Understanding Factors That Influence Small Business Participation In Environmental Improvement Activities: A Study Of Businesses Involved With The Eco-Efficiency Centre's Environmental And Energy Review Program.

by

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Abstract

Small businesses have on the whole fallen behind in attempts to reduce environmental impact and have been noted to face particular challenges in undertaking and implementing environmental improvements in their operations. With this recognition, programs have been created to encourage businesses to reduce their environmental impact. Dalhousie University, in Halifax, Nova Scotia, Eco-Efficiency Centre (EEC), Environmental and Energy Review Program provides awareness and guides small businesses in methods to undertake environmental improvements. Examining a sample of businesses involved with the EEC program, the objective of this research is to understand what motivates micro and small-sized businesses to improve their environmental performance and explore the challenges they face in the process. By analysing the motivations and challenges to reducing environmental impact, it is anticipated this research may help programs and policy makers and better encourage businesses to undertake environmental improvements.

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CHAPTER 1 - Introduction

Introduction: Problem Statement

There is a growing need to reduce the environmental footprint of our cumulative human impact. One sector in society that is often of focus in reducing environmental impact is business. Of particular interest, within this sector, are small and medium sized enterprises (SMEs) (1-500 employees)[1] because of the sheer number and overall representation in the economy. Research has indicated that small businesses face particular challenges in efforts to improve their environmental performance (such as Burke & Gaugrahn, 2007; Hillary, 2004). Governments and non-for-profit organizations such as the Eco-efficiency Centre, are reaching out to small businesses in efforts to help them improve their environmental performance. Support and information is provided to participants and attempts are made to raise awareness of environmental impact and provide possible solutions. Often these suggestions for solutions are given with cost savings arguments, the assumption that this will convince a small business owner to change because it will benefit their bottom-line. While there are success stories, many businesses do not implement suggestions or implement few and/or make small efforts. Past studies and anecdotal experience have indicated that even with help, businesses in general continue with minimal environmental efforts. Additionally, there is increasing recognition that micro (1-10 employees) and small firms (10-50 employees) differ substantially from medium and large firms in their environmental behaviours and performance (Mir and Feitelson, 2007; Mir, 2008). Particular attention needs to be paid to the smaller sized businesses in the SME sector.

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[1] For extended definition see page 10

The Canadian Federation of Independent Business (CFIB) (Armstrong et al., 2007) states: "[t]he key to getting SME owners even more focused on environmental issues is to understand why they make the changes in the first place, and what motivates them to make the effort to implement changes that will ultimately benefit the environment" (p. 6). Through understanding the motivations and drivers for change that micro and small-sized businesses encounter, programs can be designed to support these motivations and improve environmental performance. By understanding these factors, organizations and governments can better encourage and support businesses to reduce their ecological footprint. The Eco-Efficiency Centre (EEC) in Nova Scotia Canada is one such organization reaching out to businesses and wanting to build capacity for small businesses to improve environmental performance. By examining the specific situations of past participants of the Environmental and Energy Review program, light may be shed on ideas and suggestions for programming at the Centre. Moreover, understanding the situation of these small businesses may be helpful in the wider context, with businesses not involved in the EEC program, to help understand the challenges and opportunities of reducing environmental impact in small businesses in the province of Nova Scotia.

Research Objectives

Given the above problem statement the following are the objectives of the research project:

To describe the perspectives of small businesses on the environment (concerns, business impact and general environmental awareness).

The goal of the above objective is to understand the personal environmental concerns of the owner-managers, how they perceive their environmental impacts of business and general knowledge of environmental issues and environmental support programs. This will be used to help fulfill the following main objectives:

To understand what (factors) motivates small businesses involved with the Eco-Efficiency Centre's Environmental and Energy Review program to implement environmental improvements efforts.

To understand what (factors) challenges small businesses involved with the Eco-Efficiency Centre's Environmental and Energy Review program face in deciding to and to implement environmental improvements efforts.

To suggest, through input from businesses and interpretation of results, what can be done to further assist businesses in implementing environmental improvement efforts, both those that have participated in the program and the small business community in general.

Research Questions

The research objectives will be addressed by the following research questions that can be organized into three themes. The first theme relates to becoming involved and sustaining environmental improvements. The second theme addresses challenges to implementing and sustaining environmental improvements. The third relates to what can be done to support small businesses in reducing their environmental impact.

1. What motivates and drives micro and small-sized businesses[2] to implement environmental improvement efforts[2]?

2. What barriers and challenges do micro and small-sized businesses face in implementing environmental improvement efforts?

3. What can be done to further assist and encourage micro and small-sized businesses to implement environmental improvement efforts?

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[2], [2]: For further definition see page 10.

Organization Of Thesis

In addressing the research objectives and questions, this thesis is divided into five chapters. Chapter one provides the introduction to the research problem, objectives of the research, research questions and the research methods (continued in the following section). The second chapter is a comprehensive review of the literature as it pertains to the topic of small business and the environment, and the challenges and opportunities that small businesses encounter in reducing their environmental impact. The third chapter is a summary of the results of the research project undertaken to answer the thesis questions. Next, chapter four provides a comprehensive discussion of the research findings in the context of the literature review, outlining key findings while attempting to answer the research questions and will address whether the objectives of the thesis were met through the methods chose. Finally, chapter five provides the summary conclusions of the research and will provide suggestions for future studies.

Research Methods

This study used qualitative methods to take an exploratory approach to understanding small businesses and their ability to undertake environmental improvement initiatives. Semi-structured interviews and a literature review were used as the methods of data collection. To begin a literature review was used to help guide the choice of topic and research questions. Then the literature, along with discussions with the supervisory committee and staff of the Eco-Efficiency Centre, assisted in shaping the questions and topics used in the interview guide (see Appendix C for interview guide). While the data analysis was generally done through open coding the literature was useful in facilitating the choice of themes and influencing factors. At the completion of the analysis of the interview data, the literature was probed to compare and contrast results and to define the unique contributions of this study.

Tilley (1999a) notes that numerous research projects on small firms and the environment have used quantitative methods. Tilley found that while the studies

described the nature of the problem, they did not necessarily provide understanding of the underlying factors that give rise to the problem, a strength of qualitative research. Qualitative methods have been chosen in this study to further the understanding of the factors that influence small business in improving environmental performance.

Research Sample

The Study Population And Selection Criteria

While the literature predominately groups together the small and medium-sized enterprises this research will primarily focus on micro and small-sized businesses. The population that was sampled for this research was businesses enterprises under 100 employees that had participated in the Eco-Efficiency Centre's Environmental and Energy Review program.

The Environmental and Energy Review Program (now called the Sustainable Prosperity Program for SMEs) provides environmental reviews of small businesses in the province of Nova Scotia. The purpose of the review is to evaluate the ongoing environmental and energy activities of the business and to identify environmental and energy opportunities that may enhance existing good practices. Participants are presented with a written report and recommendations focusing on resource efficiency in the areas of energy, water, waste reduction and awareness training. There are over 400 businesses that have been involved in the program since its inception in 1998. Participants of the program have actively sought out the services of the EEC or been contacted by the EEC to participate in the program.

Thirteen businesses were interviewed for this research. The interviews were conducted with representatives of the businesses, who were preferably in an owner or manager position within the companies. These representatives needed to be familiar with their organization's participation in the Environment and Energy Review program and the subsequent report that was given to the business. The goal for this project was to seek depth rather than breadth in the data collection. Patton (2002) asserts that in

qualitative research, rather than seeking generalizability from the research sample, the aim is to seek understanding about the cases involved. The final sample size was determined by a number of factors including data saturation, financial resources and time available and willingness of participants. The ultimate goal for the sample was to adequately answer the research questions through interviewing a selection of different micro and small-sized businesses.

The sampling technique used for the interviews was purposive/purposeful sampling. Patton (2002) states "The logic and power of purposeful sampling lies in selecting *information-rich* cases for in depth study" (p. 230). This sampling technique, specific to qualitative research, was used to gain understanding and insights of the specific businesses being studied rather than provide grounds for empirical generalizations (Patton, 2002). Within the context of purposive sampling there were a number of strategies that were used to purposefully select information rich cases.

First, stratified purposeful sampling was used to select businesses. This method was used to identify and interview a selection of business that were approached by the Eco-Efficiency Centre to participate in the program, and a selection of companies that proactively approached the Eco-Efficiency Centre for their services. Businesses were approached by the EEC either through cold-calling the business, or were referred by others to the Centre (Ray Côté, personal communication, April 3, 2008). The reason two separate groups, those that were approached and those that sought the program was chosen, was intended to assess whether those who proactively approached the Centre were influenced by different factors. It was also hypothesized that the group who called the Centre may have been more motivated to implement environmental improvement suggestions. Moreover, it was hoped this stratified sampling technique might provide a diverse group of businesses, those who are on a continuum from little improved environmental performance, to those that have strongly improved environmental performance. While the number of businesses that were approached directly by the Centre is smaller than those that were referred or contacted by the centre, efforts were

made to create a research sample that was representative of the respective categories.

The Eco-Efficiency Centre has a database that contains the participants who have undergone an Environmental and Energy Review and this was used to choose businesses to interview. Information in the database indicates if the EEC contacted a business, or if the business approached the EEC for help. The Eco-Efficiency Centre staff was also consulted to determine the suitability of the participants according to the selection criteria. In addition, the businesses that were contacted were those who had been most recently involved in the program in the years between 2004 and 2008.

Secondly, within the stratified sample, maximum variation sampling was undertaken. This method was used to ensure there was a variety of business sectors and sizes of business represented. It was not the intention to focus on one specific type of business but rather to seek a general understanding of the factors that affect micro and small-sized businesses.

Travel distance was also taken into account when selecting participants. While the majority of businesses were located in the Halifax Regional Municipality, attempts were made to select businesses that are no more than a two-hour radius from Halifax.

Sample Size

The final sample size was thirteen businesses. There was a 50% response rate with twenty-six businesses being originally contacted to participate in the study. While no business formally declined to participate in the study, two businesses were unable to participate due to availability of time and scheduling conflicts. With the remaining eleven businesses initial contact was never made after various levels of follow-up, emails and phone messages. Of the thirteen businesses, six businesses had contacted the Centre while seven businesses were approached by the Centre to participate in the program. Businesses ranged in size from two employees to 130 employees. Among the thirteen businesses, six businesses represented the service sectors (from accommodation providers

to gas stations), and seven businesses represented the manufacturing sectors (examples are auto-part and clothing manufacturers).

Semi-Structured Interviews

Interviews were conducted with the owners and/or managers of the businesses that participated in the Eco-efficiency Centre's Environmental and Energy Reviews. These interviews were intended to directly address the research questions. An interview guide was developed to specifically address themes related to answering the research questions. A sample interview guide can be found in Appendix C. Questions posed in the interviews generally followed the interview guide. Follow-up questions were added where appropriate or questions were altered slightly to reflect the flow of conversation in order to probe further and to clarify the meaning of the questions and answers.

Data Analysis

This researcher used an inductive approach to data collection and analysis. Data analysis involved using the qualitative software program NVivo8 to organize and analyze the transcribed interviews. Using the literature as a foundation, the data were coded using open coding. This allowed for themes and ideas to emerge answering the research questions. Data were organized into free nodes and tree nodes depending on the nature of the question being answered. Nodes in the NVivo8 qualitative data analysis program map the coding or codes for a project: linking to where in the document and research materials the code can be found (Bryman & Teevan, 2005). Tree nodes are nodes with an implied connection and are grouped together in coding process. Free nodes are codes that are independent and not connected to any other codes in a hierarchical manner but may be related to other codes through analysis. Processing data by applying codes and organizing it with coding software *[i.e. NVivo8]* facilitates a systematic approach to extracting meaning and drawing out common themes and comparisons among participant accounts (Bryman & Teevan 2005, p. 285). Categories and themes emerged through the analysis process that were further refined and combined. The final list of themes that

were free coded were formed into a list of influencing factors that were used to compare to the results of the literature and compared with other themes in this study. A brief analysis was done of the stratified sample to determine possible differences between the two groups (contacted by Centre and those who contacted the Centre). This analysis did not go further because it was determined that no clear pattern existed between the two groups and the willingness to implement environmental improvement efforts.

Ethical Considerations

As human subjects are the main source of data for this study, this research project was reviewed and approved by the Dalhousie research ethics board on October 8, 2009 (see Appendix F for approval letter). Before each interview, participants were informed of their option to end the interview at any time and they were assured of confidentiality and anonymity of the interview recordings and transcripts (see Appendix A for consent form). Participants were asked to sign an interview consent form before beginning each interview (see Appendix B for signature page). Audio recording of interviews occurred where participants had indicated their agreement on the consent form. The names of the interview participants and their businesses have not been used in this study.

Study Limitations

This study is not a representation of all businesses in Nova Scotia, but a select few who have participated in the Eco-Efficiency Centre's Environmental and Energy review within the last four years. This study represents a heterogeneity of businesses but cannot necessarily represent the views of all sectors. This study does not attempt to strictly quantify, ranking and numbering, each of the factors that influence business decision-making; they are merely themes that may appear in the data. Although, some factors may be more present than others, they are not necessarily more important than others. Although, every effort was made to avoid bias on the part of the interviewer, results or themes may be a result of prompting from myself, or the way in which the questions were asked. This study will use the literature to compare results but not to

determine item-by-item if such factors exist in this study group. This study is a qualitative and subjective interpretation of the results and is an attempt to shed light on factors and themes that influence business decisions in undertaking environmental improvements in their business.

Definitions

Micro, Small And Medium Sized Enterprises

In Canada, small and medium-sized businesses comprise a large portion of Canada's economy. Small firms make up 97% of all goods-producing employer businesses and 98% of all service-producing employer businesses (Industry Canada, 2007). Industry Canada (2007) defines SMEs as any company with fewer than 500 employees. Small, good-producing firms are defined as having fewer than 100 employees, while small, service-producing firms are defined as having fewer than 50 employees. The smallest of these firms are defined as micro-sized with less than 10 employees. For the purposes of this research small businesses will be defined as having 10-100 employees. The term small business or enterprise will be used interchangeably, unless otherwise noted, with the term micro and small-sized enterprises or businesses.

Environmental Improvement Initiatives, Efforts Or Activities

Environmental improvement initiatives are defined as any effort that a business may take to reduce the impact they may have on the environment. These efforts can be defined as both pollution prevention efforts that affect their operation and are proactive in nature, or general compliance efforts such as the correct disposal of waste.

CHAPTER 2 - Literature Review

Business And The Environment

It has been acknowledged that the environment and business do not operate in separate spheres but rather are intertwined. Economies and businesses, civil society and governments have a dependent relationship on the natural environment (Waddock, 2004). The movement towards sustainable development has acknowledged this relationship. The World Commission on Environment and Development (WCED) defined sustainable development as the ability to meet the needs of the present generation without sacrificing those needs of the future (1988). Following the release of the WCED report, the World Business Council on Sustainable Development (WBSCD) has defined three pillars of sustainable development: economic growth, ecological balance and social progress (Lehni, 1998). Sustainability is interpreted in many different ways and contexts. In a narrower definition, sustainable development can be seen simply as efforts to increase eco-efficiency (Lawn, 2006). Eco-efficiency is concerned with the pillars of economic growth and ecological balance. The WBSCD acknowledges eco-efficiency is a first step that businesses should strive for in larger environmental efforts (WBSCD, 2006). The World Business Council on Sustainable Development describes an eco-efficient business, as one, which delivers:

> "…competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life-cycle to a level at least in line with the Earth's estimated carrying capacity" (WBSCD, 2006).

Hart and Milstein (2003) define a sustainable enterprise as "one that contributes to sustainable development by delivering economic, social, and environmental benefits---the so-called triple bottom line" (p. 56). Furthermore, there are only a small number of businesses that have realized the opportunity present in sustainable practices: lowering

cost and risk and the potential to grow their business (Hart & Milstein, 2003). The latter like others (e.g. Wheeler, 2003; see also Willard, 2002, Lovins, Lovins, Hawken, 2007) very much focus on large public firms, especially multinational corporations (MNCs) and how they can realign their business practices to the triple-bottom line.

Small And Medium-Sized Enterprises

Large firms are often the focus when discussing environmental issues because their individual contribution to pollution is viewed as larger than smaller enterprises (Ammenberg & Hjelm, 2003). Yet, the large size of the small and medium sized enterprises (SME) sector has been recognized as critical in the path toward achieving sustainable development (Burke & Gaughran, 2007; Côté, Booth, & Louis, 2006; Hillary, 2004). Moore and Manring (2009) have asserted: "SMEs have a vital role to play in managing limited global environmental and social resources." However, the heterogeneity of this sector makes it difficult on a large scale to calculate their exact contribution to pollution and environmental issues (Hillary, 2004). Nevertheless, it has been estimated that SMEs may account for up to 70% of global pollution (Burke & Gaughran, 2007; Hillary, 2000). In Canada, the small and medium sized business sector represents the majority of businesses and by some estimates may account for 50% of all pollution in the country (Côté, Lopez, March, Perron & Wright, 2008). Despite the acknowledgement that SMEs are critical to the path towards achieving sustainable development, they are not adequately equipped with knowledge and tools required to implement sustainable practices in their operations (Burke & Gaughran, 2007)

Some authors (Aragon-Correa et al., 2008; Moore & Manring, 2008) have argued that as opposed to larger multi-national enterprises, SMEs have unique capabilities that allow them to more easily implement environmental strategy[3] leading to better financial performance. Aragon-Correa et al. (2008) state these characteristics include a simple

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[3] Environmental strategy refers specifically to the approach that a firm may take in addressing environmental concerns.

capital structure, the ability to internally generate funds and entrepreneurial mindset of owners or managers. SMEs are sometimes characterized as being family-run enterprises especially those that are micro-enterprises (Mir, 2008). As Taylor, Barker and Simspon (2003) note, "…environmental issues are strategic issues, not merely compliance with legislation, in the same way that quality is a strategic issue and is not merely meeting a minimum required standard" (p. 102). However, SMEs generally fail to implement pollution prevention and environmental management programs (Peters & Turner, 2004) and SMEs often do not recognize the significance of their influence on the larger picture of sustainable development (Ammenberg & Hjelm, 2003,). Tilley (1999b), upon interviewing a group of owner-managers in the UK, concluded that firms can not be expected to become sustainable on their own although they may express willingness to do so. The firms did not realize the importance of their core business in relation to the environment and have problems knowing how to transform 'environmental aspirations' into pro-environmental business practices (Tilley, 1999b). Most firms were implementing resistant or reactive strategies. Tilley defines a resistant strategy as one where a business ignores the pressure to improve environmental performance, while a reactive strategy is often an ad-hoc response to environmental pressure motivated by compliance standards. Few undertook proactive behaviour and none implemented sustainable or ecological strategies. The latter are those required to actively contribute to a more concerted effort of sustainable development taking into account economic, social and environmental components. Tilley (1999b) asserts that the SMEs in the study did not "…possess the ability or the conditions to fully and holistically integrate the environment into their business practices and simultaneously maintain their economic survival" (p. 3). While they may possess the potential to implement forward thinking environmental strategies the short term success and survival of the business is paramount.

Micro-Businesses

The literature predominately groups together the small and medium-sized enterprises but the smallest of these firms are defined as micro-sized with less than 10

employees. As noted in the problem statement, there is increasing recognition that micro and small firms differ substantially from medium and large firms in their environmental behaviours and performance (Mir and Feitelson, 2007; Mir, 2008). Micro businesses have been deemed to be a particular area of interest in the field of research on SMEs and the environment. Vernon et al. (2003), suggest that the lack of research on micro-businesses may be in part due to practical issues of identifying contacts and engaging such firms. In a literature review conducted by Vernon et al. (2003) only ten articles on the subject of micro-business and the environment were identified. There is a need to continue to explore SMEs especially the smaller sized firms. They have been found to have particular challenges and factors while similar to SMEs that are unique to their situations (Mir, 2008). Mir (2008) found that their environmental behaviour can be driven by the owner managers attitudes, awareness and capabilities; their access to support services, infrastructure and information; government intervention; and market pressures or opportunities (customers and supply chain); and finally by community or social pressure. Some studies have found that micro- enterprises found customers to be uninterested in environmental improvements (i.e. pressure from customers to change) (Hillary, 2004, Mir, 2008).

Small Businesses: Barriers And Drivers

According to Hillary (2004) small businesses face numerous barriers and drivers to the adoption of pollution prevention and environmental management programs. Indeed, other literature asserts that there continues to remain a need to better understand the factors influencing SMEs' decision to undertake environmental management programs (Burke & Gaughran, 2007; Côté et al., 2006; Petts, Herd & O'Heocha, 1998). A review of the literature on factors that influence SMEs participation in environmental management (informal and formal) reveals varied approaches to understanding the barriers and drivers or factors that affect small businesses. While some look at the SME sector as a whole, others examine at a specific industrial sub-sector. Tzschentke, Kirk, & Lynch (2008) undertook a study of small 'green' tourism operators in Scotland and

identified a number of challenges that relate to the hotel and hospitality sector. Madsen (2007) examined micro-businesses in the cabinet making and the automotive repair sector in Nova Scotia. Likewise Mir (2008) studied micro-businesses in the automotive repair sector in Chicago. Spence and Rutherford (2001) examined rural tourism and hospitality businesses and note they are largely family/owner-operated businesses. As with other small enterprises these businesses faced many challenges in remaining commercially viable and have the ability to apply sustainable development principles. The commonality is that each study examines factors that influence small and medium sized enterprise participation in environmental initiatives, and most factors are overlapping, with only a few cited by a single author.

The factors (barriers and drivers) from various studies have been organized into two tables: Table 1: Drivers and motivations to reducing environmental impact and Table 2: Barriers and challenges to reducing environmental impact. Tzschentke, Kirk, and Lynch (2008) outlined three thematic categories of challenges the businesses faced: attitudinal, financial and operational. While these were based on a study of tourist operators they appear to be relevant to other sectors. Adapted from that, the drivers and barriers have been divided into financial, attitudinal, operational and institutional. Institutional was added to the three existing categories, provided by Tzschentke, Kirk, and Lynch (2008), to reflect the category influencing factors related to government and non-governmental organizational interventions and support.

Table 1: Drivers And Motivations To Reducing Environmental Impact

Financial	Authors/Works Cited
Higher economic efficiency or financial benefits (cost savings or cost pressures)	Kurzinger, 2004; McKeiver & Gadenne, 2005; Williamson, Lynch-Wood & Ramsay, 2006; CEC, 2005; Hillary, 2004; Kurzinger, 2004; Taylor, Barker & Simpson, 2003; Pimenova & van der Vorst, 2004
Competitive/marketing advantage, potential new market opportunities	Hillary, 2004; Taylor, Barker & Simpson, 2003
Production of better products	Taylor, Barker and Simpson, 2003
Satisfying customers, meeting customer purchasing requirements, attracting new customers	Hillary, 2004; Williamson, Lynch-Wood & Ramsay, 2006; CEC 2005; Taylor, Barker & Simpson, 2003
Responding to supply chain; meeting requirements of larger buyers/suppliers	McKeiver & Gadenne, 2005; Williamson, Lynch-Wood & Ramsay 2006; CEC, 2005
Insurance benefits	CEC, 2005; Hillary, 2004
Attitudinal	**Authors/Works Cited**
Owner-manager attitudes	McKeiver & Gadenne, 2005
Environmental benefits (compliance, reduce pollution, increase recycling)	Hillary, 2004; Kurzinger, 2004; Taylor, Barker & Simpson, 2003
Growing awareness of environmental impact of business	McKeiver & Gadenne, 2005; Pimenova & van der Vorst, 2004
Influence of the local community	McKeiver & Gadenne, 2005
Social responsibility	Pimenova & van der Vorst, 2004

Operational	Authors/Works Cited
Employee concerns, increased employee motivation/awareness/qualifications	Hillary, 2004; McKeiver & Gadenne, 2005
Education and training	Tilley, 1999a
Effective research	Tilley, 1999a
Organizational benefits	Hillary, 2004; Kurzinger, 2004
Internal pressures	Pimenova & van der Vorst, 2004
Institutional	**Authors/Works Cited**
Regulatory framework, response/compliance to regulation	Tilley, 1999a; Williamson, Lynch-Wood & Ramsay, 2006; Pimenova & van der Vorst, 2004
Trade association requirements	CEC, 2005
Legislation and regulatory frameworks	McKeiver & Gadenne, 2005; Taylor, Barker & Simpson, 2003

Table 2: Barriers And Challenges To Reducing Environmental Impact

Financial	Authors/Works Cited
Level or lack of resources, such as human and financial resources	Redmond et al., 2008; Hillary, 2004; Taylor, Barker & Simpson, 2003; McKeiver & Gadenne, 2005; Pimenova & van der Vorst, 2004
Lack of time	Taylor, Barker & Simpson, 2003; McKeiver & Gadenne, 2005; Pimenova & van der Vorst, 2004
Do not want to pass cost burden to customers and lack of customer support	Tilley, 1999a; Hillary, 2004; CEC, 2005
External economic concerns (state of economy)	Hillary, 2004
Difficulty translating pro-environmental attitudes/ideas into action or issues in implementation	Tilley 1999; Hillary, 2004
Cost of implementing programs, cost of upgrading to environmental standards	CEC, 2005; Tzchentke, Kirk & Lynch, 2008
Operational	**Authors/works cited**
Size of the business	McKeiver & Gadenne, 2005
Type of industry	McKeiver & Gadenne, 2005
Issues of technology	Pimenova & van der Vorst, 2004
Lack of training	Pimenova & van der Vorst, 2004

Attitudinal and perceptional	Authors/works cited
Perception business does not have environmental problems (too small/non-existent) belief impact is minimal, lack of evidence	Tilley, 1999a; CEC, 2005; Pimenova & van der Vorst, 2004
Company culture	Hillary, 2005
Attitudes of owner/managers	Redmond, Walker & Wang, 2008; Hillary 2004; McKeiver & Gadenne, 2005
Low environmental awareness of owner/ managers	Tilley 1999; CEC, 2005
Lack of information, low eco-literacy, understanding and perception	Tilley 1999; Hillary, 2004; McKeiver & Gadenne, 2005
Lack of knowledge	Pimenova & van der Vorst, 2004
Not aware of importance of sustainability (abstract portrayal does not help)	Taylor, Barker & Simpson, 2003
Environmental management system not important to business or to bottom line	CEC, 2005
Institutional	**Authors/works cited**
Awareness of environmental legislation and the complexity of legislation	Taylor, Barker & Simpson, 2003
Inadequate institutional structure institutional (e.g. government) weakness in promoting and supporting environmental management	Tilley, 1999a; Hillary, 2004; Pimenova & van der Vorst, 2004
Lack of external support and guidance	Hillary, 2004; Taylor, Barker & Simpson, 2003
Implementation concerns - fear of non-compliance or internal issues	CEC, 2005; Hillary, 2004
Lack of/or weakness of external certifiers and verifiers for EMS	Hillary, 2004

These two tables demonstrate the many factors that have been identified in past studies as having influence on a small businesses' decision to undertake environmental improvement initiatives. Analysing the tables those factors mentioned by several authors appear as key factors and may require special attention when helping reduce the environmental impact of the small business sector.

Internal And External Factors

A number of authors (including Hillary, 2004; McKeiver & Gadenne, 2005; Redmond, Walker & Wang, 2008; Tilley, 1999b) divide the factors that influence SME participation in environmental activities into internal and external drivers and barriers rather than simply drivers and barriers. Internal factors are those that are within the realm of influence or abilities of a business and external factors are those that are outside the realm of influence of the firm. Hillary (2004) has found that internal barriers have a more significant role in impeding process of environmental improvements or implementing environmental management system. The two groups of factors, namely internal and external are not completely separate from each other. A firm's internal capabilities or characteristics may inhibit it from accessing external benefits or support programs. For instance, it has been demonstrated that small and medium-sized enterprises are generally limited in both their managerial capabilities and in their abilities to access knowledge from external sources (Zhang, Macpherson, & Jones, 2006). While identifying challenges to participating in formal or informal environmental activities is important, understanding the factors that push firms towards sustainability is key. The following table (Table 3) outlines how barriers and drivers to engaging in environmental improvement activities have been divided into internal and external categories:

Table 3: Selected Drivers And Barriers Divided Into Internal And External Categories

	Drivers	**Barriers**
Internal	Owner/manager attitudes Awareness of environmental impact Financial benefits Employee concerns (McKeiver & Gadenne, 2005)	Lack of resources Lack of understanding Issues in implementation Attitudes and company culture (Hillary, 2004)
External	Customers Supplier demands Legislation and regulatory frameworks Influence of the local community (McKeiver & Gadenne, 2005)	Cost of certification of formal programs Uncertainty of economic issues Institutional (e.g. government) weakness in promoting and supporting environmental management Lack of support and guidance (Hillary, 2004)

Barriers to action can be both direct and indirect. Direct barriers are those immediate to the individual business and their day-to-day operations, such as human or financial resources, while indirect barriers are a contextual circumstance of a business: such as where they are located and the support available to them externally (Vernon et al., 2003). Vernon et al. (2003) in discussing micro-business note barriers can be real and/or perceived. Indeed, while some challenges are indeed very much apparent, such as lack of financing, the details regarding this may be unclear. For example, the amount of money required to make a change may be perceived to be too large, but the true cost may in fact be manageable. Additionally, businesses may lack the needed information to understand customer motivations and desire for environmental friendly products, this combines both the barrier of lack of customer support and lack of information.

Of note is that many of the drivers and barriers are similar. A driver or barrier can

be moderating characteristics of the same factor. Influencing factors and their relative importance differ from business to business. For example, the regulatory framework in one municipal jurisdiction could be a motivation to reduce environmental impact, while in another municipality may be a hindrance in attempts to reduce environmental impact. Another example, environmental awareness is noted as a motivation for change when environmental awareness grows and a barrier to change when businesses continue with a lack of awareness of their impact.

The factors (barriers and drivers) are very much intertwined with another and influence each other. When discussing the multitude of factors that may impede a business from actively engaging in environmental improvement efforts, one wonders if it is one of a simple case of inertia, lack of interest, or a combination of lack of pro-environmental attitude, knowledge and behaviour. Tzchentke, Kirk & Lynch (2008) assert that potential barriers to action need to be treated seriously if businesses are going to be actively engaged. Recognizing the challenges, whether their true level of impact, small businesses may face is an important step in addressing issues of environmental impact.

Canadian Context: Barriers And Drivers

The Canadian Federation of Independent Business (CFIB) (Armstrong et al., 2007) using a member survey reveal a number of key drivers and barriers for Canadian small businesses. The survey was conducted between January and March of 2007 and collected just over 10,800 responses from their members. CFIB members reflect a diversity of types and sizes of small independent businesses with members representing the full range and heterogeneity of SMEs in Canada (CFIB, 2010). In order of importance these drivers were the main reasons small businesses would or have participated in environmental measures:

- they personally believe it is important;

- there are potential cost savings in the short and long term;

- current regulation;

- views of their employees;

- customer supplier/needs;

- fear of more regulation;

- financial incentives.

The report (Armstrong et al., 2007) also examined the barriers to improving environmental performance by SMEs in Canada. The authors stressed that there was no one single obstacle but a combination of factors that impeded businesses. The survey revealed the following as barriers to participation (in order of importance):

- they lack the information needed;

- the process is too expensive and/or too complicated;

- they are already energy efficient;

- their impact is too small;

- lack of time;

- their leasing arrangements;

- lack of staff and regulatory hurdles.

These barriers and drivers reported in the CFIB report (Armstrong et al. 2007) are similar to other international studies on small businesses drivers and barriers to environmental improvements (see tables 1 and 2 for comparison). While the order of importance of each factor may not be similar across the literature, the factors are indeed mirrored. The importance of highlighting these findings is to better understand the

context of Canadian firms and their unique motivations and barriers to reducing environmental impact.

The CFIB's 2007 Environmental and Energy Survey examined businesses in different provinces, and why they may or may not have reduced environmental impact. Nova Scotian businesses were asked why they had not undertaken environmental improvements. The following were the reasons chosen: expense (26.7%), they were already efficient (23.8%), and only three percent of businesses indicated it was too complex (CFIB, 2007). In contrast, in every EEC environmental and energy review conducted in more than 400 businesses in Nova Scotia, efficiency improvements were identified as areas of improvement (Ray Côté, personal communication, May 22nd, 2009). Clearly there appears to be a difference in owners' perception of level of efficiency in operations and the businesses' the opportunities that exist to improve efficiency. This could echo the barrier of lack of awareness small business owner/managers have of environmental impact.

Even with an apparent lack of awareness of environmental impact revealed in the research, Nova Scotia small businesses indicated some type of environmental concern. In the CFIB Energy and Environment Survey (2007) the top four areas of environmental concern for Nova Scotia small businesses were: energy conservation (59.9%), recycling of materials (54.5%), climate change (51.3%) and clean water, sewage (49.6%), and handling of toxic waste (30.1%). Madsen (2007) noted that the availability of services and legislation were important factors in influencing environmentally responsible activities in micro-businesses in Nova Scotia. The CFIB Eco-Prosperity Report (Armstrong et al, 2008) found that many businesses in Canada are responding to environmental concerns and negative external factors influencing their business. The majority of small businesses in the study had or were planning to implement energy conservation changes at their business, seventy per cent of those surveyed had introduced or expanded recycling activities and about a third used environmentally friendly products (CFIB, 2008). Likewise, Vernon et al. (2003) in their study of small tourism enterprises

in the UK, found that the activities with the highest level of adoption environmental improvement initiatives were those in traditional areas of environmental management: waste management, energy conservation and water conservation. Only a small number of businesses in their study undertook innovative activities such as solar heating or solar energy projects.

Overview Of Key Influencing Factors:

Environmental Awareness, Attitudes, And Behaviour

Attitudes have been identified as both a barrier and a driver of improved environmental performance in small firms. Kollmuss and Agyeman (2002) noted that in most cases, an increase in knowledge and awareness of environmental issues does not necessarily lead to positive or pro-environmental behaviour. They describe 'pro-environmental behaviour, as a behaviour "…that consciously seeks to minimize the negative impact of one's actions on the natural and built world (e.g. minimize resource and energy consumption, use of non-toxic substances, reduce waste production)" (p.240). Indeed, small firm owner/managers have difficulty connecting their environmental attitudes and environmental behaviours' (Tilley, 1999; Schaper, 2002; Petts, Herd & O'Heocha,1998). Kollmuss and Agyeman (2002) provide a conceptual model to understand the internal and external factors that influence pro-environmental behaviour. The authors assert there are a number of competing and conflicting factors that influence decisions and actions. These include: external factors such as social and cultural factors, institutional frameworks, and economic situation; and internal factors such as knowledge, personality traits and values. Furthermore, environmental values are influenced by a number of social factors including childhood experiences in nature and the pro-environmental beliefs of family members. Various barriers, including old behaviour patterns, lack of internal and external incentives, and lack of knowledge, can influence these factors. All of these influencing factors point to the reason why environmental attitudes have been found to have a varied but low impact on environmental behaviour (Kollmuss & Agyeman, 2002). Merrit (1998), using reference to the author's own

research study, cautions that it may be important to be wary of whether research can measure true environmental attitudes of owner/managers, as it is difficult to distinguish between 'expressed' attitudes and 'actual' attitudes.

Petts et al. (1998) contend that a key to the performance of companies' involvement in environmental management systems was the presence of an individual, who championed the environmental initiative, most often but not necessarily a senior manager. The environmental champion was most successful when the environmental culture permeates the whole company and would have more lasting success. Thus, having a figure in the company that champions positive environmental attitudes would appear to be a driver to environmental participation and attitudes.

Spence and Rutherford (2001) note the following: "The reasons for being in business and running a firm are far more complex, and socially motivated, than purely financial reasons" (p.137). Businesses have to pursue the bottom-line but parallel objectives can be pursued at the same time. Vernon et al. (2003) note that financial and altruistic motives were not necessarily mutually exclusive for small businesses, enforcing the idea of a win-win situation. "…where 'saving the planet' or 'saving money' was matched by strong commitment the level of action was noticeably greater." "Similarly, if action was perceived to be financially or morally rewarding, commitment appeared to be greater" (Tzchentke, Kirk & Lynch, 2008 p. 175). While finances and the bottom-line are important influencing factors, positive environmental attitudes and awareness are shown to be important drivers for small businesses in their environmental decisions. Revell, Stokes and Chen (2008) found small businesses in the London, UK area are becoming increasing aware of their environmental footprint and they argue this may be as a result of growing policy and media attention. They note that lack of awareness may not be as large a barrier as previously discussed in older literature.

Cost

Williamson, Lynch-Wood and Ramsay (2006) point out that: "SMEs see the direct benefits of an approach based on profit-orientated self-interest and not the advantages of engaging with or appealing to their wider stakeholders." However, the authors assert that emphasizing the business case—that improved environmental performance often means improved bottom line, remains to have a major influence on most manufacturing SMEs in their study. Côté, Booth and Louis (2006) found the activities that businesses undertook were those most closely linked with principles of eco-efficiency, indicating a possible relationship between the actions taken by a company and possible cost-savings of those activities. However, Côté et al. (2008) found that measuring and tracking energy and waste management costs continues to remain a low-priority for businesses. Measurement is key to the ability to track the possible cost benefits a business may incur as a result of changes. Making the business case for sustainability is often the approach taken to convince businesses to undertake environmental improvements (Willard, 2002). The pay-back period for cost savings is seen as an important component of making the argument for environmental improvements. Hillary (2004) notes that payback periods and financial savings from adopting environmental management systems are as diverse as the SME sector itself. Nevertheless, in some cases SMEs continue to not be convinced that measures will improve the bottom-line (Taylor, Barker and Simpson, 2003).

It has been found that SMEs, when reducing environmental impact, often make improvements that are small or 'good house keeping-type' measures that show quick results (Kürzinger, 2002; Côté et al., 2006). These are actions which have been nicknamed 'low-hanging fruit' and require limited financial and technical expertise from the businesses. These practices are often those best described as eco-efficient measures: improving efficiencies in the operations of the business that reduce costs or generate savings. Examples are reducing waste in the manufacturing process and reducing energy consumption of the business. More costly changes and measures often occur at later stages in the environmental management process, and occurred under conditions of

economic and political stability (Kürzinger, 2002). Some authors suggest that achieving 'low-hanging fruit' can demonstrate immediate benefits first and motivates firms to move forward with bigger plans and successes (Aragon-Correa et al., 2008; Burke & Gaughran, 2007). This approach allows SMEs to incrementally improve and gradually build knowledge for larger projects (Burke & Gaughran, 2007).

Eco-efficient practices can be a beginning step to further environmental improvements and cost savings. A study of the eco-efficiency of SMEs in Nova Scotia used a sample of businesses that underwent an environmental and energy review with the Eco-Efficiency Centre (Côté et al., 2006). The authors examined areas in which small businesses may or not be eco-efficient. The results indicated that, on average, a company was involved in nine of the possible thirty-five different actions identified (Côté et al. 2006). The authors found that more than fifty percent of the activities companies implemented fell under the categories of 'reducing consumption of resources' and 'implementing systematic approaches' (i.e. providing information and materials). Côté et al. (2006) found that many activities that were undertaken did not fall under the regulatory framework in Nova Scotia. These could include activities such as landfill bans and recycling fees. They had anticipated that companies would at least be operating in compliance with regulatory frameworks. The activities most often completed, i.e., lighting and maintaining equipment, were most related to reducing consumption of resources (Côté et al, 2006). Armstrong et al. (2007) in a study of small Canadian businesses found recycling is the top environmental improvement or measure in every sector. This is with the exception of businesses in the agriculture and hospitality/personal services sector where reduction of electricity use is the top measure. The finding related to recycling should not be surprising because these practices are required in many jurisdictions in Canada and considerable awareness raising has been done.

Petts et al. (1998) question the approach of framing the environment as solely a business benefit. They assert that after initial successes of waste management and energy conservation, it would be a challenge to identify further long-term efforts for business

operations. Petts et al. argue that personal commitment to environmental performance is also important if there are to be long-term commitments to sustainability in businesses operations.

Customers

According to Hillary (2004), pressure from customers is the most important driver for environmental improvements and environmental management systems adoption. Hillary (2004) asserts that the absence of customer pressure means businesses have little drive to change. Indeed, Petts et al. (1998) found that environmental performance in businesses they examined was being driven by the need to stay competitive in the market. In the supply chains, many opportunities remain for cooperation between customers and suppliers to improve efficiency, reduce energy consumption and reduce waste outputs (Côté et al., 2008). Côté et al. (2008) examined the supply chains of three medium sized enterprises in Burnside Industrial Park in Dartmouth, Nova Scotia. The study examined opportunities to improve environmental performance in SMEs connected in their supply chains. Focusing on greenhouse gas emissions and solid waste management, the authors explored ways in which the businesses and a number of those in their supply chain could improve environmental performance. Côté et al. (2008) affirm that like the literature, the results indicate that although opportunities exist, SMEs in their study generally have limited time, financial resources and technical expertise.

In the Halifax area, previous research has indicated, customers are not a major push for small businesses in deciding to reduce environmental impact (Côté et al., 2008). Yet, in cases where it is required from customers, environmental management is in place (Côté et al., 2008). Lack of customer demand was identified in a study by Tzschentke (2008) as a barrier for small accommodations providers, wherein there was lower than expected demand or/and that their market was not ready. Ammenberg and Hjelm (2003), in a study of small businesses that had implemented formal environmental management systems, established that a majority of businesses noted better business relations with existing customers and an increased interest from potential customers. This has also

been remarked upon by business representatives. Taylor et al. (2003) found that while at present businesses did not feel that customer satisfaction was related to environmental best practice, almost half said that it would have an effect in the future. This increasing interest by customers may play a more influencing role in the future. Businesses may need to find ways to track the changes in demand by customers in the marketplace.

Time

It has been remarked that Nova Scotian businesses have difficulty putting time and effort into environmental improvement activities, i.e. those outside the core functions, such as in this case manufacturing or providing services (Côté et al., 2008). In a case study in Nova Scotia businesses, time, and to a lesser degree, financial resources were the biggest challenges for SMEs to initiate environmental improvements in their supply chains (Côté et al, 2008). Pimenova and van der Vorst (2004) also highlighted that time followed by financial barriers, were major constraints to improving environmental performance. Through interviewing businesses and undertaking a study of available support programs, Pimenova and van der Vorst found that the support programs did not clearly address the time and financial constraints. In particular, the time constraints in the businesses were not directly addressed and the necessity of making information and resources available in a time conscious way.

Information

Schaper (2002) argues that the availability of time is directly related to the owner/managers ability to effectively collect and process information. This is important because the author notes that "knowledge of environmental problems act as a spur to improved environmental performance…"(p 244). Addressing the need to make enough information available to businesses in a timely and accessible format is a challenge. While an increase in knowledge does not necessarily lead to an increase in pro-active environmental behaviour (Kollmuss & Agyeman, 2002), the availability and ease of access of information is an important factor in environmental decision making. Small

businesses receive their environmental information from various sources. In a study of micro-businesses (1-10 employees) Mir (2008) found they received most environmental information from suppliers, followed by networking activities and lastly through environmental agencies. Roy and Therin (2008) reveal that while trade associations and suppliers can be valuable sources of information for SMEs, it is SMEs with higher levels of environmental commitment that seek out public agencies for environmental information. The authors argue this may be a result of the increasing complexity of environmental legislation and the need for assistance in navigating and understanding the regulatory framework. Interestingly, in studying micro-enterprises, Mir (2008) indicates that while many businesses use the same type of contacts (such as suppliers, environmental agencies and networking with other firms) it is often difficult to identify common contacts between firms.

Lack of information is an identified barrier to participation for many firms in Canada (Armstrong et al., 2008) and at the same time awareness of environmental impact has been identified as a motivation for making positive environmental changes. The heterogeneity of the SME sector indeed makes it difficult to identify common contacts. By better understanding how businesses access information, this may help environmental agencies provide timely information to small businesses looking to reduce their environmental impact. Even though educational and information initiatives are often suggested to comply with government policy, SMEs are seen as expensive to reach (Taylor, Barker & Simpson, 2003). Information needs to be easy to access and have a direct and obvious impact to the business accessing it (Schaper, 2002). Appropriate language and arguments need to be used to help convince managers that environmental issues need to be managed along with other core functions of their business (Côté et al, 2008).

Programs And Interventions

Governments and organizations in Canada have made efforts to encourage SMEs

to voluntarily adopt more environmentally sound practices and help them overcome the barriers they face in the process. Voluntary pollution prevention measures are an important part of SMEs contribution to sustainable development, and have the potential to generate greater environmental improvements beyond existing regulatory frameworks (Taylor, 2006). Labatt and McClaren (1998) use the term voluntary corporate environmental initiatives and define it as any "non-statutory initiative that aims at improving corporate environmental performance" (p.193). It has been argued that a voluntary-regulatory hybrid approach is best suited to the unique needs of SMEs (Gibson, 1999; Huppé et al., 2006).

In Canada three levels of government, federal, provincial and municipal have drafted regulations to promote cleaner production and pollution prevention (Taylor, 2006). Programs, guidelines and financial support have been made available to encourage small businesses to undertake pollution prevention efforts (see Huppé et al., 2005; Côté et al., 2006; Granek & Hassanali, 2006). However, policies and program applications vary in each provincial jurisdiction. While federal programs are generally the same across Canada, they have a number of programs and agencies that address specific regions. The federal government through Natural Resources Canada provides information and funding support directly to businesses to improve energy use. The Atlantic Canada Opportunities Agency (ACOA) is a federal government agency that works in the Atlantic region to promote industrial and economic development (Côté et al., 2006). Côté, Booth and Louis (2006) describe the importance of ACOA in the context of sustainable development and eco-efficiency. ACOA has been one of the funders of the Eco-Efficiency Centre allowing it to conduct environmental reviews of businesses. Even with the various programs, funding opportunities and priorities government agencies and environmental non-governmental organizations continue to struggle with developing effective environmental management tools for small and micro sized businesses (Côté et al., 2006).

Suggestions For Effective Support Programs

Finding ways to effectively reach out to SMEs needs to be a priority for wider sustainable development efforts. In a review of the literature, few studies (see Pimenova & van der Vorst, 2004; Armstrong et al., 2007) have specifically asked businesses what they perceive the issues to be and what would be of help to them. Understanding the key drivers and barriers to implementing environmental improvement initiatives is a part of this process. In the CFIB 2007 Canadian survey of small businesses and the environment, the authors (Armstrong et al, 2007) suggested the following improvements: governments need to continue to raise awareness and provide information so SME owners can better understand the regulations and issues, simplify regulations, and reduce the paperwork burden. Schaper (2002), in a quantitative study of the green practices of pharmacies in Western Australia concluded that change within small business community will not be driven by 'eco-friendly' business operators or regulators but by a quick and pragmatic access to information. The Canadian Federation of Independent Business (2007) found that the largest issue for their small business members in Nova Scotia was the need for more information (p. 9-10). Granek and Hassanali (2006) in examining why businesses became involved with the Toronto Sustainability Program, a support program to encourage small businesses in their environmental improvement efforts, found that mandatory pollution prevention requirements (both federal and Toronto by-law provisions), the fifty percent cost share the program offered, and the desire to be environmental stewards were key drivers. Other reasons included: seeking to be compliant with legislation, reducing business risk reduction, the availability of expertise and improving efficiency.

Vernon et al. (2003) observed in their study of greening micro-tourism program, that "[e]ven the most environmentally motivated participants in the Sustain Tourism program showed a high dependence on the public sector for leadership and direction" (p.60). Côté et al, (2008) suggest that dedicated support systems, such as an eco-business support program, may be required to help companies achieve their environmental goals that are seen as outside the core operations of their business. Having readily

available support may help businesses address the barriers of lack of information, time and expertise.

Huppé et al. (2006) contend that voluntary pollution prevention programs, such as the Enviroclub in Quebec, can entice participation by providing economic benefits and be a showcase for best practices in the wider business community. The Enviroclub program incorporated: networking opportunities, in-plant projects, workshops, a hands-on approach to learning, and financial support. A performance measurement was included in the project to outline and directly capture the economic benefits of the projects for the SMEs. The Eco-Efficiency Program for Manufacturers (formerly E2BAP) operated by the EEC in Nova Scotia was similar program and has had the same type of findings (Côté et al., 2006). Huppé et al. (2006) acknowledge that even with the success of the Enviroclub program, there would be a need to follow up with other activities to reinforce the attitudes and behaviours of the participants. This points to the need for continued support for businesses over a period of time to continue and further encourage pro-environmental behaviour as time passes.

Certainly the needs of small businesses may change over time as environmental awareness grows or as financial circumstances change. Addressing these potential changes, in support programs is important for the programs' and businesses' success. Taylor et al. (2003) note the need to critically review the assistance provided by local support agencies. Likewise, Vernon et al. (2003) asserts the importance of carrying out research on the effectiveness of interventions used by the public sector. Building monitoring and evaluations into these programs is important to understand the effectiveness of the programs and if the small businesses are finding the services practical for their everyday operations.

Summary Of The Literature

The drivers and barriers small businesses encounter are numerous, yet often come down to the need to make the business case for sustainability and integrating the operations of a business with wider societal goals of environmental sustainability. The literature asserts a continued need to understand reasons why SMEs undertake environmental improvements especially in the local context. Various authors note the importance of interventions, in the form of government policy and programs, in helping SMEs implement environmental improvements. Knowing the specific drivers and barriers of a certain business sector or region is important to be able to tailor the efforts to aid small business in reducing their environmental impact. Information, incentives, and help from agencies are valuable, but the literature also notes the all-important forces of the market, customers and suppliers as those having the greatest influence over firms. There appears to be different drivers and barriers depending on the sectors and jurisdictions. It seems that only more directed studies will provide a good understanding of the key drivers and barriers of relevance in Nova Scotia.

CHAPTER 3 - Results

Characteristics Of Businesses

Size And Location

Businesses were located throughout the province, in or near small towns within a 200km radius of the Halifax Regional Municipality. Businesses sizes ranged from 2-130 employees. Several businesses had a fluctuating workforce, growing larger as seasonal peak periods demanded. For the purposes of this thesis, using the low off-peak numbers, four were micro-enterprises (1-10 employees), eight were small sized (10-100 employees) and there was one medium sized business (100+ employees). While having a medium sized business was out of the scope of the intended research sample, the business had numerous locations with employees distributed between the sites. The interview focused on one business location, a site that could be defined as 'small' as it had fewer than one hundred employees.

Industrial Sectors Represented

There were a variety of industrial sectors in the sample, with 54% of the businesses in the broadly defined manufacturing sector and 56% of respondents in the service sector. The only duplication of industry type was accommodation providers (three of thirteen businesses). This probably reflects the large representation of this category in the Eco-Efficiency Centre's Environmental and Energy Review program, the source of the sample, due to its involvement with the Bay of Fundy Tourism Partnership. Nevertheless, the sample does reflect the heterogeneity of the small business sector.

Environmental Impacts

Environmental impact refers to the effect the operations of the business may have on the environment. Participants were asked directly how their business impacted or

interacted with the environment (see questionnaire Appendix C). A variety of impacts were noted. Some activities had a positive impact on the environment, such as recycling, while others were negative in impact. The following table outlines the top four environmental impacts as indicated by businesses.

Table 4:   Environmental Impacts Of Businesses As Noted By Participants

Environmental impact category	Number of times cited
Emissions	5
Energy Use	5
Waste and recycling	5
Water Use	2

The impact category of 'Emissions' relates to emissions in the air from operations or vehicles. Energy use is identified as either the use of electricity, fuel for heating and cooling and the type of resources used to create energy. The category of waste and recycling relates to the production, management and disposal of waste either into landfills or through recycling.

Type Of Environmental Improvement Activities Implemented

Businesses were involved in a wide range of activities that influenced their impact on the environment. The nature and scale of these activities varied considerably. In some cases businesses were involved in activities related to compliance with existing regulations, while in other cases activities were focuses on operational efficiency. Participants were asked what environmental activities they may have implemented (see Appendix C for questionnaire). Information was also provided in general discussion during the interviews. Some activities may have been implemented before the review; others resulted from the review, some were inspired by suggestions from other sources, and others because of the owner's own research.

In an attempt to elicit best case scenario answers, respondents were also asked, if they had unlimited resources what environmental improvements would they choose to undertake. Environmental initiatives that were discussed were coded in the following way: 'Activities Undertaken', 'Activities Not Undertaken', and 'Activities possibly to be undertaken'. Businesses are implementing or considering a range of initiatives for their operations. Table five outlines the degree of implementation of activities by major category. The first column is a representation of the number of businesses who discussed the activity, rather than the actual implementation of the activity. The category of 'Energy efficiency', relates to efficient use of energy for both lighting and heating and cooling; 'Waste and recycling' refers to activities related to either the disposal and reduction of waste or the handling of recyclable materials; 'Water and water conservation' refers to activities that help maintain water resources and reduce consumption; the category 'Hazardous material and chemical use and disposal' refers to that exactly; and 'Sustainable procurement' relates to purchasing activities that reduce environmental impacts.

Table 5: Degree Of Implementation By Major Category

Environment activities by category	Number of businesses who discussed activity	Number of times activities undertaken	Activities not undertaken	Activities to be possibly undertaken
Energy efficiency	13	12	3	8
Waste and recycling	10	10	1	1
Water and water conservation	6	5	1	0
Hazardous material and chemical use and disposal	3	3	0	1
Sustainable procurement	2	2	0	0

The following table displays the environmental improvement activities that were most implemented by the businesses in research sample. The actions listed below are sub-activities of the categories in table five. A full list of activities implemented and discussed by the participants can be found in Appendix E.

Table 6: Degree Of Implementation By Specific Activity

Environment improvement activities	Number of businesses	Activities undertaken	Activities not Undertaken	Activities possibly undertaken
Efficient lighting	11	9	0	5
Recycling	9	9	1	1
Sealing building envelope	6	4	0	2
Efficient heating	4	3	1	0

Twelve of thirteen businesses recalled implementing various types of energy efficiency (both in terms of power usage and heating and ventilation) activities, with the most predominant being efficient lighting with nine businesses (and also being the only implemented activity of one business), decreasing energy lost from heating and cooling and decreasing reliance on fossil based fuels. Of the twelve businesses, seven had undertaken activities related to their heating and cooling systems, installing energy efficient heaters, heat pumps or moving away from oil based heating. Four businesses had put effort into sealing and insulating their building envelope to reduce heat and energy loss.

Recycling and waste reduction activities were the second most often mentioned as having been implemented. Ten of the thirteen businesses' activities related to efforts to recycle more, finding ways to recycle materials not normally collected for recycling in the province, and reducing waste.

Of the five businesses that undertook efforts to reduce water use, two businesses on the suggestion of the EEC installed toilet bags (bags that limit the use of water used

while flushing) and two accommodation providers noted towel/bedding policies, where they wash items only when asked to reduce water consumption.

There were a number of activities that businesses indicated they might undertake in the future. Five indicated they would like to implement more energy efficient lighting. For activities 'not undertaken', geothermal heating was explored by two businesses as an alternative heating solution but had indicated they did not install because of the large cost associated with the installation or the difficulty in receiving a quote. Geothermal heating was also noted by one person under "activities to possibly undertake" as an option they would like to explore. Solar and wind power was also on the 'wish list' of two of the businesses.

Reason For Participating In Environmental And Energy Review Program

When asked directly why they decided to become involved with the environmental and energy review program, owner/managers identified numerous reasons for deciding to participate ranging from general to very specific reasons. A third of participants indicated it was in part because the Centre contacted them, while the others were connected to the Centre through contacts or presentations given by the EEC. Three businesses specifically cited that they were looking to reduce their energy costs, while one was looking for information on alternative heating systems. A few also noted they felt it would be a way to get in contact with programs available for small businesses. One participant said he sought out the centre to help provide legitimacy for his efforts. There were a number of general reasons businesses decided to take advantage of the program: some highlighted that it was a no-cost opportunity they wanted to take advantage of. Others wanted to find out if there were ways they could improve what they were already doing and find new ways to reduce their environmental impact. A couple of businesses also noted that they want to make sure they were on the right track or to be compliant/responsible.

The participants chosen for this study were divided and chosen from two groups, those that had directly called the Eco-Efficiency Centre for help and those that had been contacted by the Centre to request their participation in the program. It was hypothesized that the group actively seeking help may have implemented more recommendations or showed a willingness to reduce environmental impact. While there was some variation across the full sample of businesses, a brief analysis of the two groups revealed no clear pattern of willingness or levels of implementation of activities.

Factors Influencing Implementation Of Environmental Activities

A variety of factors influencing businesses were apparent in most interviews. These broad themes appear to have influence on the operations and the undertaking of possible environmental improvements. These factors can be interpreted as drivers, barriers or moderating factors on the businesses ability or willingness to implement environmental improvements. The table below indicates the prevalence of coding for each factor identified in the data analysis. Following the table will be a summary of results for each factor and sub-themes related to each of the topics. The number indicated in the 'Barriers' and the 'Drivers' columns reflect the number of times this factor was deemed one or the other for the participants in this study. A business may have one factor as both a driver and barrier, therefore the total of the two (drivers and barriers) does not equal the total number of sources/businesses that had that factor coded. The 'References' column denotes the number of times this factor was coded in total; factors were often coded numerous times in one interview.

Table 7: Influencing Factors

Name	Sources	References	Barrier	Driver
Awareness	13	57	11	10
Cost	12	83	11	12
Owner /manager attitude	12	45	6	9
Customers	10	33	6	7
Government intervention	10	30	9	5
Incentives	10	29	8	10
Programs	10	26	6	9
Employees	9	24	4	8
Time	8	21	6	1
Ability to source products and services	7	24	7	0
Geographic location	7	19	7	3
Small or simple changes	7	11	3	3
Success in implementing improvement	7	9	1	2
Efficiency	6	17	0	6

Name	Sources	References	Barrier	Driver
Few recommendations	6	8	3	2
Local issue	6	7	1	5
Compliance and certification	5	23	3	5
Perception already doing enough	5	13	5	3
Family influence	5	12	1	4
Demonstration of best practices	5	10	0	5
Measurement	5	7	0	1
Source of information	5	7	2	3
Shipping and transportation	5	7	4	1
Banking	4	12	4	3
Pay-back period	4	11	3	3
Implementation issues	4	9	3	0
Reduce environmental footprint	4	8	0	4
Networking	4	6	0	2

Name	Sources	References	Barrier	Driver
Validation of environmental initiatives	3	13	1	3
Business type as environmentally friendly	3	10	0	2
Family business	3	6	1	2
Global issue	3	5	1	1
Generational differences	3	5	2	1
Unbiased information needed	3	3	2	0
Success story (EEC award)	2	5	0	2
Limited contractor support	2	4	2	1
Advertising	2	3	0	2
Liability	2	3	1	1
Environment as by-product rather then the main goal	2	2	0	2

Awareness

Awareness of environmental issues, awareness of the environment impact of the business, and awareness of ways to reduce environmental impact of the business was a factor for each business in the study. Moreover, having lack of awareness (a barrier) and being environmentally aware (a driver) were equitably distributed as a barrier and driver for the participants. Awareness is a broad theme that cuts across all of the interviews. It is the perception of the business owners and/or managers as it relates the impact their business may have on the environment or the perceived knowledge they have of the impacts. It also relates to the knowledge they may have gained or are gaining in regards to environmental improvements. Moreover, this theme pertains to the awareness or lack of awareness of programs or opportunities that may be available to their small business. It could also be an acknowledgement that they may not have all the information required.

Awareness of support programs. Each one of these businesses was involved in the Eco-Efficiency Centre's Environmental and Energy review Program. However, even with the information provided in the review, few businesses had awareness of programs or opportunities available to them. Support programs appeared to only be a driver or possible driver for six businesses and accessing or knowing about the programs was a challenge for nine businesses. There were a few 'success stories' in which businesses had accessed some programs and services (at a federal or provincial level) to help with various initiatives but the majority of businesses appeared to remain unaware of potential opportunities. While some businesses used their wide network of contacts to find programs and support, others acknowledge they would not know where to start to find support programs.

Generational awareness. An interesting factor that was present within growing awareness (and carries over into the theme of owner - manager attitude) was the assertion by a number of participants of the difference in generational attitudes towards the environment. Some participants indicated that older generations were less conscious of

their environmental impact. Participants talked about this generational difference in terms of their own family and in regards to the wider community and larger society. A number of the businesses in the sample were family businesses, and some participants indicated a difference in how the previous generation ran the business and even the difference in current attitudes or importance placed on environmental issues. The following is an example of how a participant expressed the generational difference:

> *"There is a lot of old school business people and business owners and they don't care about saving the environment, maybe that is not quite fair." Interview 5*

The participant described the difference in the following way:

> *"Not a big push for sure. I don't know what the average age of business owners is here but I would expect it is older than other parts of the country. The younger generation automatically thinks of some of this other stuff that the older generation just. To ask somebody in their sixties who has been running his own business for thirty years to suddenly change and take care of the environment. For them dumping their oil down into the sewers is a big step. That is where we have come from in twenty years." Interview 5*

Owner/Manager Attitude

While no specific questions were targeted towards the attitudes and perceptions of owners and managers, this emerged as a theme from the interviews and questionnaire in whether a business may undergo environmental improvements. Factors such as awareness, perception, and how they described their situation were taken into account for this factor. Almost all interviews had the theme of owner/manager attitude as a factor. In six cases it was a potential barrier, while in nine cases it was a potential driver. Attitude relates to possible pro-environmental attitudes; those having favourable opinions or feelings about the need to improve environmental impacts. There may not necessarily be negative environmental attitudes but a scale of importance one puts on the need for

environmental improvements will influence their priority.

Areas Of Environmental Concern

Participants were asked specifically what they were most concerned about in terms of the environment. The intention was to understand their personal perspective, but most respondents answered in reference to their business. In order of importance, these were the main areas of environmental concern for interview participants:

- Energy and resource use

- Waste and recycling

- Water

- Indoor air quality

Energy and resource were a concern for twelve participants. It groups together a number of concerns: basic energy use, the type of energy used, the costs of energy usage and natural resource usage. Eight businesses indicated a concern with waste and recycling, some referred to limited landfill space, while others indicated the need for widespread recycling efforts. The third area of concern, with six of thirteen respondents, was water. Answers related to issues of water as an important resource, water quality, and the cost of water. Finally, three participants noted indoor air quality at the place of business as a major concern. This pertained to the concern for the health and safety of employees and the concern of inhaling noxious substances. Areas of environmental concern did not appear to be grouped or linked to the location of their business in the province but in some cases was linked to the business activities.

Family Influence

Family influence appeared to have a role in influencing respondents' attitudes and decision to undertake environmental improvements with four of five examples being an

identified driver for business owner/managers. In two cases, participant discussed the role their children played in shaping their views and actions towards the environment. In one case, there was a discussion of how the business owner wanted to ensure his business was left to his children without any problems. For that owner, this meant having an environmental assessment done and cleaning up the business property. He expressed that this would give him piece of mind, contribute to the community and protect the environment with specific mention of a river behind the property. This same owner expressed how many of his employees had young families and he placed an importance on their safety and health.

> *"I have three kids and I am hoping that it is cleaner when I leave."*
> *Interview 11*

The second business owner noted that, while he was environmentally aware, his daughters spurred on his awareness and environmental improvements at home and at work. Another owner talked about his business partner and wife, and how her concern for the environment has helped motivate activities in the business. Thus, in these cases, family appeared to be a strong motivator to improve environmental performance because of both the influence of family members and a desire to leave something positive for future generations.

Cost

The theme of cost and expense of activities was the second most influential factor whether a business decided to undertake environmental improvements. The idea of cost and financial resources was present in all interviews. It was equally both a driver and barrier for the group of businesses. Cost was a coded as a barrier in eleven cases and a driver in twelve cases. There were eighty-three references to the factor of cost in the transcribed interviews. Cost as related to cost-savings or effectiveness was largely cited as a motivating factor for businesses and was coded as a driver in twelve cases. For participants "cost" can mean the cost of doing business, the bottom-line, the cost of

implementing activities, the real or perceived cost of an activity, or the length of the payback period.

Environmental improvement too costly. A number of businesses indicated the reason they had not undertaken suggested environmental improvements was that the changes were too costly. This is despite the matter that changes in practice suggested by the Centre range in cost and ease of implementation and many are inexpensive and relatively easy to implement.

> *"I would really liked to have done the hot water insulating. But it is just a matter of cost." - Interview 4*

There are also activities that businesses have researched on their own that may have been deemed too expensive to implement. Resources, both financial and human, factor into this. Cost to the participants was not simply about simple dollars spent, but about the cost of labour, such as taking employees away from core operations to work on environmental initiatives.

> *"So anyways it is a limited group, when you are running full steam, everyone of those guys has a specific task to do. You can't just pull one guy out of the system and it will continue working, somebody has to be there to man the point in the operation. It is somewhat limited on the resource side." - Interview 5*

Cost-effectiveness. In contrast to costliness, the factor of cost-effectiveness was a motivating factor for all thirteen businesses. Cost-effectiveness represents the motivation to change operations for cost savings reasons. Many businesses in this study cited cost-effectiveness as a reason they had reduced their environmental impact. Often the reason was to save on energy costs.

> *"Our actual costs has gone up but I suspect they would have gone up more if we hadn't made these changes." Interview 2*

> *"You know it is all about cost as well. You are a small business and*

your costs keep going up and yet your rates don't. So it makes it very hard to move ahead. So I wanted to be ahead." Interview 3

Operational Efficiency. In certain cases it appeared that so-called environmental improvements were implemented more out of a goal of operational efficiency, rather than reducing environmental impacts. This was cited directly on two occasions. One business noted that reducing environmental impact is built into their business by the type of product they make, while another noted that they hadn't made the improvements to 'save the environment' but rather to save their business, the environmental benefit was incidental. Here is the statement in the participants' own words:

"And I am going to say, I didn't initially do this, to be frank with you, to save the world or because I wanted to be green. I looked at my options and one of the best options was to be green, which is kind of ironic you know." Interview 6

"So that really just started the wheels turning, in the sense we either had to eliminate the production facility totally, because you can not grow plants on oil anymore and now we had to make a decision: eliminate the production facility or find better way of generating heat." Interview 6

Four other businesses talked about efficiency of their operations in general and efficiency of their buildings as a motivator as well. This related to efficiency in production and as it related to energy usage. Efficiency seems to be intuitively related to cost-effectiveness as a motivating factor with both related to cost savings in the operation of a business.

An example of cost-savings vs. cost: conflicting factors. In one interview, the owner did want to be 'environmentally friendly' however the time and energy needed to run their business was all they could concentrate on. Costs savings were important to them; the reason they had initially approached the Centre was to help with energy costs. It appeared that anything that did not immediately result in savings potential, took too much time away from running the business. The owner recognized that there could be

potential cost savings in changing lighting but had not made any changes. Interestingly, she indicated they would be willing to pay someone to do the changes for them; i.e. if the bulb was twenty dollars to replace they would pay someone twenty-five dollars each to do the job for them. They were not looking for a general awareness review and suggestions but a solution to a specific problem they were facing with the energy use in their production lines. By the time I had visited this business they had considerably less staff and were just attempting to make ends meet. The environmental issue, although it was of concern to the owner, was very much a peripheral one.

Pay-Back Period

While many of the initiatives have an initial cost, cost savings can be realized in time. Less waste or more efficient resource use can mean less money spent in the long term. Initial costs can include purchasing new lights or lighting fixtures, purchasing materials to insulate, and replacing equipment or heaters. Payback period was mentioned in a third of interviews with participants. The length of the payback period appeared to play a role in a number of businesses' decisions. Upfront costs were noted to be a barrier for some businesses, especially those with limited resources, who did not want to take away from business operations. A couple of businesses appeared to be comfortable with longer pay-back periods (more then one year), while most were wary of the time needed to gain the cost savings. These discussions were rarely quantified using real numbers or time periods, therefore it is difficult to determine what a 'comfortable' pay-back period would be for small businesses in this group.

Banking

In four interviews banking and loans were discussed. Businesses have either not tried at all for a loan, not tried because they believe the lending institution would not give them a loan, or talked about not being able to get a loan to help pay for a capital intensive and environmental efficient project for their business. One business noted an environmental improvement was spurred by the fact that some of their property was an

environmental liability, and would now be able to get a loan more easily. Access to
financing appears to be an issue for some of businesses.

> *"I think government putting pressure on banks or either government having
> their own sub-committee that would help in the financing. Take the farm
> loan boards, the farm credit or these ACOA operations, put more into that.
> Tax breaks would be more the US way, but aggressive tax breaks. You get
> 20,000 tax breaks, if you put that windmill up, a year. You know I think it
> has to be pressure to the banks, government initiatives; it has to be good
> government initiatives. ... Government and banking they are really the
> biggest hurdles. They are the real hurdles of this program." Interview 6*

Government Intervention

The theme of government intervention groups together the role of policy,
government support, and legislation and regulations. Some sub-themes emerged in this
category: legislation as a motivation for businesses to change, the idea that different
levels of Canadian government are behind others (i.e. Europe) and government should
not intervene in the affairs of businesses. The theme of government intervention was
both a positive motivating factor for businesses in making environmental improvements
and a challenge. Ten businesses noted the role government might have in decisions to
improve environmental performance. It was difficult to ascertain the level of knowledge
of specific regulations, as this question was not asked in each interview. In a few cases it
appeared that there was a lack of knowledge of specific laws and standards. A few
businesses stated that they would not want government involved in how they run their
business.

Improve legislation or implement new laws. There was a consensus among
almost half of those who discussed government intervention that governments needed to
implement new laws or improve legislation. Specifically, four businesses noted that a
solution to some waste and recycling problems might be to change the rules of what is
accepted by recyclers, while one business noted that improved fuel efficiency standards
might reduce emissions. Two businesses noted that legislation was a challenge for them
in implementing environmental initiatives. In one case the business was importing

fuel-efficient vehicles from Europe, and in another, the possibility of alternative electricity generation was impeded because the business could not sell back into the transmission system.

Government leadership role needed. Parallel to the discussion of improving laws was the feeling by some that governments in Canada (municipal, provincial and federal) were lagging behind in promoting the environment. The provincial government was specifically noted by five businesses as a body that needed to take an active role in promoting the environment and environmental initiatives for business. Two businesses cited the positive example of Europe with its standards and legislation aimed at protecting the environment. Anecdotally, in certain cases where provincial government leadership was discussed, the businesses managers were unaware of the province of Nova Scotia's Environmental Goals and Sustainable Prosperity Act.

Hands-off approach needed. A few (three) businesses asserted that government should have a limited role in how businesses make decisions or operate their business. A couple of participants felt that businesses should not be receiving so-called 'hand-outs' or believed that government does not need to necessarily support small businesses. For these businesses, it appeared that it was not the government who should be the primary motivating factor in their decisions to implement environmental improvements.

Customers

Customers are not actively seeking environmental standards and products. Except for the very few businesses specifically promoting an environmentally friendly or eco-efficient product, owner/managers indicated they are not being approached by customers to reduce their environmental impact or to change products. A few businesses discussed the issue of cost and how much more money the more environmentally friendly product or service would be and did not want to pass the cost to the customer. In contrast, it was in the few cases where the customers were directly asking for products to meet certain standards, e.g. compliance with standards such as LEED or ROHS in

Europe, that businesses were supplying more environmentally friendly products. These improvements were mainly for markets outside of Nova Scotia and were seen as value-added for those customers who did not require that standard.

Businesses are not marketing to customers. Few businesses have actively promoted their greening efforts to their customers. Indeed, a number of those who have made efforts, have done it peripherally making information available when asked but not as a main marketing tool for their product or service. One business acknowledged regret in not having promoted its products as 'green and environmentally' friendly, realizing the potential market opportunity and potential for differentiation.

> *"The one thing I have failed at though, I failed at using it to my advantage in the marketplace. … And that goes back again to the Eco-Efficiency Centre giving us legitimacy but we haven't capitalized on that." Interview 6*

There is a need to be legitimate to customers. Following the above quote, there was expressed need to be legitimate in their greening efforts. The Eco-Efficiency Centre was seen as a source of legitimacy for the business. This was achieved by being associated with EEC, through the awards they received for their efforts or for the potential to receive an award of recognition. This was an important distinguishing factor for a number of the businesses.

Customers can be willing participants. Specifically, the accommodation providers also discussed how customers are often willing to participate in recycling, energy conservation (i.e. towel policy or turning off air-conditioners when they are not needed). On the other hand they also indicated that it was difficult to 'police' recycling efforts of their guests.

Customers as a source of information. A couple of the businesses interviewed indicated that their customers were a source of information for them and ideas in undertaking environmental improvements indicating a network of support can exist

between customers and businesses.

Financial Incentives

The role of incentives in implementing environmental improvements was discussed in almost all interviews. Incentives are defined as any kind of monetary program to help environmental efforts of businesses. As interpreted in the interviews incentives were most related to monetary efforts. They could be tax credits, rebates or interest free loans. Incentives can be both monetary and in the form of services provided to business. An incentive where non-financial support is provided is referred to in this study as programs or support programs. It appeared that only a few businesses (three businesses) had used a type of financial incentive program in their efforts.

Incentives as a motivation to change. The results indicated that incentives could be a motivation to initiate changes in the businesses. Ten participants indicated that an incentive would help them (or has helped them) in their efforts. Having that extra money would be both an important factor in the ability to implement environmental changes but was also seen as a reward for their efforts. In seven of the ten interviews it was apparent there were different types of challenges associated with incentives and some indicated certain areas of need: lack of knowledge of programs, difficulties with upfront costs and the need for support to access and use an incentive.

Lack of knowledge of incentive programs. Five participants noted a lack of knowledge of incentive programs both for themselves and others businesses similar to them. Even with contact information and programs often provided in the Eco-Efficiency Centre report, knowledge of incentive programs was limited. Businesses admitted it would be nice to have help in accessing incentives but had not heard about programs or had not found one yet that applied to their situation. A few participants note the effectiveness of home incentive programs such as the eco-energy audit program and rebates on home appliances.

Incentives are seen as reward or extra. A number of businesses indicated that an incentive to them would be more of a bonus or a reward for completing the activity instead of being the sole motivation for choosing to make an environmental improvement. They would need to spend their own money upfront for many of the activities and receiving money for the activity or a tax credit after the fact was viewed positively.

Types of incentives. A few businesses indicated they would not be looking for what one participant termed a 'hand-out'. Others talked about interest free loans as a possibility and four businesses talked about tax credits being a motivation for businesses to undertake environmental improvements. One business discussed the need for a subsidy to hire a student or intern for several months to champion environmental projects. While no programs were cited specifically, a few businesses indicated the difficulty in actually following through with the incentives. Getting the right paperwork together while the process is underway and actually applying for the money after the fact was time consuming for them.

Employees

Employees and human resources requirements were described as both motivation and challenges for business managers. Six participants described their employees as a type of motivation or driver. Owner/managers talked about wanting to have a safe working environment, noted the help that employees have offered in improving environmental performance, and the value of staff expertise in making environmental improvements. Availability of employees, as human resources, was discussed by four businesses as a barrier to improving environmental impact. This is in regards to the need to have more employees to implement activities, ass well as the difficulties in changing employee behaviour.

> *"I don't think we capitalized on that as much as we probably should have. It's that thing where you are working in very busy times and you might*

not have enough labour to address it." Interview 1

Time

Lack of time was noted by eight businesses to be challenge when initiating environmental improvements. Participants noted that if more 'time' was available more initiatives would have been completed or projects would have taken a shorter amount of time to implement. These reasons were often related to the need to focus their 'time' on core operations and not wanting to take employees away from regular tasks. It appeared that in some cases there was some intention to do activities but lack of time prevented them from being done.

> *"I think and I know they had mentioned when they were here to shut the computers off at night to save money. What happened after we got that, we laid off a bunch of people. And I have been doing a bunch of work here so I haven't even had a chance to think about it." Interview 12*

> *"These days it takes most of our time to keep the business going. It is difficult to spend a lot of our time to spend on different programs." Interview 2*

Suppliers

Resistance to change. Following the role of customers, suppliers play an important role in the ability of the businesses to implement environmental improvements. A number of businesses expressed frustration with their suppliers, either of their products or contracting services. When undertaking renovations, a couple of the businesses ran into difficulty with their suppliers resisting the decisions of the owners to install more efficient products or being unable to supply the service that was needed for a environmentally responsible renovation.

> *"When I went to do some improvements people around here hadn't done, I am the one teaching them some of the different things. " Oh I have never heard about that." As a purchaser, I shouldn't be the one telling the supplier, the supplier should be leading me to the water." Interview 4*

The ability to source products. The ability of businesses to source products from suppliers that they can trust is important to a number of the small business owners. A number of businesses expressed a problem in sourcing sustainable/environmental friendly products that were up to the quality they required. A few had been successful in negotiating with suppliers to find products required. One person commented that part of the issue was they were the middle-man and supplier did not deal directly with the customer.

Businesses are questioning information provided by sales people and suppliers. There seems to be a perception that sales people will not be providing a neutral position on their products. This can mean that they may try to convince businesses of the effectiveness of a product as perhaps the best, when in fact businesses have learned that another more environmentally friendly or effective product is available. There was a lack of trust in some cases of sales people relating to the information they provided to the businesses.

Geography And Place

Place and location came up in a number of interviews: how the participants related to their environment (local vs. global), shipping and transporting of goods, and the variation in how different markets or regions address environmental issues. Participants indicated that location of their business might affect their ability to implement environmental improvements and operate their business.

Importance of 'local' and community global context. Seven participants related their experience and discussion of the environment to the locale or specifically their community. They emphasized the importance of buying local products and services, or related their concern for the environment to their communities. Alternatively, three businesses talked about the difficulty in addressing environmental issues because of their global scale.

Community concern. Like family, community arose as a theme of discussion with three participants. It was expressed that the community was a source of support and a place that business owners gave back through their environmental efforts. Two of these businesses had undertaken some larger environmental improvements.

Geographic location. More broadly, when discussing the location of their business in the context of environmental improvements five businesses noted this as a type of challenge, whether it was because of the business's rural location and accessing products and services, or its location in a province or country that is not perceived as forward thinking in regards to environmental legislation or general pro-environmental attitude.

Measurement

When measurement arose in the discussions with businesses, it was noted that many do not formally measure the changes being made. Measurement of environmental improvements was discussed in five interviews, each relating to measuring the cost of energy. For businesses that had made energy efficiency changes, some did acknowledge that there had been a lowering of power usage. Moreover, it was noted that the amount of power they were using was less but the cost of power had gone up. Two of those businesses indicated that they had measured some of their changes; one was an immediate measure from a power-cost monitor and the other had monitored power bills and had received outside support in doing that. This was an immediate and tangible measurement of power usage. The other three that had not measured possible improvements gave the reason that the changes were likely too small, because of changes in their operations, or changes to cost of utilities, it would be too difficult to track. Those who have made changes do not necessarily measure or see the improvements they have as insignificant. On the whole concerted measurement of changes is not taking place across the different stages of projects or environmental improvement activities (pre-project and post-project).

Shipping And Transportation

Five businesses discussed the challenges of shipping and transportation as related to their business operations and the distance required for recycling some of their production waste. For a number of businesses shipping goods, it is a challenge to ship because of cost and access to reliable transportation. A few businesses discussed the shipping of waste and recycling, and emphasized the cost of doing the activity. Nevertheless, two businesses I spoke with were shipping materials out of province to be recycled. One reasoned that the cost of shipping materials for recycling once every few months was likely the same as the alternative of shipping everyday to a landfill.

Compliance And Certification

This factor reflects the theme of compliance with environmental regulations or environmental certification standards. Five of the six businesses noted that compliance and certification was a motivating factor. Most who discussed this factor, talked about non-governmental compliance, such as the product being able to be used in LEED buildings or a certification for environmental responsible hotels. The ISO certification was discussed by two businesses, and issues of the program being too costly were noted. Two businesses also discussed the desire to be above compliance for government regulations and with one citing the need to be compliant with international regulation that was stricter than those in Nova Scotia.

'Low-Hanging Fruit' Vs. 'High-Hanging Fruit'

There are a number of businesses in the sample that have implemented large or costly environmental improvements in their businesses operations and changes that I have referred to as 'high-hanging fruit'. If resources are available, businesses may be implementing large changes such as installing high-efficiency furnaces, building energy efficient buildings or renovations, environmental remediation of their properties or buying fuel efficient vehicles for their fleet. These businesses were in part motivated to undergo the large activities by the following factors: lowering operational costs,

family, environmental concern, energy costs, and the long-term viability of their operations. On the other hand, there were businesses that implemented only relatively small projects or 'low-hanging fruit'. The majority of businesses interviewed had implemented in some way small or low-cost initiatives. Examples of low-hanging fruit for this group include waste separation and recycling efforts, energy efficiency activities such as installing inexpensive light bulbs and/or turning off equipment. Moreover, some businesses only implement small suggestions identified during the site visit it self. It appeared that most lighting changes were being done incrementally; bulbs were being replaced with more efficient ones as older ones burnt out. Cost arose as a barrier to implementation in a number of discussions, some apparent 'low-hanging fruit' is still too big or costly – with an example being small lighting changes. The jump to undertake even small initiatives is still too much of a barrier for some business owners.

Suggestions To Help Small Businesses From Businesses

Participants were asked what they felt would help businesses implement environmental improvements. The top response was providing subsidies for activities. Of the seven businesses who noted this was important, three pointed to tax credits as a way to encourage and reward behaviour. Next, five businesses highlighted the need for support. Participants felt there was a need to help initiate activities, either with guided support for the activities in both the planning and undertaking or being matched up to programs and subsidies. The third most noted suggestion was the provision of information. Businesses want access to impartial information and education, and would like to be connected to programs and experts. Two responses were given for each of the following: increased regulation, improving waste and recycling (facilities and laws), starting with the 'little things'. The following were each noted once: focus on the bottom-line, lower cost green products, and the need for changing customer's behaviour. The quote below describes one interviewee's suggestions for delivery of support

programs and suggestions to help small businesses:

> *"Visit them, talk to them about it and show them the benefits of that. It's a very very personal thing you know. You go in and you try, and some people would take that as an attack on their business, what they are trying to do. And a lot of people think they are doing a really good job including myself, but maybe there is improvements we can do and this type of thing. A gentle push is better than a slam." - Interview 9*

The Role Of The Eco-Efficiency Centre

The Report

When selecting the businesses to interview it was expected that a number of businesses would not remember the report due to a lapse in time since their reviews. Indeed, five businesses specifically indicated that they did not remember much content from the report and had trouble recalling suggestions they may have implemented. Two businesses recalled not reading the review in depth at the time they received the report and had not reviewed it since that time.

Recommendations

Throughout the interviews it was apparent a number of businesses had taken suggestions from the report and used them in their operations. Only one business indicated they had undertaken all the possible suggestions, while six participants noted that there were few recommendations for them to implement. Reasons given for only doing a few or any recommendations related either to the nature of their business, the fact that they had already completed multiple projects previous to the report recommendations or they had completed a few large activities. Two examples of answers given highlight these points:

> *"Again it is just one of those things in terms of our environmental footprint, there wasn't a whole lot left over for someone to say there is an opportunity here." Interview 10*

*"We were pretty much moving forward in a good direction anyways.
That was one of the big things that really stood out." Interview 3*

This relates also to the fact that a number of businesses sought out the Centre's help to ascertain confirmation if they were environmentally friendly and for validation of past efforts.

Confirmation And Validation Provided By The EEC

Three businesses noted the type of legitimacy the EEC provides either being associated with the organization, and very fact of having a review or the chance to be given an award by the EEC for their efforts. For the businesses the report provides validation for the activities they have already undertaken.

*"Well we can say look we have this eco-efficiency award from this
recognized institution in the province of Nova Scotia and we can say
we are producing a product that will help your building achieve LEED
platinum design recognition. It is kind of a nice synergy to have all
those little pieces of the puzzle in place. So from that context in
addition to having confirmation that we are doing things well, it is
beneficial in that way." Interview 10*

EEC Communications And Events

EEC emails regarding activities and events were noted by businesses in four interviews. While not necessarily read, they noted their usefulness for learning about upcoming events hosted by the Centre and about possible opportunities for their business. Two of the businesses noted specifically the value of attending and participating in events hosted by the Centre.

Success And Frustrations Of Businesses

This sample reflects a mix of businesses, with varying 'success' rates in their

environmental improvements. Three businesses were recognized by the Eco-Efficiency Centre as 'Eco-Efficiency success stories', that is businesses that have been given recognition for their positive environmental successes and used as case studies by the Centre. One business indicated they were in part motivated to implement environmental improvements because of the recognition and awards offered by the Centre. When discussing success, seven businesses noted different types or levels of success. Some noted their success relative to their previous state, as being more of a step in the right direction rather than compared to being considered a comprehensive environmental success.

A number of businesses encountered implementation issues and frustrations. Three interview participants noted specific difficulties in attempting to implement environmental improvements or frustration with not being able to find a solution to an identified 'environmental' problem in their business. These businesses had made efforts to find solutions but discussed how suitable solutions had not been found.

Participants' Self-Described Biggest Challenges

Participants were asked directly what they perceived to be the biggest challenges facing small and medium sized businesses in improving environmental performance. Whereas the list of factors discussed previously was gleaned from the interviews, these factors are direct answers to the above question. While it was a general question based on their perceptions, most participants responded with reflections on their own experience. Some participants listed more than one challenge. In order of importance, participants listed the following challenges:

- financial reasons;

- accessing and finding information;

- ability to source products and suppliers;

- location of business;

- uncertain about challenges businesses may face;

- customers, attitudes, waste disposal issues and time.

Financial factors were the most important challenge with six businesses indicating they found the cost of making improvements and the ability to access capital difficult for projects. Five participants identified the challenge of finding the right information and obtaining impartial advice. Closely related was the ability to source products and suppliers that would assist in reducing environmental impacts. The location of the business was cited as challenge for three businesses. The challenge of location for these business related to their ability to source information and issues related to shipping and transportation. Customers, attitudes of business owners, waste disposal issues and time, were each mentioned once. Finally, two participants were unsure of challenges businesses might face this could be attributed in part to the success they have had in implementing environmental improvements. While in a different order of importance, the reasons businesses gave as their main barriers to change are also those factors coded the most in this study.

CHAPTER 4 - Discussion

Introduction

This study reveals a diversity of factors influencing the small businesses in their decisions whether or not to implement environmental improvements. The highest coded factors are both drivers for change and challenges for businesses to initiate positive environmental changes. There are only a few factors that present themselves as mainly a barrier or a driver. These themes play an important role in how, why, when and where businesses may undertake positive environmental changes. The factors appear to have different levels of influence for different people. The results of this study are reflected in the existing literature. This chapter will examine the main findings from the interviews in relation to the literature. While the sample is small, there appears to be some consistency among the respondents to suggest that there are implications for the delivery of environmental support programs assisting small businesses in the province. The results could provide guidance to both managers of businesses and program delivery agents.

As a group, the businesses overall appear to have a general concern for environmental issues. How this has translated into business activities is different for each business. In this study, a variety of factors influence owners and managers in their decisions regarding the environment and their business. The most predominant factors can be grouped under the themes of awareness, resources, and information, and external influences. The latter include government, suppliers and customers. In the data analysis and presentation of results influencing factors were further subdivided into drivers and barriers, many themes are both drivers and barriers to change. This reflects the heterogeneity of the sector, the different needs of businesses and how they interact with their customers, the market place and their personal levels of environmental awareness. Nevertheless, understanding the influencing factors and specific challenges will help

provide ways to assist and encourage businesses in their environmental improvement efforts.

Internal Context

Environmental Awareness

The results reveal that awareness is the largest overall influencing factor revealed in the interviews. This factor is defined as both a lack of awareness and a presence of environmental awareness. Business owner/managers could be seen to have a growing environmental concern or awareness about the environment. They discussed both business and home life. In a number of interviews, the managers' awareness of environmental issues appeared to have an important influence on their decisions to make changes. The growing environmental awareness of businesses in this study concurs with research done by McKeiver and Gadenne (2005) that found growing awareness of the environmental impact of business was a motivation for improvement for small businesses. However, awareness did not necessarily mean a translation into action for the businesses interviewed. This is reflective of the work of Kollmuss and Agyeman (2002) who assert that an increase in awareness or knowledge does not necessarily result in positive environmental behaviour. Whether businesses did implement changes or not, awareness of the environmental issues in general appears to be growing. This may have occurred through a combination of the owner/managers' own efforts to seek information and through involvement with the Centre's programs.

> *"Yeah [the environmental and energy review] created a lot of awareness, you know a little more awareness of what we can do to better our company. We have taken on a couple new projects because of that." Interview 9*

A number of participants indicated they wanted to grow their awareness and indicated this was a reason why they decided to participate in the review.

> *"Why we implemented them? I guess we started to implement them number one as a cost savings, again you get out what you put in. Probably more of an awareness. I never used to think about where I got my fruits and vegetables before. What sort of a footprint are you leaving? Just small things, I thought they would maybe all add up."*
> *Interview 3*

While there is a lack of awareness of the full impact on the environment for some, most managers in one way or another acknowledged that their business had some type of impact. This growing awareness may be reflective of the current trends in society and/or a wider awareness of environmental issues. Revell, Stokes and Chen (2008) found small businesses in the London, UK area are becoming increasingly aware of their environmental footprint and they argue this may be as a result of growing policy and media attention. They note that lack of awareness is likely not as large a barrier as previously cited in older literature (such as Tilley, 1999; Hillary, 2004). There appears to be a growing awareness over the last number of years of environmental impacts large and small. In this study, a number of owner managers expressed what they saw as a growing generational awareness. While younger generations are becoming more aware of the impact they have had on the environment, the older generation still in business may still need more impetus to change. This growing awareness may be playing an increasing role in small business owners' decisions to reduce their environmental impact and market to consumers about their environmental efforts. An important component of helping small businesses improve their overall impact is helping them understand what that impact may be.

Cost

Financial reasons were one of the largest factors influencing businesses. The results reveal that cost is the second largest factor, with an almost even division between

the theme as a driver and a barrier. Cost as an influencing factor in this study is multi-faceted; it is not solely about the idea of the actual 'cost' of the activities and whether one of the small business could afford to undertake the activities, it is also about needing a convincing business case to undertake the changes. While specific financial details were not discussed, it appeared that some businesses simply did not have enough resources for simple or small initiatives. This is reflected in previous studies of Nova Scotia businesses, such as the CFIB survey, in which expense was a barrier for businesses (Armstrong et al., 2007).

It also appears there is a general lack of knowledge about the actual cost of changes and/or the potential payback period of the activities. This may have been because of the length of time between receiving the EEC report, (that contains information on payback of certain activities), or simply that they have never had the return on investment calculated. Hillary (2004) notes that payback periods and financial savings from specifically adopting environmental management systems "are as diverse as the sector itself." It is difficult to have a standard payback period for each activity. Each business needs to calculate and determine this for themselves. Nevertheless, a number of participants indicated that regardless of the longer-term payback, in the immediate term improvements were too costly to be made. The importance of the cost of implementing environmental improvements is reflected in various literature (examples include Redmond et al. 2008; Hillary, 2004; Taylor, Barker and Simpson; McKeiver & Gadenne, 2005; Pimenova & van der Vorst, 2004).

On the opposite side, as a driver some business owners in this study were convinced by the potential cost-savings of environmental improvements in their businesses. In certain cases, it was a matter of keeping the business viable, and in others it was searching for further efficiencies and cost savings in their operations. The drivers of cost savings and cost pressures are prominent in numerous other studies of small businesses and environmental performance (such as Kurzinger, 2004; Hillary, 2004; Taylor, Barker & Simpson, 2003 and Pimenova & van der Vorst, 2004). Although,

businesses may not formally measure the original consumption versus the new improved usage, energy consumption and its associated cost is a major influencing factor for making changes. Energy saving efforts, often referred to as 'low-hanging fruit', are seen as the easiest and are often the most common environmental improvements businesses undertake (Kürzinger, 2002; Côté, Booth & Louis, 2006). Businesses in this study undertook both easy, low-cost improvements and higher cost environmental and efficiency improvements.

People want to do well for their business and environmental improvements should not be in conflict with business operations. Many business owner/managers expressed wanting to do well in business and also be environmentally friendly. There was an acknowledgement among many of the businesses that suggested environmental improvements must not conflict with their business operations. While they may express a certain positive attitude about the environment the translation into business efforts is another bigger step. Meritt (1998) reasons that this may be because it requires little effort to express a positive attitude about the environment. An expressed attitude in a discussion may be different than the managers' actual attitudes and how this may translate into business operations. Whether, the 'truthfulness' or 'depth' of attitude is prevalent in business owner/managers in this study can not be said for certain. What can be said is that often it appeared that most businesses needed to be convinced of a solution that did not detract from their core business operations, either taking away resources, money or time or needed a solution that added to the operational efficiency of the operations.

Cost was described as one of many motivations or challenges. While cost was an important factor in implementing positive environmental improvements, a number of businesses indicated cost was not the only factor involved in their decision-making, the importance of environmental impact was also taken into account in many cases. This supports the work of Petts et al (1998), who argue it is important that cost is not the sole focus when convincing businesses to reduce their environmental impact. Petts et al

(1998) concluded that if long-term environmental commitment is to be achieved personal commitment to the issues plays an important role. This long-term commitment was reflected in this study in the instances of business owners who had implemented larger and longer-term environmental projects. However, whether the project is large or small cost plays a major part in the decision to introduce or not to introduce an environmental improvement. Nonetheless, cost is one of many interwoven motivations and challenges that businesses might encounter.

Owner/Manager Attitude

Owner/manager attitude was the third most prevalent factor coded in this study. The coding reflected the frequency of positive, ambivalent or negative attitudes about the environment or the importance they placed on reducing environmental impact. In this study, it was a motivator in slightly more cases, but it was also determined to be a hindrance for some owners in environmental decision-making. While this theme was one of the most coded factors in this analysis, it is truly difficult to objectively identify and measure an environmental attitude as it can encompass many facets of the participant's values, beliefs and understandings. Kollmuss and Agyeman (2002) found that environmental attitudes to have varied but overall little impact on environmental behaviour. Nevertheless, Canadian small businesses have indicated the biggest reason they would participate or have participated in environmental measures was they personally believe it is important (Armstrong et al., 2007). Environmental attitude, while difficult to measure objectively in this study, remains an important component in business owners' decision-making.

Resources: Time And Employees

The resources that small businesses owners/managers had available to them also play an important role in their ability to environmental improvement activities in their operations. The availability of time and labour are important factors in this study. They can be linked to the notion of cost as each have a monetary value to a business manager.

Employees were both positive drivers for change and challenges when implementing change. Employees influenced managers to make changes, and their skills were viewed as useful in the change process. However, there was also the issue of taking the employees off their regularly scheduled duties and of having enough labour to implement changes. The literature points to employees as positive motivators for change with their concerns influencing managers and changes having a positive influence on employee motivation (Hilary, 2004 and McKeiver & Gadenne, 2005). On the other hand, employees, in parallel with financial resources, are key resource barriers in various articles (Hillary 2004, McKeiver & Gadenne, 2005 Pimenova & van der Vorst, 2004; Taylor, Barker & Simpson, 2003). For owner/managers, because they are often the key labour resources in their small firms, finding time away from core operations was a challenge for many in their implementation of environmental improvements. This is reflective of past research of Nova Scotia SMEs supply chains by Côté et al. (2008). In that study and another by Pimenova and van der Vorst (2004) they both found that time followed by financial constraints were the biggest barriers to improving environmental performance. However, Pimenova and van der Vorst (2004) point to the need to not over emphasize cost as a constraint, driver and benefit related to environmental action and to closely examine how time can be a significant constraint for businesses. Time may indeed be the dominant underlying constraint in decisions to implement environmental improvements. While time was a lower rated factor in this study, even with a stated desire to make improvements, there was a consensus of a lack of time to dedicate to environmental improvements away from core business operations.

> *"You know part of it is time, part of it is the cost issue, and part of it is the reward issue. If there was a movement towards changing it, for a business there isn't really a movement to change other than the fact you will save your own money and maybe you will sleep better or ....whatever reasons you are changing. Or if there was a bonus. Here they are going to give me an interest free loan and I get a credit on my taxes because underwent two or three alternatives." Interview 4*

The ability to take time to process information to make environmental decisions and the

time needed to implement the changes are important considerations when helping small businesses improve their environmental impact.

Resources: Information

The results reveal that businesses owner/managers continue to search for verified and trusted sources of information. The provision of information was a top suggestion when asked what could be further done to help businesses make environmental improvements. Businesses in this study found information through suppliers, the Eco-Efficiency Centre, customers and their own research. While a few participants did go back to the Eco-Efficiency Centre as a source of help, suppliers or 'sales people' were a common source of information for the businesses. The owners/managers noted hesitation in taking their product knowledge as the final word on environmental and energy efficient products fearing their sales information may be biased. Likewise, Mir (2008) found that micro-businesses received most environmental information from suppliers, followed by networking and environmental agencies. Past research has shown that lack of information and knowledge is a definite barrier for small businesses to participate in environmental improvements (Hillary, 2004; Tilley, 1999; McKeiver & Gadenne, 2005 and Pimenova & van der Vorst, 2004). In this study, a businesses' network of contacts were both of benefit and a deterrent for finding effective environmental improvements. Beyond the availability of reliable and trustworthy information needed to make educated changes, the time resources needed to digest and process this information likely plays a role in this challenge. A business owner may have a trusted source, such as the Eco-Efficiency Centre but taking the time to use the information provided in a productive way may be a challenge. This highlights the importance of having easily accessible information for managers of small businesses, as well as using the supply chain as means to disseminate information.

Environmental Concern, Impact And Activities

The results suggest that virtually all the businesses owner/managers have some

type of concern for the natural environment. How this translated into his or her business efforts was different for each participant. Top environmental concerns were related to energy and energy use, as well as waste disposal and recycling. The results for environmental concern were very similar to feedback from Nova Scotia businesses presented in the Canadian Federation of Independent Business (CFIB) Energy and Environment Survey (2007). In the survey the top four areas of environmental concern for Nova Scotia small businesses were: energy conservation, recycling of materials, climate change, and clean water or sewage. Indoor air quality was not a category in the CFIB survey however handling of toxic waste was a concern for 30.1% of the businesses surveyed, and this could be related to indoor air quality. Except for the absence of climate change as a factor, the top four were quite similar to the results presented here (see Table 7 below). These results further support the findings of the CFIB survey.

The results for businesses concern for the environment were similar to the the areas they indicated for environmental impacts of the businesses and also similar to the environmental activities they implemented. Indeed, the four areas of environmental impact as noted by participants matched the top areas of environmental concern, and were also reflected in the activities the businesses undertook. The table below (Table 8 on the following page) provides a comparison of the similarity between these three categories of results.

Table 8: Comparison Of Environmental Impact, Activities And Concern.

Type of environmental impact (top four)	Type of activities implemented	Areas of environmental concern
Emissions	Energy efficiency	Energy and resource use
Energy use	Waste and recycling	Waste and recycling
Waste and recycling	Water conservation	Water
Water use	Disposal and use of hazardous materials and chemicals	Indoor air quality

While there is relative similarity between the top four impacts, environmental concern and activities implemented, this does not mean that they are all directly correlated; a number of businesses had implemented only a few activities. This is concurs with past research on small firms, such as that done by Tilley (1999b) who found that firms found it difficult knowing how to transform 'environmental aspirations' into pro-environmental business practices. This table speaks to the group as a whole rather than to specific businesses. However, it does reflect that there are a number of traditional areas of environmental management, which are of focus to business. Energy and resource use can be easily to associate with a direct cost in the business,

Likewise, the CFIB survey (2008) revealed that many businesses are responding to environmental concerns and negative external factors influencing their business. The report found that the majority of businesses had or were planning to implement energy conservation changes at their business. CFIB also reported that seventy per cent of the SMEs in the survey had introduced or expanded recycling at their business. Like this study, these results could reflect that businesses are undertaking environmental improvement activities out of concern for their environmental impact. Water, waste and

energy are common environmental issues and highest visibility. Vernon et al. (2003) in their study of small tourism enterprises found that the activities with the highest level of adoption were those in traditional areas of environmental management: waste management, energy conservation and water conservation. Only a small number of businesses in their study were undertaking innovative activities such as solar heating or energy. In this study, innovative activities were those considered for the future, and included installing wind power and geo-thermal heating. These were also activities that tended to be more expensive, requiring significant amounts of capital and having longer pay-back periods for the businesses.

Family Influence

A factor that may have a positive influence on the environmental concern and pro-environmental attitude of business decision makers is family influence. There were a number of cases where participants indicated that family members, either children or spouses, played a key role in decisions to implement environmental improvements. While a review of the literature did not reveal family to be a major driver for small businesses, this could be viewed as a part of the overall influence on owner-manager attitudes. Kollmuss and Agyeman (2002) in their examination of the gap between individual environmental attitudes and behaviour discuss how values influence environmental behaviour. Positive environmental values are influenced by a number of social factors including childhood experiences in nature and the pro-environmental beliefs of family members. SMEs are generally family-run enterprises, especially those that are micro-enterprises (Mir, 2008). In three cases in this study, where some type of significant environmental efforts had been undertaken, each was a family business and the owners had noted the influence of family members on their actions. While the environmental influence of family has not been specifically discussed in the literature, it plays an important motivating factor for a number of businesses in this study.

Size Of Business And Success Stories

With the exception of one firm the environmental success stories in this sample, or firms that implemented the most initiatives appear to be the larger businesses. While financial information was not requested during the interviews, the few businesses that stood out as success stories had more employees, and indicate a larger business with more resources available. These businesses were still defined as small business (less than 100 employees) yet were on the large scale for the sample size. On the other hand, one of the businesses with success had two employees and had been awarded an Eco-Efficiency Centre Award for environmental excellence. However rather than size, it could also be the characteristics of these firms that enabled them to undertake these environmental improvements. This could include the ability to internally generate funds and the entrepreneurial mindset of the business owner/managers (Aragon-Correa et al., 2008), two of the businesses indicated they did not seek outside capital for their larger projects. Size of businesses, within the sample, may play a role in the ability and willingness to reduce environmental impact but his remains difficult to quantify.

External Context

Customers And Market Forces

On the whole, customers appear not to be a major driver for positive environmental change for the majority of businesses in this research sample. There does not appear to be an impetus by these businesses to actively inform customers about environmental improvements, and it has not been used as a point of differentiation for those that have undertaken significant activities. Moreover, a number of respondents indicated that customers were not asking or inquiring about environmental impact of their operations, products or services. These results are similar to those of Côté et al, (2008) who found, in studying the supply chain of businesses in the Halifax area, that customers are likely to become a major motivator for change. Likewise, Hillary (2004) has argued that the absence of customer pressure to introduce environmental improvements means

businesses have little motivation to change. In this research sample, across sectors very few customers are actively seeking out environmental products or questioning the environmental practices of the businesses. In the few cases where customers had asked for changes or adherence to environmental requirements the product was being provided. Côté et al (2008) found similar results in another study of small businesses in the Halifax area. The majority of the customers across sectors in the Halifax area may not be actively seeking environmentally friendly products. Or it may be that customers have not connected with businesses in a meaningful way to indicate a demand for environmental improvements. In a number of discussions, businesses acknowledged that if customers were to ask, and would be willing to pay for a possible mark-up, they would be willing to provide 'green' products and services. Participants acknowledged that they have not actively communicated the changes they have made to their customers, and this may also be a reflection as to why environmental services or products are not actively being sought. While some businesses acknowledged if the demand existed they might be able to charge a premium for environmentally responsible products, there was some concern that customers may not be willing to accept the extra cost that may be incurred. This concern has been reflected in other research (CEC, 2005). Customers play a large role in how a business decides to operate and what services it provides, and while a number of businesses are making significant improvements behind the scenes, customers are not yet a large impetus for change in this group of businesses.

Nova Scotia Context

Nova Scotia, as a place, in comparison to the rest of Canada and North America, is relatively small in size and population. Businesses in this study catered not only to local populations but also to markets outside the province, such as Ontario, the United States and Europe, as well as to tourists who visit the province. Nevertheless, the scale of the economy, the population size of the region, the availability of resources from a relatively smaller sized government and non-governmental authorities influence the abilities of the small businesses in this study. A few businesses spoke about the divide they experience between Nova Scotia and central Ontario, with Quebec's

francophone language being a dividing force geographically in their efforts to secure specialty products to help in their environmental efforts. The Internet and communication tools reduce this divide but a business trying to make changes in Ontario may have greater ease at finding a supplier or incentive program in that province than within the province of Nova Scotia. A few businesses spoke about transportation issues for exporting their product and those associated with sending materials for recycling to other locations. While a review of the literature did not discuss geography and the scale of local economies, location of the businesses was a theme in this study.

Regulatory Framework And Waste Facilities

Waste and recycling efforts are an area of specific and tangible importance to the businesses in this study. It is an identified activity that many had implemented. In a number of interviews, it was apparent that difficulties existed with waste and recycling efforts. Innovative businesses had sought out alternatives: specifically seeking out recyclers for special products and sending waste to recyclers out of province, while others had not been successful in improving their waste and recycling efforts because of lack of closely located facilities. Redmond, Walker and Wang (2008) in their examination of small business waste and recycling efforts, in Southern Australia, found that the lack of local council facilities was a significant barrier to those attempting to initiate these types of activities. This is linked to the policy and programs made available to businesses by different levels of government.

Government Intervention

The actions or inaction of government in this study is both a potential motivating factor and a challenge for businesses. The factor of government intervention was related to ways in which governments intervene in small business operations: such as policy, general government support for environmental initiatives, legislation and regulations. Government (at all levels) was more of a potential motivating factor instead of an existing motivation for businesses to make changes. In some cases, businesses noted the

current provincial policies were inhibiting their attempted environmental improvements. An example, would be what materials are allowed to be recycled or burned in a bio-mass furnace. Similarly, there was a consensus among a third of the businesses that there needs to be an increased leadership role from government in promoting positive environmental behaviour. Most businesses felt that improved legislation and regulations was a way to promote positive change and facilitate the efforts of the businesses. Madsen (2007) in speaking with micro-businesses in the province of Nova Scotia noted that the availability of services and legislation were important factors in influencing environmentally responsible activities. The literature has pointed to an inadequate institutional structure (i.e. lack of waste and recycling regulations) and a government weakness in promoting and supporting environmental management as potential barriers to change (Tilley, 1999a; Hillary, 2004; and Pimenova & van der Vorst, 2004).

While the government may have an important role to play in providing adequate institutional and legislative support, many businesses are making changes in spite of what some stated as a lack of government leadership in environmental policy. A few business owner/managers in this study would prefer a hands-off approach from government authorities, as they saw businesses as needing to be able to make decisions for themselves and operate how they see fit. This sentiment is reflected in the CFIB study (2008) that found that small businesses while potentially motivated to make changes, because of current regulation were wary of the paperwork burden and complexity of government regulations. On the other hand, regulatory and legislative frameworks have been shown to be positive drivers for change in small businesses (e.g. Williamson, Lynch-Wood & Ramsay, 2006; Taylor, Barker, & Simpson, 2003). Similarly, businesses in this study would like to see an increased leadership role from their government and improved institutional structures to facilitate environmental improvements but would like these supports to be provided in a non-intrusive manner. Through a review of the literature and the results one could conclude that, for government intervention to be a driver for changes there needs to be the correct balance between leadership in environmental legislation and an environmental regulatory framework that pushes businesses to make

change on their own terms.

Programs And Incentives

While many participants called for a more active leadership role by government in environmental matters, other than the Eco-Efficiency Centre's Environmental and Energy Review program itself, very few businesses had sought out or been a part of a government or non-governmental organization's program intended to help them implement positive environmental changes. The few businesses that had used an incentive or support program were those that were the most active in implementing energy and environmental improvements. Those that were perhaps most in need expressed the challenge of time and effort to implement new initiatives, to find out about programs and to actually take the time to apply for the incentives. While owner/managers overwhelmingly indicated that incentives could be a driver to help them implement positive environmental changes they had little awareness of existing programs and incentives. Further, challenges to using incentives for energy and environmental improvements included the problems with upfront costs of making changes and issues with completing required paperwork. This supports the findings of other studies (i.e. Armstrong et al. 2008) that have indicated paperwork can be a barrier to participation.

Overall Comparisons Of Challenges To Participation

Participants face numerous challenges both self-described by the businesses and interpreted by the researcher as influencing factors. Table nine, on the following page, is a comparison of the challenges indicated by businesses in this study and the factors most coded as a barrier to change.

Table 9: Comparison Of Self-Described Challenges And Factors Most Coded As Barriers

Self-described biggest challenges	Factors most coded as a barrier
Financial reasons	Awareness
Accessing and finding information	Cost
Ability to source products and suppliers	Government intervention
Location of business	Incentives
Uncertain about challenges they may face	Ability to source products
Customers	Geographic location
Owner-manager attitudes	Owner/manager attitude
Time	Programs
	Time

The top two reasons (while not in the same order) were the same. Lack of awareness of environmental issues can indeed be related to the business owner/managers ability to access and find information. That this was both indicated by businesses and reflected in the data analysis is an indication of a further need to provide timely and easily accessible information. This information should include strong arguments for financial benefits of implementing environmental improvements and be provided in such a way the businesses can easily read through and use. The cost factor as a barrier is not only about making return on investment arguments, it also relates to the limited resources and capital of small businesses. The two main challenges as noted by businesses, lack of information and financial reasons, furthers supports the research of Armstrong et al. (2007) that found small businesses across Canada said their biggest challenges to reducing environmental impact were lack of information and that changes were too expensive or complicated. These studies both asked businesses to identify what they perceived to be their biggest challenges.

The Eco-Efficiency Centre's Environmental And Energy Program

Reason For Participating In EEC Program

Businesses gave various reasons for participating in the Eco-Efficiency Centre's program. Businesses participated in the program because the opportunity presented itself and thought it would be of benefit to the company, or with specific goals for their environmental performance. Understanding why participants are choosing to participate in the program may be an important factor in the success of the participants in achieving environmental goals and likewise in the success of the program in helping small businesses achieve their goals. Granek and Hassanali (2006) in examining why businesses became involved with the Toronto Sustainability Program found businesses had two or three drivers for participation. The top three reasons cited by the study businesses were mandatory pollution prevention requirements (both federal and Toronto by-law provisions), the cost share the program offered, and reasons of environmental stewardship. These top reasons were followed by: non-compliance, business risk reduction, limited in-house expertise and improved efficiency. Participants in this study gave some similar reasons for participating but not as much emphasis was put on mandatory requirements, rather they wanted to find out if they were being environmentally responsible or compliant with regulations. There was more of a desire to gain awareness both generally and in a few cases that were seeking specific expertise. Like the Toronto businesses there was also a desire to reduce costs, in this case especially related to energy usage. While it is important to match support to specific reasons for participating, at the same time providing insightful information on overall environmental impact is an important consideration.

The research sample was selected almost evenly from two groups, those who had contacted the Centre for support and those that had been called by the Centre and requested to participate in the Environmental and Energy Review Program. It was supposed that there may be a difference in willingness to implement initiatives between

the two groups. A brief analysis was conducted to determine the difference between the groups, no clear pattern emerged between them and no further analysis was conducted. There was a range of willingness and ability to implement environmental improvement efforts across the complete sample. For instance, if they called the Centre to request a review, it may have been because they were seeking validation for efforts that had been completed previously and were not interested in implementing more activities. If a business had been contacted by the Centre, and may have been spurred on to make changes by the Report by an increased awareness. On the other hand, they may have agreed to participate because of an existing awareness and changes at the business, and wanted to see if other changes could be made but did not initiate any more changes after the report. Many scenarios exist and reasons for participating ranged across the entire sample. If a larger sample size was used this may have revealed a pattern of difference between the two groups but it may also have simply confirmed my findings.

The EEC Report And Recommendations

A number of businesses indicated that there were few recommendations in the report tailored to their needs. While others indicated that, the report provides a large amount of information and the Eco-Efficiency Centre acts as a continued resource for them. To me this indicates, an important balance is needed in providing general suggestions in a number of key categories and a need to gear recommendations to what people are looking for, such as help with specific initiatives or helping to provide them with validation for completed projects. Tailoring to their specific business requests and needs may help with two of the main self-described challenges: accessing and finding information, and sourcing environmental products and services. This may help target programs or suggestions to their needs and perhaps improve the adoption of initiatives by businesses. As in the case of at least two businesses in this sample, success in one area encouraged them to undertake more environmental improvement activities. By providing targeted help and support businesses may be able to successfully initiate two or three suggested activities from start to finish and those may encourage them to undertake other

environmental improvements.

Methodology Revisited

Overall the methods used for this research project proved effective in answering the research questions and meeting the objectives of the project. The qualitative method of face-to-face semi-structured interview with owner -managers of small businesses worked well in eliciting discussion and answering the questions in the interview guide. At the onset, time was a consideration in structuring the interview guide, with the goal of only taking a half-hour of the businesses owner's time. While follow-up questions were used, it would likely have been of value to add some additional questions. Specifically, a more detailed account of their knowledge of programs available to them, their knowledge of the regulatory framework in Nova Scotia and questions regarding what specific types of information sources and support they would prefer.

The research sample while small in size (thirteen participants) provided a sufficient level of data saturation. If this study were to be undertaken again the suggestion would be expand the population studied. The businesses interviewed were only those that had been involved with the Eco-Efficiency Centre Environmental and Energy Review Program, businesses who had expressed some type of interest in environmental improvements and would likely not be completely representative of the population of Nova Scotia small businesses. If a truly comprehensive study of the drivers and barriers for SME participation in environmental activities were to be conducted a more diverse group of businesses would need to be interviewed.

While understanding the businesses' motivations and challenges is an important part in providing support to businesses to undertake environmental initiatives, having a more detailed understanding of existing support programs as they match the needs of businesses would be beneficial (see Pimenova and van der Vorst (2004) for an example of such a study). Doing a program review, along with interviewing businesses

owner/managers would provide further depth and analysis to answering the research questions used in this study. This type of evaluation would be specific to the province as different jurisdictions across Canada provide different programs and initiatives.

CHAPTER 5 - Conclusion

Summary Of Findings

Businesses owner/managers appear to be genuinely concerned about the environment around them and virtually all showed concern about how their businesses impacted the environment. This thesis has demonstrated that small businesses are influenced by a variety of factors in their environmental decision-making. Small businesses continue to face challenges in implementing environmental improvements. Nonetheless, many of the thirteen businesses in this study have been motivated to make meaningful changes to their operations to reduce environmental impact. Business owner/managers have made changes despite the challenges and are influenced by cost-effectiveness, environmental awareness and family. Businesses continue to seek support, information, expertise and advice, from outside sources as they make the positive environmental changes and most of those interviewed make the changes on their own without outside financial support. The results from this project further support the body of literature on drivers and barriers for environmental change in small and medium sized businesses and also help identify important influencing factors in the province of Nova Scotia. Below are detailed conclusions of the three research questions, followed by comments on how this study has contributed to the literature and a number of considerations for future research.

Research Question One

What motivates and drives micro and small-sized businesses to implement environmental improvement efforts?

While cost savings and financial reasons are a primary motivator for small businesses to implement environmental improvement initiatives, environmental awareness and concern are also important factors that need to be taken into consideration.

The literature and this study indicate that businesses quite often make environmental decisions based not only on the cost-benefit of a project but based on a multitude of other influencing factors. Business owner/managers are influenced to make changes by those around them especially family, suppliers and customers. In the few cases where businesses had implemented both larger and/or a variety of long-term environmental improvements, it appeared that success with one initiative motivated them to continue onto other projects. The businesses in this study would be motivated to change practices by an increased leadership role from their governments at all levels but would like to implement changes on their own terms. They welcome financial support but often do not see it as a requirement to make the environmental changes.

Research Question Two

What barriers and challenges do micro and small-sized businesses face in implementing environmental improvement efforts?

There are many barriers and challenges to change for micro and small-sized businesses. The top factors relate to business resources, knowledge of environmental benefits, sources of information, and market demand. Many businesses indicated they did not have the time and resources needed to make changes. They may have the environmental awareness and desire to make changes but financial constraints or time constraints or a combination of both have been impediments to change. Owner/managers understand there may be a financial benefit to making changes but either simply do not have enough capital to get the project started (whether large or small in undertaking), do not wish to take away finances from the immediate operations and profitability of their business or do not have enough information to make an informed decision regarding the pay-back period of projects. Many of those interviewed struggle with finding trusted sources of information. Suppliers are often their main sources of information when seeking environmentally responsible products and services. However, a number of businesses either questioned the nature of the information provided by suppliers or found it difficult to find suppliers to help execute their desired environmental

improvements. While customers ranked lower as an influencing factor in this study, the importance of customer demand was reflected in the literature. Most owner/managers indicated that while customers have appreciated their environmentally responsible practices, customers do not appear to be seeking out environmentally responsible businesses and products. Likewise, businesses have not actively promoted their changes and are unsure if customers would accept an increase cost, or do not know if an increase environmental responsibility would increase business. Finally, government intervention ranked as a significant barrier to change. Businesses are looking to government at all levels for support and direction in making environmental improvements but they feel governments are coming up short in these areas. Nonetheless, a number of businesses do not see financial support, often provided by government, as a requirement for change but as an important piece of the equation.

Research Question Three

What can be done to further assist small and micro-sized business to adopt and implement environmental improvement efforts?

Using the information gathered from the first two research question may help in understanding what is needed to support and motivate businesses in Nova Scotia in undertaking environmental performance improvements. When providing recommendations and support it is important to take into account the time, financial and human resources needed to implement recommendations. Businesses' suggestion for support are primarily in the form of financial subsidies, outside support and expertise such as that provided by the Eco-Efficiency Centre and the provision of information. When providing recommendations to businesses it is important not to undervalue certain influencing factors at the expense of others. The importance of environmental responsibility does not have to be excluded when making arguments for the cost-savings benefits of environmental improvements. In this study, business owners indicated they made changes for both reasons. While the heterogeneity and large size of the small business sector makes it difficult to reach everyone and provide a 'one-size fits all'

solution it seems important to provide targeted and individualized support to each business seeking help in reducing their environmental impact. Since businesses are influenced in part by their networks of contacts, businesses that have success with environmental improvements, may provide best practice examples to their competitors, suppliers and customers. Helping owner/managers market their improvements to customers may provide an impetus for change for others and increase demand for environmentally responsible products and services.

Contributions To The Literature

Above all this project contributes to the understanding of small businesses in the province of Nova Scotia and why they may or may not choose to reduce their environmental impact. As noted in the literature review, only limited research has been conducted on small and medium-sized businesses and their drivers and barriers to environmental change in the province of Nova Scotia or in Canada. By examining a diverse group of businesses in this province it reveals particular influencing factors that may be important for local policy and program considerations. Of note this study uniquely pointed to growing generational awareness and the importance of family influence as factors in deciding to reduce the environmental impact of their business operations. In addition, this study highlighted the challenges that businesses have in procuring environmental advice, products and services from their suppliers. While this study examined a particular sub-set of businesses that had participated in an environmental support program, it demonstrated that even those who have sought out expertise continue to need support and guidance.

Future Considerations

As mentioned at the end of the discussion chapter, suggestions for future research could include expanding a similar study to include businesses that have not been involved with the EEC and conducting an investigation of existing programs to better understand

the gap between what is being provided and the expressed needs of businesses. Additionally, given that businesses in this study were still seeking information and at times uninformed about what support was available to them, studying the preferred and most effective method of information delivery may be of use for program providers. As businesses in this study sought information from their networks of suppliers, industry partners and customers, and were often challenged by suppliers lack of awareness, researching how environmental information is passed through supply networks and other informal networks may be important in improving the environmental awareness of many small business owners. This may help both the businesses wanting to make changes and enable suppliers to help them make those changes. Another area for future consideration would be to investigate the market demand, in Nova Scotia, for businesses providing services and products with a reduced environmental impact. This information would be of use in understanding how customers spur changes in business sectors and could be of use to small businesses in Nova Scotia to better understand what customers are seeking. Generally speaking, customers drive businesses to provide product and services. Prompting further positive environmental changes in small businesses may mean targeting customers or it may mean businesses making the changes before the market demand grows. It is likely a combination of both, leadership from customers and leadership from small business owners that will be needed to make meaningful and long-term positive environmental change in the small business sector in Nova Scotia.

References

Armstrong, M., Lavoie, A., Petkov, P., Pohlmann, C. & Smith, D. (2007). Achieving eco-prosperity: SMEs' perspectives on the environment. Report. Toronto: Canadian Federation of Independent Business.

Ammenberg, J. & Hjelm, O. (2003). Tracing business and environmental effects of environmental management systems: A study of networking small and medium-sized enterprises using a joint environmental management system. *Business Strategy and the Environment, 12* (3), 163-174.

Aragon-Correa, J., Hurtado-Torres, N., Sharma, S. & Garcia-Morales, V. (2008). Environmental strategy and performance in small firms: A resource-based perspective. *Journal of Environmental Management, 86,* 88–103

Bryman, A. & Teevan, J.J. (2005). *Social Research Methods, Canadian Edition*. Toronto: Oxford University Press.

Burke, S. & Gaughran, W. (2007). Developing a framework for sustainability management in engineering SMEs. *Robotics & Computer-Integrated Manufacturing*, *23* (6), 696-703.

Canadian Federation of Independent Business (CFIB) (2007). Energy and environment survey: March 2007. Retrieved August 17, 2009 from http://www.cfib.ca/research/surveys/results/res-m225pv-0701.pdf

Canadian Federation of Independent Business (CFIB) (2010). "Who we represent". Retrieved June 22, 2010 from http://www.cfib-fcei.ca/english/about_us/canada/203-who_we_represent.html

Côté, R., Booth, A. & Louis, B. (2006). Eco-efficiency and SMEs in Nova Scotia,

Canada. *Journal of Cleaner Production*, *14* (6-7), 542-550.

Côté, R., Lopez, J., March, S., Perron, G. & Wright, R. (2008). Influences, practices and opportunities for environmental supply chain management in Nova Scotia SMEs. *Journal of Cleaner Production, 16*, 1561-1570.

Commission for Environmental Cooperation (CEC). (2005). *Successful practices of environmental management systems in SMEs: A North American perspective*. Montreal: Tim Whitehouse.

Gibson, R. B. (Ed.) (1999). *Voluntary Initiatives: The new politics of corporate greening*. Peterborough: Broadview Press

Granek, F. & Hassanali, M. (2006). The Toronto Region Sustainability Program: Insights on the adoption of pollution prevention practices by small to medium-sized manufacturers in Greater Toronto Area (GTA). *Journal of Cleaner Production, 14*, 572-579.

Hart, S. & Milstein, M. (2003). Creating sustainable value. *Academy of Management Executive, 17* (2), 56-67.

Hillary, R. (Ed.). (2000). *Small and medium-sized enterprises and the environment: Business Imperatives*. Sheffield: Greenleaf.

Hillary, R. (2004). Environmental management systems and the smaller enterprise. *Journal of Cleaner Production, 12* (6), 561-569.

Huppé, F., Turgeon, R., Ryan, T. & Vanasse, C. (2006). Fostering pollution prevention in small businesses: The Enviroclub initiative. *Journal of Cleaner Production, 14* (6-7), 563-571.

Industry Canada. (2007). Key small business statistics: July 2007. Retrieved 11/13/2007 from http://www.ic.gc.ca/epic/site/sbrp-rppe.nsf/en/rd00760e.html

Kollmuss, A. & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behaviour? *Environmental Education Research, 8* (3), 239-260.

Kurzinger, E. (2004). Capacity building for profitable environmental management. *Journal of Cleaner Production*, *12* (3), 237-348.

Lawn, P. (2006). Sustainable development: concept and indicators. In P. Lawn (Ed.), *Sustainable Development Indicators in Ecological Economics* (pp. 13-51). Northhampton: Edward Elgar

Lehni, M. (1998). *WBSCD project on eco-efficiency metrics & reporting state-of-play report*. Switzerland: WBSCD

Lovins, A., Lovins, L. & Hawken, P. (2007). A road map for natural capitalism. *Harvard Business Review: Managing for the long term*, July-August, 172-183.

Labatt, S. & Maclaren, V.W. (1998). Voluntary corporate environmental initiatives: a typology and preliminary investigation. *Environment and Planning C: Government and Policy, 16*, 191-209.

Madsen, S. (2007) Factors that influence behavioural change for improved environmental performance: Micro-sized businesses (Masters thesis, Royal Roads University, 2007).

McKeiver, C. & Gadenne, D. (2005). Environmental management systems in small and medium businesses. *International Small Business Journal, 23* (5), 513-537.

Merritt, J.Q. (1998). EM into SME won't go? Attitudes, awareness and practices in the London borough of Croydon. *Business Strategy and the Environment*, 7, 90-100.

Mir, D. (2008). Environmental behaviour in Chicago automotive repair micro-enterprises (MEPs). *Business Strategy and the Environment, 17*, 194-207.

Mir, D. & Feitelson, E. (2007). Factors affecting behaviour in micro-enterprises: Laundry and motor vehicle repair firms in Jerusalem. *International Small Business Journal, 25* (4), 383-415.

Moore, S.B. & Manring, S.L. (2009). Strategy development in small and medium sized enterprises for sustainability and increased value creation. *Journal of Cleaner Production, 17*, 276-282.

Patton, M.Q. (1999). Enhancing the quality and credibility of qualitative analysis. *Health Services Research, 34* (5), 1189-1208.

Patton, M.Q. (2002). Two decades of developments in qualitative inquiry: A personal experiential perspective. *Qualitative Social Work*, 1 (3), 261-283

Peters, M. & Turner, R. K. (2004). SME environmental attitudes and participation in local scale voluntary initiatives: Some practical applications. *Journal of Environmental Planning and Management, 47* (3), 449-473.

Petts, J., Herd, A., & O'Heocha, M. (1998). Environmental responsiveness, individuals and organizational learning: SME experience. *Journal of Environmental Planning and Management, 41* (6), 711-730.

Pimenova, P. & van der Vorst, R. (2004). The role of support programmes and policies in improving SMEs environmental performance in developed and transition economies. *Journal of Cleaner Production, 12*, 549-559.

Redmond, J., Walker, E. & Wang, C. (2008). Issues for small businesses with waste management. *Journal of Environmental Management, 88*, 275-285.

Revell, A., Stokes, D. & Chen, H. (2008). Small businesses and the environment: Turning over a new leaf? Queen's University Belfast Conference Paper CRRC, 2008.

Spence, L. & Rutherford, R. (2001). Social responsibility, profit maximisation and the *Development, 8* (2), 126-139.

Schaper, M. (2002). Small firms and environmental management. *International Small Business Journal, 20* (3), 235-251.

Taylor, B. (2006). Encouraging industry to assess and implement cleaner production measures. *Journal of Cleaner Production*, 14, 601-609.

Taylor, N., Barker, K., & Simpson, M. (2003). Achieving `sustainable business': a study of perceptions of environmental best practice by SMEs in South Yorkshire. *Environment and Planning C: Government and Policy*, *21*, 89- 105

Tilley, F. (1999a). The gap between the environmental attitudes and the environmental behaviour of small firms. *Business Strategy and the Environment, 8*, 238-248.

Tilley, F. (1999b). Small-firm environmental strategy: The UK experience. GMI, 25, 1-14.

Tzschentke, N., Kirk, D. & Lynch, P. (2008). Ahead of their time? Barriers to action in green tourism firms. *The Service Industries Journal, 28* (2), 167—178.

Vernon, J., Essex, S., Pinder, D. & Curry, K. (2003). The 'greening' of tourism micro-business: outcomes of focus group investigations in south east Cornwall. *Business Strategy and the Environment, 12*, 49-69.

Waddock, S. (2004). Creating corporate accountability: Foundational principles to make corporate citizens real. *Journal of Business Ethics, 50*, 313-327.

Wheeler, D. (2003). The successful navigation of uncertainty: Sustainability and the organisation. In: Burke R & Cooper C (eds.) *Leading in Turbulent Times*. Oxford: Blackwell, 182-207.

Willard, B. (2002). The sustainability advantage: Seven business case benefits of a triple bottom line. New Society: Gabriola Island.

Williamson, D., Lynch-Wood, G. & Ramsay J. (2006). Drivers of environmental behaviour in manufacturing SMEs and implications for CSR. *Journal of Business Ethics, 67* (3), 317-330

World Business Council on Sustainable Development. (2006). *Eco-efficiency learning module*. Retrieved November 13, 2007, from http://www.wbcsd.org/Plugins/DocSearch/details.asp?DocTypeId=25&ObjectId= MTc5OTI&URLBack=/templates/TemplateWBCSD5/layout.asp?type=p&MenuI d=MTE0NQ&doOpen=1&ClickMenu=LeftMenu

Zhang, M., Macpherson, A. & Jones O. (2006). Conceptualizing the learning process in SMEs: Improving innovation through external orientation. *International Small Business Journal*, 24 (3), 299-323

APPENDIX A - Interview Consent Form

DALHOUSIE UNIVERSITY
Inspiring Minds

Interview Consent Form

Title of Research Study Understanding challenges and opportunities that small and micro-sized businesses face in the implementation of environmental improvements in the province of Nova Scotia.	
Principal investigator Cynthia Waters Masters of Environmental Studies Candidate School for Resource and Environmental Studies Dalhousie University cynthia.waters@dal.ca 902-219-1644 (cell)	**Academic supervisor** Ray Côté Professor Dalhousie University

Introduction

We invite you to take part in this research study that is being conducted in partial fulfillment of Cynthia Waters Masters of Environmental Studies. Your participation in this study is voluntary and you may withdraw from this study any time. Below is a description of the study, describing risks, confidentially and anonymity and other important information for consent.

Purpose of the study

The purpose of this study is to gather information about challenges and opportunities small businesses face to becoming involved and having continued involvement in environmental improvements in their business operations. This study aims to contribute to a greater understanding of how small businesses can better be enabled to undertake environmental improvements in their business.

Study design

This study involves interviews followed by focus groups with business participants of the Eco-Efficiency Centre's Environmental and Energy Review Program.

Who will be conducting the research

Cynthia Waters is the Principal Investigator for this project. She will conduct the interviews, transcribe the audio files, and analyze the transcripts. The supervisor and committee may review the audio transcripts and data but no other researcher will have access to the audio files or transcripts.

What you will be asked to do

To participate in a thirty-minute interview, where you will answer questions regarding challenges and opportunities regarding environmental improvements you have encountered and/or may continue to encounter in your business operations and about your current attitudes and perceptions of environmental issues as they relate to your business operations.

Possible risks and discomforts This study is expected to involve minimal risk. You may experience some distress while talking about frustrating experiences. You may be asked to divulge information which indicates your business is non-compliant with environmental legislation.

If you feel discomfort at any time, you may decline to answer questions and you may withdraw from the study at any time.

Possible benefits No direct benefits are anticipated for this study. The knowledge gained from this study and the resulting recommendations may possibly help program administrators in non-governmental organizations or government officials help small business to improve their environmental performance.

Compensation There will be no monetary compensation for taking part in the study.

Confidentiality **and** **Anonymity**	The Principal Investigator will make sure that the anonymity of all interviewees is protected throughout their participation in this study. With your permission, anonymous direct quotations will be included in the presentation of final results. Direct quotations included in the final results will not contain information that may indirectly identify you as the speaker. Only the Principal Investigator will hear the recordings of the interviews and focus groups. Audio files will be destroyed once they are transcribed. Only the Principal Investigator will have access to electronic files containing transcribed interviews and focus groups. Your name will not be associated with the audio files or transcripts of the interviews. The supervisor and committee may review the audio transcripts and data but no other researcher will have access to the audio files or transcripts. The written transcripts of the interviews from this study will be kept in a locked filing cabinet at the School for Resource and Environmental Studies at Dalhousie University for at least five years before being destroyed as required by the Dalhousie University Policy on Research Integrity.
Questions	If you have any questions about this study, please contact Cynthia Waters by phone at 902-219-1644 or by email at cynthia.waters@dal.ca.
Problems or concerns	If you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, you may contact Patricia Lindley, Director of Dalhousie University's Office of Human Research Ethics Administration, for assistance at (902) 494-1462, patricia.lindley@dal.ca.

APPENDIX B - Interview Consent Form Signature Page

INTERVIEW CONSENT FORM SIGNATURE PAGE

Consent to participate in the study

I have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent to take part in this study. However, I realize that my participation is voluntary and that I am free to withdraw from the study at any time.

_____   _____

Signature of research participant   Date

_____   _____

Signature of researcher obtaining consent   Date

Consent for audio-recording

I hereby consent to allow this interview to be audio-recorded.

_____   _____

Signature of research participant   Date

_____   _____

Signature of researcher obtaining consent   Date

Consent for use of direct quotations

I hereby consent to allow the researcher to use direct quotations from this interview/focus group in writing and presenting study results. I understand that these quotations may refer to the size of the business but will not refer to my name or the name of the business.

_____   _____

Signature of research participant   Date

_____   _____

Signature of researcher obtaining consent   Date

Participant/Interview Identification Number _____

APPENDIX C - Interview Guide

Interview Guide

Date: _____ Start Time: _____ End Time: _____

Digital Recorder File: _____

Participant Name_____

Employment Title: _____

Business Name: _____ Number of Employees: _____

Type of Business: _____ Years in Business: _____

INTRODUCTORY QUESTIONS:

Describe my study and ask them to describe their business operations

1) The environment and environmental issues have become more visible these last few years, especially with more attention being given by the media. What would you say are your main environmental concerns?

2) How does your business interact with the environment or what type of impact would you say your business has?

MOTIVATIONS & DRIVERS:

3) Why did your business initially decide to become involved in the Environmental and Energy Review Program?

4) Have you undertaken any environmental improvements from the review or any other improvements beyond those suggested?

 (IF NO ENVIRONMENTAL INIATIVES SKIP TO CHALLENGES & BARRIERS)

5) Could you describe some of the initiatives that were implemented and why you

implemented them?

6) What has motivated you to continue with these environmental improvements?

7) Have these environmental improvements changes been successful? (How do they define success?)

CHALLENGES AND BARRIERS:

8) **(If no to question 5)** Why has your business not undertaken any of the suggestions from the environmental and energy review or other environmental improvements?

9) If you had unlimited resources what other environmental and energy improvements would you make to this business?

10) What do you feel are some of the biggest challenges you face to improving and continuing to improve environmental performance at your business?

Possible examples may include: resources (human or financial), cost, lack of information, not enough outside support, time, lack of awareness. Etc

11) What do you think can be done to further assist small and micro-sized business to adopt and undertake environmental improvements?

12) I have now come to the end of my questions, is there anything else you like to add that we have not discussed?

I would like to thank-you for taking the time to participate in this interview. I would like to know if you would be willing to participate in a follow-up focus group. This focus group will involve other small businesses that have participated in these interviews. The goal of the focus group will be to receive feedback on the analysis of the interviews, and to seek recommendations to help surmount the challenges small businesses face in undertaking environmental improvements in their business. Your feedback and participation is greatly appreciated and would add to the strength of the recommendations in the final research report.

APPENDIX D - Tables Of Results

Complete table of free nodes results

Name	Sources	References	Barrier	Driver
Awareness	13	57	11	10
Reason for participating	13	15	0	10
Biggest challenge	13	14	8	6
Business suggestion for help	13	13	7	9
Cost	12	83	11	12
Activities undertaken	12	77	4	6
Owner /manager attitude	12	45	6	9
Cost Savings or effectiveness	12	40	2	12
Customers	10	33	6	7
Government intervention	10	30	9	5
Incentives	10	29	8	10
Programs	10	26	6	9
Employees	9	24	4	8

Name	Sources	References	Barrier	Driver
Time	8	21	6	1
Ability to source products	7	24	7	0
Geographic location	7	19	7	3
Small or simple changes	7	11	3	3
Success in implementing improvement	7	9	1	2
Efficiency	6	17	0	6
Few recommendations	6	8	3	2
Local issue	6	7	1	5
Compliance and certification	5	23	3	5
Perception already doing enough	5	13	5	3
Family influence	5	12	1	4
High-hanging fruit	5	11	3	3
Demonstration of best practices	5	10	0	5
Low-hanging fruit	5	10	3	4
Measurement	5	7	0	1
Source of information	5	7	2	3

Name	Sources	References	Barrier	Driver
Shipping and transportation	5	7	4	1
Contacted by EEC	5	6	0	1
EEC report: do not remember content	5	5	1	0
Banking	4	12	4	3
Pay-back period	4	11	3	3
Implementation issues	4	9	3	0
Reduce environmental footprint	4	8	0	4
Networking	4	6	0	2
Validation of environmental initiatives	3	13	1	3
Business Type as environmentally friendly	3	10	0	2
Family Business	3	6	1	2
Site Visits	3	5	0	0
Global Issue	3	5	1	1
Generational differences	3	5	2	1
Unbiased information needed	3	3	2	0
Success story (EEC award)	2	5	0	2

Name	Sources	References	Barrier	Driver
Limited contractor support	2	4	2	1
Advertising	2	3	0	2
Liability	2	3	1	1
Environment as by-product rather than main goal	2	2	0	2

APPENDIX E - Table Of Environmental Improvement Activities

Note: Numbers in table represent the number of businesses discussing or implementing the activity not the number of activities implemented. Activity groupings are indicated by bold text. Activities in italics are sub-groupings of activity above in regular text.

Environmental Improvement Activity	Activities Undertaken	Activities Possibly To Be Undertaken	Activities Not Undertaken
Environmental Activities	**12**	**8**	**3**
Water and Water Conservation	**5**	**0**	**1**
Towel cleaning policy	2	0	0
Toilet bags	2	0	0
Water filtration	1	0	0
Water conservation and collection	1	0	0
Waste and Recycling	**9**	**1**	**1**
Recycling	8	1	1
Waste reduction	2	0	1
Composting	2	0	0
Zero waste	1	0	0
Materials exchange	1	0	0
Procurement	**2**	**0**	**0**
Sustainable procurement	2	0	0
Sourced local food	1	0	0
Hazardous Materials and Chemical Usage	**3**	**1**	**0**
EIA	2	0	0
Clean-up of oil and gas spill	1	0	0
Chemical free spraying	1	0	0
Eco-friendly garden	0	1	0
Energy Efficiency	**12**	**8**	**3**
Efficient lighting	9	5	0
Heating and cooling systems	7	3	2
Efficient heating	3	0	1
Heat pump	2	1	0
Non oil based heat	2	1	0

Environmental Improvement Activity	Activities Undertaken	Activities Possibly To Be Undertaken	Activities Not Undertaken
Building ventilation	2	0	0
Waste oil furnace	1	1	0
Air conditioning limited	1	0	0
Biomass furnace	1	0	0
Geothermal heating	0	1	2
Sealing building envelope	4	2	0
Computer turn-off policy	3	0	0
Energy conservations	2	0	0
Light turn-off policy	1	0	1
Efficient equipment	1	1	0
Reduce energy costs	1	0	0
Efficient windows	1	0	0
Fuel efficient fleet vehicles	1	0	0
Alternative power	0	3	0
Solar power	0	3	0
Wind power	0	2	0

APPENDIX F - Ethics Approval Letter

DALHOUSIE UNIVERSITY
Inspiring Minds

**Social Sciences and Humanities
Human Research Ethics Board
ANNUAL RENEWAL Letter of Approval**

Date: August 27,2009.

To: Cynthia Waters, School for Resource and Environmental Studies
Dr. Raymond Cote, School for Resource and Environmental Studies

The Dalhousie Social Sciences and Humanities Human Research Ethics Board has examined the annual report dated August 25,2009 for:

Project # 2008-1862

Title: Understanding Internal and External Factors That Influence the Adoption of Environmental Improvements in Micro and Small-Sized Businesses in Nova Scotia

and found the proposed research involving human subjects to be in accordance with Dalhousie Guidelines and the Tricouncil Policy Statement on *Ethical Conduct in Research Using Human Subjects*. This approval will be effective until the expiring date indicated below.

1. Dalhousie Guidelines require that, prior to the anniversary of the expiry date of this approval you must submit your next annual report.
2. Should there be any significant changes to either the research methodology, or the consent form used during the approval period, these changes must be submitted for ethics review *prior to their implementation.*
3. You must also notify Research Ethics when the project is completed or terminated, at which time a final report should be completed.

Expiry Date: October 8,2010.   signed: _____

                                      Dr. Stephen Coughlan (Chair SSHREB)

Funding: N/A
Award No:

This approval does not reflect the current status of your funding.

Copy sent to: ☑ Research Services