THE FACTORS THAT INFLUENCE ENVIRONMENTAL COMMITMENT IN THE WINE GROWING INDUSTRY OF ONTARIO, CANADA

by

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Author's Declaration

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The Factors that Influence Environmental Commitment in the Wine Growing Industry of Ontario, Canada Master of Applied Science, 2010 Lindsay Johanna Burgess Walker Environmental Applied Science and Management, Ryerson University

Abstract

In recent years, the Ontario wine growing industry has gained significant recognition for its production of high quality wines. Closely reliant on the natural environment, this industry must manage its environmental, social and economic impacts in order to sustain successful long-term growth. This study identifies the environmental initiatives currently used and the main factors that influence their implementation. It also highlights the criteria that differentiate the number and type of initiatives undertaken. Key factors discovered to influence environmental commitment are wine quality, protection of the environment, leadership, financial considerations, regulatory compliance and practical knowledge. The presence of three criteria: 1) leadership with strong environmental values, 2) knowledge of financial benefits, and 3) accessible practical information regarding implementation lead to greater winery estate involvement and adoption of initiatives. This study proposes eight recommendations which could further improve environmental commitment in the Ontario wine growing industry.

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Author's Declaration	ii
Abstract	. iii
Acknowledgements	. iv
Table of Contents	v
List of Tables	. ix
List of Figures	. xi
List of Appendices	xii
Chapter 1: Introduction	1
1.1 The Canadian Wine Growing Industry	2
1.2 World Wine Growing Industry	2
1.3 Environmental Commitment	3
1 4 Research Objectives	
1.5 Research Approach and Conceptual Framework	4
1.6 Structure of Thesis	
Chapter 2. Literature Review	1
2.1 Puginess and Environmental Commitment	0
2.1 Business and Environmental Communent	0
2.2 Sman and Medium Enterprises	7
2.3 The Negative Social, Environmental and Economic Impacts of the Wine Growing Industry	/
2.3.1 Main Negative Impacts Related to Vineyard Operations	7
2.3.2 Main Negative Impacts Related to Wine Making Operations	8
2.3.3 Impacts Related to Wine Tourism	9
2.4 Stakeholder Theory, SMEs and Environmental Commitment	10
2.5 Resource Based Theory, SMEs and Environmental Commitment	13
2.6 Factors That Influence Environmental Commitment in the Wine Growing Industry	14
2.6.1 Drivers of Proactive Environmentalism in the United States Wine Growing Industry	14
2.6.2 Drivers of Sustainability in the New Zealand Wine Growing Industry	16
2.6.3 Environmental Commitment in the Tourism Industry	17
2.7 Barriers to Environmental Commitment in SMEs	18
2.8 Environmental Commitment and the World Wine Growing Industry	21
2.8.1 United States (California) Wine Growing Industry	23
2.8.2 New Zealand Wine Growing Industry	24
2.8.3 Australian Wine Growing Industry	25
2.8.4 European Wine Growing Industries	26
2.8.5 South Africa Wine Growing Industry	27
2.8.6 Canada and Ontario's Wine Growing Industry	27
2.0.0 Canada and Ontario's while Growing industry	32
Chapter 3: Research Setting	32
3.1 Winery Estate and Wine Growing Industry Defined	33
3.2 The History of the Canadian Wine Growing Industry	34
2.2 Wine Crowing Industry Structure	Эт 2г
2.4 Wine Growing Industry Structure	20
2.4.1.C I: V: to A it it	30
3.4.1 Canadian Vintners Association	36
3.4.2 Vintners Quality Alliance	36
3.4.3 Wine Council of Ontario	37
3.4.4 Grape Growers of Ontario	37
3.4.5 Regional Wine Growing Industry Associations of Ontario	38
3.5 The Ontario Wine Growing Industry	38
3.5.1 The Ontario Wine Growing Regions	38
3.6 Federal, Provincial and Municipal Regulation That Govern Ontario Winery Estates	40
3.6.1 Federal	40
3.6.2 Provincial	41

Table of Contents

3.6.3 Municipal	. 42
3.7 Cost Sharing Programs	. 42
3.7.1 Environmental Farm Plan	, 42
3.7.2 Food Safety and Traceability Initiative	. 43
3.7.3 Canada-Ontario Farm Stewardship Program	, 43
3.8 Summary	, 44
Chapter 4: Methodology	. 45
4.1 Purpose and Objectives of Study	45
4.1.1 Objectives of Study	. 45
4.2 Case Study Approach	. 45
4.3 Research Methods	. 46
4.3.1 Quantitative Research	. 46
4.3.2 Qualitative Research	. 47
4.3.3 Data Collection Methods	. 47
4.4 Research Process	. 49
4.4.1 Phase One: Literature Review	. 50
4.4.2 Phase Two: Developing the Questionnaire and Interview Questions	. 50
4.4.3 Phase Three: Primary Data Collection	. 53
4.4.4 Phase Four: Data Analysis	. 55
4.4.5 Phase Five: Discussion and Conclusions	. 56
4.5 Limitations	. 56
4.5.1 General Population and Contact Information	. 57
4.5.2 Biased Study Population	. 57
4.5.3 Self-reporting	. 57
4.6 Summary	. 57
Chapter 5: Structure of Winery Estates in Ontario	. 58
5.1 Organizational Data	. 58
5.2 Responsibility for Environmental Commitment Practices	. 59
5.3 Environmental Audits	. 61
5.4 Environmental Initiatives Currently Implemented in Ontario Winery Estates	. 61
5.4.1 General Environmental Commitment Practices	. 63
5.4.2 Water Initiatives	. 64
5.4.3 Wastewater Initiatives	. 65
5.4.4 Solid Waste Initiatives	. 65
5.4.5 Energy Efficiency	. 66
5.4.6 Material Handling Initiatives	. 67
5.4.7 Industry Standards and Awareness	. 68
5.4.8 Vineyard Management	. 68
5.4.9 Employee Training and Involvement with Environmental Commitment	. 69
5.4.10 Community Relationship	. 70
5.4.11 Suppliers	. 70
5.4.12 Participation in Industry Associations	. 71
5.4.13 Participation in the SWO Charter	. 71
5.4.14 Number of Initiatives Winery Estates Have Implemented	, 72
5.5 Summary	, 73
Chapter 6: Factors That Influence Environmental Commitment in the Ontario Wine Growing Industry	. 74
6.1 Influencing Factors	. 74
6.1.1 Wine Quality and Protection of the Land	. 75
6.1.2 Compliance with Regulations	. 76
6.1.3 Social Responsibility	. 77
6.1.4 Public Image	. 77
6.1.5 Internal Leadership	. 78

6.1.6 Cost Savings	
6.1.7 Certification	80
6.2 Important Benefits	
6.2.1 Improved Wine Quality and Protecting the Natural Environment	82
6.2.2 Competitive Market Advantage	
6.2.3 Cost Benefits	84
6.2.4 Pre-emption of Future Regulation	84
6 2 5 Other Benefits	
6.3 Similicant Barriers	
6.3.1 Inadequate Financial Resources	
6.3.2 Threat to Wine Quality	
6.3.3 Inadequate Time to Implement	
6.3.4 Inadequate Knowledge	
(2 Communicate Rhowledge	
6.5.5 Government Regulation	89
6.5.6 Other Barriers	
6.4 Strategies to Overcome Barriers	89
6.5 Incentives	
6.6 Information Sources	
6.7 The Role of the Environment in the Ontario Wine Growing Industry	
6.8 Sustainability Defined	
6.9 Influential Stakeholders With Respect to Implementing Environmental Initiatives	95
6.10 Competitiveness and Acceptance of Environmental Practices	95
6.11 Attitudes That Could Support Proactive Environmentalism Within the Industry	
6.12 Participation in the SWO Charter	
6.13 Future Implementation Plans	97
6.14 Summary	
Chapter 7: Discussion of the Study's Key Findings	
7.1 Wine Quality and Protecting the Environment	
7.2 Financial Considerations	
7.3 Regulatory Compliance and Certification	
7.4 Internal Resources and Leadership	
7.5 Knowledge of Practical Information	
7.6 Summary	
Chapter 8: Recommendations	
8.1 Specific Recommendations	
8.1.1 Dedicated Environmental Wine Cooperative	109
8 1.2 Unified Goals and Objectives	
8 1 3 Legislation	110
8.1.4 Certification and Third Party Verification	110
8 1 5 Marketing	
8.1.6 Enhance Training Education Programs and Information Sources	
8.1.7 Enhance Financial Support	
8.1.7 Emance Financial Support	
8.1.8 Conduct a Follow-up Study	
8.2 Koles and Responsibilities	
0.2.21 Government	
8.2.2 Industry Associations	
8.2.3 The Ontario Winery Estates and Grape Growers	
8.2.4 Employees	
8.3 Summary	
Chapter 9: Conclusion	
9.1 Achievement of Thesis Objectives	
9.1.1 Objective One	116

9.1.2 Objective Two	117
9.1.3 Objective Three	117
9.1.4 Objective Four	
9.2 Contribution to Knowledge	
9.3 Further Research	
9.4 Summary	
Appendix A: Table A.1 List of the General Population of Winery Estates in Ontario	
Appendix B: Table B.1 List of Key Informants	
Appendix C: Study Questionnaire Part 1 and 2	
Appendix D: Example Qualitative Interview Data Coding Sheet	
Reference List	
List of Acronyms	
•	

List of Tables

Table 2.1	Main Negative Environmental, Social and Economic Impacts of Winery Estates10
Table 2.2	Factors That Influence Environmental Commitment in SMEs20
Table 2.3	The Background of the Environmental Movement in the United States Wine Growing Industry
Table 2.4	The Background of the Environmental Movement in the New Zealand Wine Growing Industry
Table 2.5	The Background of the Environmental Movement in the Australian Wine Growing Industry
Table 3.1	Winery Estate Size by Number of Employees
Table 5.1	General and Study Population by Region58
Table 5.2	Age, Size and Ownership of Participating Ontario Winery Estates59
Table 5.3	Persons Responsible for Directing and Coordinating Environmental Initiatives in an Ontario Winery Estate Within the Study Population
Table 5.4	Percentage of Ontario Winery Estates That Require Owners or Senior Management Level Support and Endorsement of Environmental Commitment Policies Within the Study Population
Table 5.5	Percentage of Ontario Winery Estates That Have Conducted an Environmental Audit Within the Study Population (Multiple Response)61
Table 5.6	Full List Environmental Initiatives That Ontario Winery Estates Within the Study Population Have Implemented
Table 5.7	General Environmental Commitment Practices That Ontario Winery Estates Within the Study Population Have Implemented63
Table 5.8	Water Efficiency and Conservation Initiatives That Ontario Winery Estates Within the Study Population Have Implemented
Table 5.9	Method of Wastewater Treatment Used by Ontario Winery Estates Within the Study Population
Table 5.10	Solid Waste Initiatives That Ontario Winery Estates Within the Study Population Have Implemented
Table 5.11	Energy Efficiency Initiatives That Ontario Winery Estates Within the Study Population Have Implemented
Table 5.12	Material Handling Initiatives That Ontario Winery Estates Within the Study Population Have Implemented67

Table 5.13	Industry Standards and Awareness of Hazardous Materials That Ontario Winery Estates Within the Study Population Have Implemented68
Table 5.14	Vineyard Management Initiatives That Ontario Winery Estates Within the Study Population Have Implemented68
Table 5.15	Employee Training and Involvement That Ontario Winery Estates Within the Study Population Have Implemented69
Table 5.16	Community Initiatives That Ontario Winery Estates Within the Study Population Have Implemented70
Table 5.17	Supplier Initiatives That Ontario Winery Estates Within the Study Population have Implemented70
Table 5.18	Ontario Wine Growing Industry Associations that Ontario Winery Estates Within the Study Population have Membership71
Table 5.19	Percentage of Ontario Winery Estates that Participate in the SWO Charter (General Population and Study Population)71
Table 5.20	Percentage of Participating Ontario Winery Estates That Have Implemented Environmental Initiatives
Table 6.1	Rating Frequency of Factors That Influence Ontario Winery Estates to Increase Their Level of Environmental Commitment
Table 6.2	Rating Frequency of Benefits That can Motivate and Sustain Environmental Initiatives in a Winery Estate
Table 6.3	Rating Frequency of the Barriers That Impede Ontario Winery Estates to Increase Their Level of Environmental Commitment
Table 6.4	Strategies Used by Participating Winery Estates to Overcome Barriers to Environmental Commitment
Table 6.5	Rating Frequency of the Incentives That Encourage Ontario Winery Estates to Increase Their Level of Environmental Commitment90
Table 6.6	Percentage of Study Participants That use Various Information Sources to Gather Information on Ontario Wine Growing Industry Environmental Initiatives and Best Practices (multiple response)
Table A.1	List of the General Population of Winery Estates in Ontario
Table B.1	List of Key Informants
Table D.1	Example Qualitative Interview Data Coding Sheet139

List of Figures

Figure 1.1	Conceptual Framework for the Study4
Figure 2.1	Stakeholder Map of a Large Firm11
Figure 2.2	Revised Model – Drivers of Proactive Environmental Behaviour in United States Winery Estates
Figure 3.1	Operations of a Winery Estate
Figure 3.2	The Wine Growing Regions of Ontario and Number of Winery Estates
Figure 4.1	Phases of the Study Research
Figure 5.1	Percentage of Participating Ontario Winery Estates that have Implemented Environmental Initiatives

List of Appendices

Appendix A	Table A.1: List of the General Population of Winery Estates in Ontario.	123
Appendix B	Table B.1: List of Key Informants	127
Appendix C	Study Questionnaire Part 1 and 2	129
Appendix D	Table D.1: Example Qualitative Interview Data Coding Sheet	138

Chapter 1: Introduction

The Canadian wine growing industry has experienced significant growth in the last 25 years, and is in the beginning stages of both increasing environmental performance and developing industry standards for environmental practices. If sufficient environmental commitments are not made, the industry may face difficulty being competitive. This is because other wine growing industries have already begun to form environmental standards based on best practices. As the wine growing industry develops and vineyards are expanded, the environmental footprint of wine production is raised (Barber, Christopher Taylor & Strick, 2009).

The Ontario wine growing industry consists primarily of SMEs, which have a significant impact on society and the environment. The types of negative impacts that winery estates produce include: the use of toxic pesticides, herbicides, fertilizers, consumption of large amount of water and energy during production, contamination of wastewater, and production of hazardous and non-hazardous waste materials. Land use issues can also arise in terms of habitat destruction and endangered species (Barber *et al.*, 2009).

This topic is also worthy of study because the Ontario wine growing industry has recently made initial steps to improve their environmental commitment. The SWO Charter (an industry initiative that provides benchmarking and tools for assessment and improvement of winemaking, grape growing and wine hospitality) has existed for almost three years at the time of writing (Winter/Spring, 2010), but only one third of the industry currently participates. This industry initiative is a significant step to improve environmental commitment, but industry-wide implementation and consumer awareness are limited. Analysis of the factors that influence winery estates to implement environmental initiatives and make commitments, such as participating in the SWO Charter, will provide the information necessary to recommend ways to improve.

Existing research has examined the environmental performance of many industries, primarily those that are heavily polluting and have experienced pressure to improve. Studies have explored how various pressures influence decision making and how the adoption of environmental initiatives can impact an organizations' operations (Bansal & Roth, 2000; Lynes & Andrachuk, 2008; Graci, 2009; Marshall, Cordano & Silverman, 2005). This existing literature indicates that in other business sectors, a wide variety of stakeholders and factors influence decision making regarding environmental issues. Stakeholders and factors that are found to influence environmental commitment may not be relevant for all industries, or for the same industry in different regions (Graci, 2009).

In the United States and New Zealand wine growing industries, some research has been conducted on environmental performance in an effort to understand the drivers of proactive environmental behaviour. There is limited research done, however, on environmental commitment in the Ontario wine growing industry.

1.1 The Canadian Wine Growing Industry

For the purpose of this study, the term 'winery estate' incorporates all stages of wine production, 'from grape to glass' in this sector. Winery estates in Canada manage the vineyard operations (agricultural processes), winery estate operations (wine production) and wine tourism and sales. The term 'wine growing industry' includes all the winery estates in a particular region. In this thesis, the focus is on Ontario wine growing regions.

Wine has been produced in Canada for over two centuries. However in the past two decades, the Canadian wine growing industry has experienced significant growth in wine production from high quality vinifera-based (traditional) grape varieties due to better technology and disease resistant vines (Canadian Vintners Association (CVA), 2005).

Ontario's wine growing regions are located within the world's wine belt, on latitudinal bands similar to the famous traditional wine growing region of Bordeaux, France. The regions are endowed with favourable climates and topographies enabling them to evolve into well-established wine-grape growing areas capable of large-scale commercial production of internationally recognized wines (Shaw, 1999). Ontario is the largest wine producing region in Canada making up approximately 80% of all domestic wine (AAFC, 2009a). Increased tourism is often observed in wine growing regions that become more and more renowned for the wines produced (Carlsen, 2004).

1.2 World Wine Growing Industry

The world wine growing industry has shifted in the last two decades. One reason for this is that more winery estates have entered the wine industry. A report conducted for the French Ministry of Agriculture in 2001 described how Old World wine producers (wine primarily produced in Europe) have observed a "rapid invasion of their global markets" (Flint & Golicic, 2009: 843) by New World wine producers (wines produced outside the traditional wine-growing areas of Europe including: New Zealand, Australia, Canada, the United States, Chile, Argentina, South Africa). The top four Old World producers are experiencing a decrease, or much slower increase, in their exports compared to New World producers resulting in a loss of market share (Flint & Golicic, 2009). There are several reasons for the increased competition in the world wine growing industry. Currently worldwide, more wine is produced than is consumed (Flint & Golicic, 2009).

Consumer behaviour throughout the world is also changing as people become more educated about the products and brands they purchase (Flint & Golicic, 2009). This increase in knowledge can result in brand discrimination and preference. Wine producers that are able to best adapt to these market changes by brand differentiation are the most likely to succeed (Flint & Golicic, 2009). Beyond the improvement of other business tactics such as distribution and variety, environmental performance and responsibility provides a new way that winery estates can differentiate along with protecting their long-term wine quality.

1.3 Environmental Commitment

Many terms are used in the existing research when discussing environmental, social and economically responsible action including: sustainability, sustainable development, environmental awareness, environmental strategy, corporate social responsibility (CSR) and environmental commitment. Environmental commitment refers to "what a company is actually doing or has done with reference to environmental issues" (Henriques & Sadorski, 1999: 88). The term involves business ethics and the idea that organizations have a responsibility to the well-being of society and the environment, similar to the term CSR which is defined as integrating economic, social and environmental concerns for long-term sustainable business growth and success (Foreign Affairs and International Trade Canada, 2010). Corporate policy, personnel overseeing social and environmental performance, third-party auditing, participation in certifications, and meeting regulation and industry standards are all aspects involved in the environmental commitment of an organization (Lynes & Andrachuk, 2008).

The level of an organization's environmental commitment can be indicated by the extent to which environmental issues are integrated into their operations. It can be measured by the amount of resources (financial, time, people) invested in environmental, social and economic issues, the amount and range of environmental, social and economic practices implemented, and the degree to which environmental, societal and economic concerns are integrated into general management practices (Rhee & Lee, 2003).

1.4 Research Objectives

The goal of this research study is to discover the key factors that influence the level of environmental commitment in the Ontario wine growing industry. The factors that motivate, barriers that impede, incentives that encourage and strategies used to overcome barriers are identified and examined in an effort to comprehend what influences Ontario winery estates to become (or not to become) environmentally committed. The results can then be used to suggest recommendations regarding ways to increase the level of environmental commitment of winery estates in Ontario. This may also be applied to other wine growing industries. The following is a list of objectives that will be explored and accomplished are:

- Review the current business and environmental management literature to determine factors that influence environmental commitment in SMEs and to examine them in the context of the Ontario wine growing industry;
- Identify the number, ownership, age, size, management structure and location of winery estates in Ontario and establish the number and type of environmental initiatives implemented;
- 3. Explore what factors influence the decision to become more environmentally committed in the Ontario wine growing industry; and,
- 4. Identify recommendations to increase the level of environmental commitment in the Ontario wine growing industry.

1.5 Research Approach and Conceptual Framework

This study used a mixed-method approach in order to identify the factors that influence environmental commitment in the Ontario wine growing industry (Sommer & Sommer, 2002). Both quantitative and qualitative research methods including survey questionnaires, semi-structured interviews and observation were utilized to empirically measure information and gather an in-depth understanding of reasoning for the answers provided (Brotherton, 2008). The data collected were analyzed in a number of ways, each stage informing the next. Results of the analysis brought out recognizable themes that were built upon previous knowledge to form conclusions and recommendations.

The conceptual framework, presented in Figure 1.1, outlines the context for this study. It was developed through a review of relevant literature and theories. It illustrates the complementary nature of the factors that influence a winery estate's level of environmental commitment. These factors are identified in the accompanying literature review (Chapter 2). Each factor may influence a winery estate differently depending on which are present and how they are perceived, as a benefit or a barrier, by the decision maker(s). Their influence may also differ depending on the leader's knowledge of existing incentives and strategies available to implement environmental initiatives. These factors may compliment or work against each other resulting in a low, medium or high level of environmental commitment.





1.6 Structure of Thesis

This introduction presents the general study topic, purpose and objectives and illuminates the gaps in the literature that instigated this study. In Chapter 2, a review and examination of the literature and theories that discuss the factors that influence environmental commitment of organizations is included. Stakeholder Theory and Resource Based Theory are used as a theoretical basis of the study. Chapter 3 provides a description and background of the research setting, the wine growing industry of Ontario. In Chapter 4, the study methodology is outlined and a description of the need for both quantitative and qualitative methods is presented. It discusses the four wine growing regions in Ontario, the part that industry association's play and the environmental commitment of the industry to date. Chapter 5 presents the organizational elements of the Ontario wine growing industry and Chapter 6 presents the factors found to influence environmental commitment. Chapter 7 discusses the key findings of the study and Chapter 8 provides recommendations to the Ontario wine growing industry to increase environmental commitment. Conclusions of the study are presented in Chapter 9.

Chapter 2: Literature Review

The purpose of the following literature review is to examine previous environmental management, business and sustainability research to seek out the factors that affect the decision making of small and medium enterprises (SMEs) to move towards a higher environmental commitment.

To begin, this chapter discusses business and environmental commitment as it has been studied in existing research. The importance, role and impact of SMEs are reviewed since the wine growing industry of Ontario is mainly composed of SMEs. Then the various negative environmental, social and economic impacts that the wine growing industry creates are explored. Stakeholder Theory and Resource Based Theory are reviewed to highlight factors that influence the environmental commitment of SMEs. Subsequently, current research of environmental commitment specific to the wine growing industry as well as the tourism industry is touched upon since tourism typically increases around wine growing regions. Research highlighting barriers to environmental commitment in SMEs is examined and related to the wine growing industry. A list of the factors that influence environmental commitment in SMEs from various industries is presented in the chapter summary, which satisfies the first objective of this thesis. Next, the current environmental commitment of six international wine growing industries are explored to gather an understanding of worldwide wine growing industry environmental management regulation and best practice standards.

2.1 Business and Environmental Commitment

The World Commission on Environment and Development (WCED) in 1987 and the Earth Summit in Rio de Janeiro in 1992 prompted serious attention to environmental issues and the concept of sustainable development throughout the world. The message was that attitudes and behaviour regarding development had to change in order to stop the destruction of the planet's natural resources. It was an emphatic statement to governments to redevelop policies and economies to address the serious impacts on the environment and society. The notion of sustainable development integrates social, environmental and economic concerns and is defined by the United Nations (UN) as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987: 43).

Subsequently, awareness and demand for responsible environmental, social and economic business practices have increased (Gadenne, Kennedy & McKeiver, 2009). Much research has been conducted about industry and environmental issues to encourage the implementation of environmental management practices in business and gather an understanding of the factors that influence an organizations' choice to engage in superior environmental performance (Álvarez Gil, Burgos Jiménez & Céspedes Lorente, 2001; Bansal & Roth, 2000; Marshall *et al.*, 2009; Tilley, 1999). Scholars have examined environmental management and the pressures to adopt environmentally responsible practices for over forty years (Marshall *et al.*, 2005).

Environmental commitment will be used in this thesis to describe the level of commitment winery estates make in terms of the social, environmental and economic initiatives that they have implemented. Factors that influence environmental commitment which will be evaluated in this study include regulatory agencies, customers, local community, industry associations, suppliers, ownership, internal leadership, financial considerations, organizational culture, social responsibility, product quality and internal resources. All of these factors were chosen in this study based on secondary research of existing environmental management SME literature and an Ontario wine growing industry initiative entitled the Sustainable Winegrowing Ontario (SWO) Charter (see section 2.8.6.1).

2.2 Small and Medium Enterprises

The majority of the economies in developed countries are made up of small and medium enterprises (SMEs) (Aragón-Correa *et al.*, 2008; Gadenne *et al.*, 2009; Parker, Redmond & Simpson, 2009; Revell & Blackburn, 2007; Simpson, Taylor & Barker, 2004). While the specific definition of an SME varies between countries, Industry Canada (2010) defines a small enterprise as one with less than 100 employees for goods-producing businesses. Above that size and up to 499 employees, a firm is considered a medium enterprise (Industry Canada, 2010). A SME with less than 5 employees is defined as 'micro' (Industry Canada, 2010).

Approximately 70% of total global pollution (Smith & Kemp, 1998) and 60% of carbon emissions (Marshall, 1998) are produced by SMEs. A study by Hillary (2000) showed that the total negative environmental impact from SMEs outweighs the combined environmental impact of large firms. As such, there have been a growing number of studies looking at the negative environmental impacts and drivers of environmental responsibility in SMEs (Aragón-Correa *et al.*, 2008; Cambra-Fierro, Hart & Polo-Redondo, 2008; Gadenne *et al.*, 2009; Hitchens, Clausen, Trainor, Keil & Thankappan, 2003; Kusyk & Lozano, 2007; Lefebvre, Lefebvre & Talbot, 2003; Parker *et al.*, 2009; Rangone, 1999; Revell & Blackburn, 2007; Roy & Thérin, 2008; Simpson *et al.*, 2004; Tilley, 1999; Williamson, Lynch-Wood & Ramsay, 2006).

2.3 The Negative Social, Environmental and Economic Impacts of the Wine Growing Industry

Although the wine growing industry gathers less attention than 'dirty' industries such as the chemical industry, it has to manage a number of issues as well (Gabzdylova *et al.*, 2009). The local environment, community and economy can all be negatively impacted by the wine growing industry. These impacts can be discussed in relation to vineyard operations, winery estate operations and wine tourism.

2.3.1 Main Negative Impacts Related to Vineyard Operations

The majority of the negative impacts related to vineyard operations are environmental. Air, water and soil pollution can occur from overuse of toxic substances such as agricultural fertilizers, pesticides, herbicides and fungicides in vineyard management. The chemicals that are found in some pesticides have been shown to produce severe environmental and health effects (Baughman, Brown, Brummett, Goldstein & Hooper, 2000). One commonly used chemical found in agricultural pesticides, sulphur, is naturally occurring in soil and has a low impact but some of the other chemicals (such as methyl bromide) are highly toxic, and are still widely used by the wine growing industry (Baughman *et al.*, 2000). These chemicals are slow to break down chemically, can have significant chronic effects and can destroy habitat for beneficial insects, birds and aquatic life (Baughman *et al.*, 2000; Silverman *et al.*, 2005).

Besides the impact from the application of toxic substances, a substantial amount of energy is required to produce synthetic fertilizer products. The energy required to produce one pound of synthetic nitrogen fertilizer, for example, is approximately 34,000 BTU compared to commercially producing the same amount of compost which requires less than 500 BTU (Baughman *et al.*, 2000). The farming equipment used in the vineyard use fossil fuels which creates greenhouse gases, depletes natural resources and produces air quality impacts (Silverman *et al.*, 2005).

Even though wine grapes require less water than many agricultural crops, most winery estates use some form of irrigation in their vineyards (California Sustainable Winegrowing Alliance (CSWA), 2010). Regular irrigation may be needed to keep the vines healthy depending on the regional climate and size of the vineyard.

Vineyard management practices also have social impacts. The use of agricultural pesticides could have a negative effect on neighbouring residents and vineyard workers who are in close proximity to the toxic substances (Silverman *et al.*, 2005). Another social impact that has been observed is the noise pollution from wind machines that have been installed by several winery estates in Ontario. Not to be confused with wind turbines that generate energy, these machines are used to protect grapes from cold injury but they also can disrupt neighbours and the local visual atmosphere (Fraser, Gambino & Gambino, 2006).

Some wine growing regions have had to deal with over expansion of vineyards, which takes over other types of agricultural farmland. The conversion of land into vineyards involves clearing native upland and riparian vegetation, potentially affecting natural resources, increasing hillside erosion, impacting endangered species and impeding wildlife migration. This has a social impact because public debate arises over natural habitat removal, overproduction of wine grapes, loss of agricultural diversity and changing scenery (Merenlender, 2000).

2.3.2 Main Negative Impacts Related to Wine Making Operations

The negative impacts of winery estate operations are for the most part environmental as well. Winery estate operations require water to continuously clean all equipment and barrels used for food processing as required by law. Every tank, pipe, hose and barrel must be cleaned after use with water and a cleaning agent, often several times prior to re-use (Baughman *et al.*, 2000). This process creates wastewater contaminated with cleaning products that must be properly managed. Wastewater issues in winery estate operations relate to treatment of wastewater that contains organic matter, nitrates and phosphorous (Silverman *et al.*, 2005).

Energy is used throughout the wine making process (Gabzdylova *et al.*, 2009; Silverman *et al.*, 2005) for monitoring, refrigeration systems, heating and cooling tanks, pumping, lighting, building heating, ventilation and air conditioning (HVAC) systems. Fossil fuels used to make the power to run these systems as well as to operate farm equipment create greenhouse gas emissions, deplete natural resources and impact air quality (Silverman *et al.*, 2005).

Material inputs as well as wastes produced during winery estate operations include organics, glass, cardboard, pallets, plastics, cork and paper (Silverman *et al.*, 2005). The use of these materials involves the extraction of various natural resources, processing and transportation to the winery estate and then transport to recycling and/or landfill facilities. Each of these stages may result in spills and various air, soil and water quality impacts (Silverman *et al.*, 2005).

2.3.3 Impacts Related to Wine Tourism

There are a number of positive economic impacts that are brought to a region that result from increased wine tourism. Economic prosperity in a region is often a result as more visitors spend money at local businesses (Hall, Sharples, Cambourne & Macionis, 2000). It can create jobs and wealth within the community. Small and medium winery estates in particular rely heavily on cellar door sales (Carlsen, 2004) and increased tourism provides a significant source of revenue from retail, merchandising, food and beverage sales (ACIL Consulting, 2002; Dodd, 2000).

While the wine growing industry can bring a number of positive economic impacts, a boost in tourist visitors has the potential to change the economic focus of a community. Increased pressure on housing and local services is possible due to newly created tourism jobs (Poitras & Getz, 2006). In addition, expensive infrastructure improvements can eventually be necessary due to increased traffic on roads and highways. This can result in higher taxes for road maintenance that can negatively affect the prosperity of local businesses and residents (Poitras & Getz, 2006).

As a wine growing region becomes increasingly well-known, wine consumers begin to travel to the region to participate in regional events, follow wine routes, taste wine and enjoy wine festivals (Carlsen, 2004). Increased tourist traffic to a region may increase the resulting negative environmental, social and economic impacts.

Increased tourism traffic can stress the local water system and increase emissions to local air, water and land (Poitras & Getz, 2006). As a greater number of tourists visit a wine region, a greater number of resources are used, energy consumed and emissions produced during their stay (Poitras & Getz, 2006). Local amenities will deteriorate faster as a result of increased use. Wine growing regions are located in rural areas and over-development and over-commercialization of a wine growing industry can threaten local ecosystems and species (Marshall *et al.*, 2005). As wine tourism increases and winery estates become more commercialized there is the potential of a loss of authentic ruralness if not properly managed (Poitras & Getz, 2006; Sharpley & Telfer, 2002). As a result, conflicts can arise with the local community due to over-development and over-commercialization (Marshall *et al.*, 2005).

Table 2.1 provides a summary of the vineyard and winery estate operations, and wine tourism impacts discussed above.

	Environmental	Social	Economic
Vineyard operations (grape growing)	 Over expansion of available land Alteration of regional habitat and biodiversity Use of toxic substances for viticulture management Water consumption Energy consumption 	 Use of toxic substances for viticulture management (health effects) Noise pollution of wind machines, tractors. Over expansion of available land 	-
Wine making operations	 Emissions to air, water and land as a result of increased wine production Excess water consumption for wine making and process equipment cleaning Excess energy consumption for wine making and process equipment cleaning Production of waste Use of natural resources 	-	-
Wine tourism (restaurant, tours)	 Overcrowding can accelerate deterioration of amenities and atmosphere Emissions to air, water and land as a result of increased tourism traffic Increased water and energy use due to increased tourism traffic Increased water and energy use due to food preparation and sanitation 	 Loss of authentic 'ruralness', change of local culture Conflict with host community due to tourism development 	 Change in local economy and business focus, competition for existing local businesses Increased deterioration of roads and highways due to increased tourism; Increased taxes to local residents and businesses as a result

Tab	le 2.	1: Mair	1 Negative Er	nvironmental,	Social	and	Economic	Impacts of	Winer	y Estates
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Compiled from: Barber *et al.*, 2009; Gabzdylova *et al.*, 2009; Marshall *et al.*, 2005, 2009; Martin, 2007; Poitras & Getz, 2006; Silverman *et al.*, 2005.

2.4 Stakeholder Theory, SMEs and Environmental Commitment

Stakeholder Theory (ST) outlines how organizations make decisions to satisfy their main stakeholders. ST was originally detailed by Freeman (1984) who identifies the stakeholders as: "all of those groups and individuals that can affect, or are affected by, the accomplishment or organizational purpose" (p. 84). Organizations strengthen long term success through the continued support and resources provided by satisfied stakeholders (Álvarez-Gil *et al.*, 2001). It can then be inferred that if stakeholders demand the adoption of environmental initiatives, organizations will implement them. Figure 2.1 is an adapted view of the stakeholders of an organization.



Figure 2.1: Stakeholder Map of a Firm

Source: Freeman, 1984 as found in Graci, 2009, p. 19

Since Freeman's work in 1984, a number of other studies have examined how stakeholders influence environmental commitment in an organization. In 1997, Mitchell, Agle and Wood proposed a theory of stakeholder salience, recognizing the role of managers in organizational decision making and how they prioritize among an organizations' other stakeholders. When looking at the hotel industry in China, Graci (2009) made similar observations to Mitchell *et al.* (1997). Bansal and Roth (2000) collected data from 53 companies in several countries and industries including food retailers, auto manufacturers and oil companies. They showed that organizations experience pressure from many stakeholders and aim to satisfy them in order to attain legitimacy. In 2001, Álvarez-Gil *et al.* researched the Spanish hotel industry and found that stakeholder pressures were among the factors that determine whether an organization will implement environmental practices. Henriques and Sharma (2005) examined stakeholders influence on individual firms' sustainable practices in Canadian forestry industry. This research indicates that stakeholders who do not have direct control over an organization's resources (such as NGOs) can still influence their strategic decisions and actions. More recently in 2008, Delmas and Toffel studied how organizations from heavy polluting industries respond to environmental demands. They concluded that external stakeholders

including customers, regulators, legislators, local communities and environmental activist organizations can affect a manager's decisions.

Although a great deal of research involving ST relates to the stakeholder pressures on large firms, ST can also be used to understand various stakeholder pressures on SMEs. A number of studies have used ST and/or discuss how pressures from stakeholder groups encourage the adoption of environmental practices in an SME context (Cambra-Fierro *et al.*, 2008; Cordano, Marshall & Silverman, 2010; Gadenne *et al.*, 2009; Lefebvre *et al.*, 2003). In addition, a number of studies that have focussed on understanding the drivers of environmental commitment in wine growing industries have used ST to gain an understanding of stakeholder pressures (Gabzdylova *et al.*, 2009; Marshall *et al.*, 2005, 2009).

A study by Gadenne *et al.* (2009) explored the connection between pressures to improve practices and the management actions taken by SMEs. They examined how influence from various stakeholders related to awareness of environmental issues in SMEs from a number of industries (service, manufacturing, retail, building, agriculture and food production) in Australia. Overall, the results indicate that SME owner/managers are influenced by suppliers and mandatory compliance (legislation), and are aware of the potential benefits of certain environmental practices to the future of their business. The study concludes that legislation and suppliers are effective at influencing SMEs to improve their environmental commitments, along with influencing environmental attitudes and awareness of the decision-maker.

Lefebvre *et al.* (2003) conducted a study of 368 environmentally responsive SMEs from four different industries, and found that environmental performance cannot be looked at from only one dimension. The impact of environmental performance on innovativeness and competitiveness of a business varies depending on the industry in which they operate. In all industries studied, there was a positive and significant relationship found between process and managerial innovations and environmental performance. Conclusions from the study about what influences SMEs include: 1) international markets and regulations, 2) the benefit of competitive advantages, and 3) managerial and technological innovations. In North America, international trade is becoming more of a reality and SMEs that export their products have to be aware of international environmental requirements and/or expectations. In terms of specific standards, Lefebvre *et al.* (2003) noted that although many SMEs "have made progress towards environmentally friendly products and processes, almost none are ISO 14001 certified and very few plan to seek such certification" (p. 277). The study also noted that businesses were motivated to manufacture environmentally responsible products if they were able to get a premium price for them. However, this depends on the market conditions which differ by industry. It also concluded that education about the benefits of manufacturing environmentally responsible products can occur through the supply chain or based on customer demand.

In a study of United States winery estate managers' attitudes, norms and perceptions of stakeholder pressures by Cordano *et al.* (2010), the intention to implement environmental management programs (EMPs) was examined. It was found that internal stakeholders' (managers and employees who are familiar

with a facility's operations) pressures for environmental performance perceived by managers increased the adoption of EMP components, implementation of energy conservation and recycling practices. Similarly, pressures from external stakeholders were also perceived by managers as influential to the adoption of EMP components.

Another study conducted by Cambra-Fierro *et al.* (2008) explored SMEs from two different industries (a winery and a paint and solvent factory) to analyze the reasons that influence decision-making. The study reveals two main reasons for implementing environmentally responsible systems and practices: ethics and business. The first is the belief that their responsible actions will be appreciated by the market and therefore lead to a competitive advantage. The second reason that SMEs in the study implemented environmentally responsible practices was the desire to implement a business philosophy that matched the owner/manager's values and beliefs. The authors concluded that there is a combined influence of three general factors that lead a company, particularly an SME, to manage their business in an environmentally respectful manner: 1) comply with environmental legislation, 2) adapt management to the owner/managers value system, and 3) that the SME will obtain an economic profit.

2.5 Resource Based Theory, SMEs and Environmental Commitment

In this study, an analysis of financial issues, business, and competitive advantage was further explored using Resource Based Theory (RBT). SMEs are concerned with financial advantage and RBT relates internal capabilities and the firm's resources to financial success (Barney, Wright & Ketchen, 2001). RBT provides evidence that key motivating factors for environmental commitment involve internal resources within organizations such as leadership, social responsibility and organizational size (Hart, 1995; Russo & Fouts, 1997). These internal factors can encourage in-house efficiencies, competitive advantages and financial benefits. Internal factors, such as implementing an environmental management program, can increase internal efficiencies and lead to cost savings, as well as firm differentiation against the competition (Hart, 1995; López-Gamero *et al.*, 2009; Rivera, 2002; Russo & Fouts, 1997).

López-Gamero *et al.* (2009) examine the RBT view of the firm to understand the link between environmental protection and firm performance. Their results support the RBT view that a firm's resources and competitive advantage can facilitate a positive relationship between environmental protection and financial performance. The study also outlines that depending on the industry, the effect of environmental protection on firm performance can vary and the affect is not always direct. For example, "competitive advantages in relation to costs influences financial performance in the [IPPC] law sector, [whereas] the relevant influence in the hotel sector comes from competitive advantage through differentiation" (López-Gamero *et al.*, 2009, p. 3110).

Traditionally environmental management and business research has utilized RBT in relation to large corporations; however, the RBT perspective can also be related to SMEs (Aragón-Correa *et al.,* 2008; Rangone, 1999). Study results of the environmental strategy and performance in small firms from a

Resource Based perspective by Aragón-Correa *et al.* (2008) shows that "SMEs' potential to adopt proactive environmental practices is associated with specific organizational capabilities based on their unique strategic characteristics of shorter lines of communication and closer interaction, the presence of a founders' vision, flexibility in managing external relationships, and an entrepreneurial orientation" (p. 98). They further discuss how "large and small firms both require organizational capabilities for competitive strategies", but each "may follow a different path and generate different sets of capabilities based on different sets of characteristics" (Aragón-Correa *et al.*, 2008: 99). A number of studies on environmental commitment and SMEs have identified internal factors that have the potential to enhance competitive advantage (Aragón-Correa *et al.*, 2008; Cambra-Fierro *et al.*, 2008; Cordano *et al.*, 2010; Gabzdylova *et al.*, 2009; Gadenne *et al.*, 2009; Lefebvre *et al.*, 2003; Marshall *et al.*, 2005, 2009; Parker *et al.*, 2009; Rangone, 1999; Simpson *et al.*, 2004).

In their study of SMEs in the auto repair sector, Aragón-Correa *et al.* (2008) found the environmental strategies that SMEs had chosen to implement could be classified into three general categories: 1) reactive, 2) preventative, and, 3) proactive, which are similar to large firms. They also concluded that the environmental strategies could be associated with three organizational capabilities: 1) shared vision, 2) stakeholder management, and 3) development of proactive strategies. Their results showed a significant positive inter-relationships between "innovative-preventative environmental practices and eco-efficient practices and firm performance" (p. 99). This provides evidence that SMEs can enhance their business based on their unique characteristics such as adopting environmental practices, which can lead to superior financial performance (Aragón-Correa *et al.*, 2008).

2.6 Factors That Influence Environmental Commitment in the Wine Growing Industry

Two recent studies regarding the drivers of environmental commitment have been conducted in the wine growing industries of the United States and New Zealand. These are discussed below because of their relevance to this study. Tourism related research is also examined based on the connection between the wine growing and tourism industries.

2.6.1 Drivers of Proactive Environmentalism in the United States Wine Growing Industry

There is evidence to show that the motivations of environmental behaviour cannot be looked at in isolation, but must include sectoral and cultural contexts (Lynes & Andrachuck, 2008). Marshall *et al.* (2005) conducted a study of individual and institutional drivers of proactive environmentalism in the United States wine growing industry. Interviews and focus groups were conducted with key industry informants to test the model.

The final model developed by Marshall *et al.* (2005) shown in Figure 2.2, identifies the factors involved in proactive environmentalism as either individual or institutional drivers.

The individual drivers describe internal factors that influence an organization's actions and decisions based on interpretation and tradition. Individual drivers include managerial attitudes and subjective norms of an organization such as employee welfare, cost savings and product quality. The study had similar results to existing research showing that managers have considerable control over the degree to which a firm pursues environmental initiatives (Aragón-Correa *et al.*, 2004, 2008; Bansal & Roth, 2000; Berry & Rondinelli, 1998; Cambra-Fierro *et al.*, 2008; Darnall, Henriques & Sadorski, 2008; Davis *et al.*, 2009; Gabzdylova *et al.*, 2009; Ghobadian, Viney, Liu, & James, 1998; Graci, 2009; Henriques & Sharma, 2005; Lee & Rhee, 2007; Lynes & Andrachuck, 2008; Mauser, 2001; Mitchell *et al.*, 1997; Paulraj, 2008; Pryce, 2001; Rivera & deLeon, 2005; Sinha & Akoorie, 2010). Additionally, if there is a high justification for environmental preservation within an organization already, proactive and/or voluntary environmental initiatives will be easier to introduce (Marshall *et al.*, 2005).

Figure 2.2: Revised Model – Drivers of Proactive Environmental Behaviour in United States Winery Estates



Source: Marshall et al., 2005, p. 105

Institutional drivers shown in this model describe the context within which winery estates are acting. Stakeholders who create a social pressure from outside the winery estate include government, suppliers, professional and trade associations, special interest groups, local community and the general public. Pressures from regulations, other organizations and media can strongly influence the adoption of environmental management practices within an organization (Marshall *et al.*, 2005). This is similar to Stakeholder Theory which was discussed in section 2.4. Staying competitive and unique are also classified as institutional drivers in this study, which may make a winery estate focus on or initiate responsible environmental choices (Marshall *et al.*, 2005).

All the managers interviewed by Marshall *et al.* (2005) expressed positive personal attitudes toward environmentalism and the presence of environmental stewardship and sustainability in the corporate culture of their winery estates. It was discussed in the study that due to the global nature of the wine growing industry, winery estates differentiate as much as they can and respond to growing regulations and industry pressures (Marshall *et al.*, 2005).

Interviews and meetings with regulatory agents and industry associations revealed that the United States wine growing industry is characterized overall by a combination of traditional command and control regulatory mechanisms and cooperative government-industry partnerships. It was found that frequently the initiation of environmental efforts began at a local level. The commitment of national associations to improving environmental practices usually followed (Marshall *et al.*, 2005).

Overall from this study, the issue of environmentalism in the United States wine growing industry is motivated by individual and institutional drivers. Industry and regulatory agencies are increasingly involved and the legitimacy of environmental commitment has grown. Managerial characteristics, competitive pressures, regulatory issues and management of public image are significant factors of proactive environmental behaviour (Marshall *et al.*, 2005).

2.6.2 Drivers of Sustainability in the New Zealand Wine Growing Industry

In 2009, Gabzdylova *et al.* conducted a study to investigate sustainability drivers, stakeholders and practices in the New Zealand wine growing industry. Twenty-four winery estates were studied. The most important drivers of environmental commitment were found to be personal values, preferences and satisfaction with the profession, product quality and consumer demand (Gabzdylova *et al.*, 2009). Demand and expectations from overseas customers was also observed as a main driver for implementing sustainability practices (Gabzdylova *et al.*, 2009).

Decisions were also influenced by environmental regulations and in particular the pre-emption of future regulations. This was due to the industry-led initiatives to have all New Zealand vineyard and winery estate operations participate in a sustainability scheme by 2012. Respondents in this study perceive overseas regulations, many of which demand third party certification, as more demanding than those in New Zealand (Gabzdylova *et al.*, 2009).

The most important stakeholders were found to be owners/managers, shareholders and customers. In addition, relationships between winery estates were noted as friendly and helpful. The image projected overseas by the entire industry is important in order for each winery estate to be successful and therefore information and experiences with sustainable practices are shared amongst winery estates (Gabzdylova *et al.,* 2009).

Product quality was an essential driver for implementing environmental initiatives as well. Wine quality was said to depend on soil quality. The use of toxic chemicals kills pests, but also kills other life in the soil that contributes to tasting a 'sense of place' (terroir) in a wine. If soil quality is enhanced, healthier vines and premium grapes are produced. Although preserving terroir was an influencing factor, the study revealed that was no price premium for sustainably or organically grown wine grapes (Gabzdylova *et al.*, 2009).

In effort to distinguish the varied levels of involvement in sustainability and drivers of implementing environmental initiatives in winery estates, Gabzdylova *et al.* (2009) identified four winery estate typologies. These typologies (minimalist, value driven, reputation seeking and excellence seeking) describe the owner/managers' varied influence.

2.6.3 Environmental Commitment in the Tourism Industry

Research on environmental commitment in the tourism industry was included in this literature review for several reasons. The wine growing and tourism industries are both environmentally unregulated, primarily consist of SMEs and include elements that are service-oriented. In addition, there is an abundance of research about environmental commitment in the tourism industry, a great deal of which focuses on influencing factors and barriers that can be clearly related to this study.

The tourism industry accounts for approximately 9.2% of global GDP and is considered one of the largest industries in the world (WTTC, 2007). It is resource intensive industry and creates many negative environmental and social impacts (Álvarez Gil *et al.*, 2001; Bohdanowicz, 2005; Dodds, 2005, 2007; Dodds & Joppe, 2005; Graci, 2009, 2010; Graci & Dodds, 2008; Rivera & deLeon, 2004; Williams & Pondsford, 2009). In the last several years, the impacts of tourism have become an increasing concern and attention to the importance of integrating environmental commitment has grown (Dodds, 2005, 2007; Pryce, 2001; Williams & Pondsford, 2009).

There is no shortage of research on environmental commitment in the tourism industry. Studies of the tourism industry discuss how owners/managers and their knowledge, values and perceptions (Graci, 2009; Graci & Dodds, 2008), regulatory bodies (Graci & Dodds, 2008; Revell & Blackburn, 2007; Rivera & deLeon, 2004), industry associations (Graci 2009), employees (Graci, 2009), consumer relations and reputation (Moon & deLeon, 2007; Rivera & deLeon, 2004), certification programs (Dodds & Joppe, 2005), reduced risk (Dodds & Joppe, 2005), and financial considerations (Álvarez Gil *et al.*, 2001; Graci, 2009; Graci & Dodds, 2008; Pryce, 2001; Revell & Blackburn, 2007) can influence increased environmental commitment.

In a study of the tourist accommodation industry in Sanya, China, Graci (2009) found the factors that motivated greater environmental commitment included economic considerations and competitive advantage, social responsibility, municipal government, corporate decision makers, and a hotel's clientele. Although this study is conducted in a developing country, it relates to the area of study because both the tourist accommodation and wine growing industries consist of primarily SMEs and rely on a providing a positive experience to increase the business's reputation and be successful.

In their study of the tourism industry, Williams and Pondsford (2009) characterize the industry's environmental and sustainable performance. The study includes a case study of a leading environmentally committed tourism destination (Whistler, B.C.). They found that while consumers are starting to become more aware of the environmental impacts of products and services, for the most part they remain ambivalent to environmentally responsible production processes. In addition, it was observed that governments resist taking strong action first because they are concerned with potential economic issues that could occur by increasing policies for the tourism industry, and second there is an absence of consumer pressure. However, the authors note that there is a trend of environmentally responsible products and services. As the market changes, businesses will have to diversify and governments will develop better policies and incentives. Going forward this means there is an opportunity for tourism communities to 'reinvent' their destination as environmentally committed (Williams & Pondsford, 2009).

In 2008, Graci and Dodds explored the business case for implementing environmental commitment practices in the Canadian hotel industry. This research is relevant to this study because the wine growing industry has a tourism component. Further, it uses Resource Based Theory was used to show that an organization can attain a competitive advantage by increasing its environmental commitment level. The environmental economic and social benefits from increasing organisational performance of a hotel were found to include: cost savings, improved competitive advantage, employee loyalty, regulatory compliance, leadership in industry, and managing risk and social responsibility. Barriers to implementing environmental initiatives included lack of communication, legislative issues (tourism not on the legislative agenda, not recognized as an important economic sector or environmental issue), business culture and need for cohesive information. Most of the environmental initiatives currently in place are either very general or due to a proactive hotel general manager.

2.7 Barriers to Environmental Commitment in SMEs

Many studies had drawn attention to specific barriers to environmentally responsible activities by SMEs. Factors might be perceived differently depending on the attitude and knowledge of the respondents or of the industry that was being studied.

Parker *et al.* (2009) conducted a review of interventions that encourage SMEs to improve their environmental commitment level. Their findings conclude that identifying the drivers and barriers to environmental commitment is not practical for policy and program development to encourage improvements. The presence of a number of barriers (lack of knowledge, not enough stakeholder pressure,

financial considerations) does not guarantee that an SME will have a low level or awareness and commitment. There may be any combination of other influences and reasons that impact the level to which an SME makes decisions and integrates products and processes that are environmentally responsible (Parker *et al.*, 2009). They developed a typology of SME types for analysing environmental improvement based on what drives the owner/manager decisions and what they focus on. The owner/managers values can have a significant influence on and SME's environmental commitment. Parker *et al.* (2009) found they can be environment driven, advantage driven, compliance driven or profit driven. The environment driven owner/managers were focused on environmental improvement goals and this was a strong motivation for implementing environmental initiatives (Parker *et al.*, 2009).

In a study of SMEs in the United Kingdom's (UK) construction and restaurant sectors, Revell & Blackburn (2007) found that becoming environmentally sustainable may increase costs of production despite the country's government putting emphasis on a business case for sustainability. Not all owner/managers were convinced of the business case, perceiving environmental initiatives as a 'niche market' and fearing higher costs will affect their competitiveness. The SMEs in this study reported that they felt governments should lead the way with regulation to increase environmental responsibility because it safeguarded against 'free-riders' of green initiatives. Without regulations, SMEs often assume that there is no environmental problem from their actions. The study also found that owner/managers were too busy and environmental responsibility was a low priority for many. Another impediment to increased environmental responsible actions was that there was not enough stakeholder pressure, and a lack of correct skills and/or reliable advice (Revell & Blackburn, 2007).

Hitchens *et al.* (2003) studied the relationship between environmental initiatives and competitive performance of SMEs in the UK furniture, textile finishing and fruit and vegetable processing industries. Regulation, cost and market drivers were found to be the most important drivers, and implementing environmental initiatives positively influenced cost and market performance. Impeding factors included a lack of resources (time and capital), scepticism of the benefits of environmental initiatives, lack of stakeholder pressure, uncertain regulations and a shortage of good quality advice.

While a number of factors were found to positively influence environmental commitment of SMEs in Gadenne *et al.*'s study (2009) (section 2.6.2), the authors also found barriers that impeded the implementation of environmental initiatives. There seemed to be a high level of environmental awareness and owner/managers with positive outlooks, few businesses were committed to implementing environmentally sustainable practices. Lack of financial resources was found to be a major obstacle in becoming aware and engaged in environmentally sustainable practices. Although awareness did not result in taking action, many business owners may either be "unaware of the environmental impact of their businesses or they do not know what they can do to improve" (Gadenne *et al.*, 2009, p. 60).

Similarly, Graci's study (2009) of environmental commitment in the tourist accommodation industry discussed in 2.6.3, also found a number of factors that are barriers to greater environmental commitment. These were inadequate resources, incompatible corporate culture and unsupportive employees.

Therefore, it is apparent from the existing literature that although there are a number of benefits for SMEs to implement environmental initiatives, there are a number of barriers that prevent SMEs from becoming more environmentally committed, including: lack of knowledge, lack of time, not enough stakeholder pressure and financial considerations.

After a review of the above literature, a number of factors that can influence a SME to become more environmentally, socially and economically responsible were discovered. These factors are summarized in Table 2.2.

Factor	Barrier/Motivation Description	Studies
Product quality	Barrier: threat to quality	Gabzdylova et al., 2009; Marshall et al.,
	Motivation: improve quality	2005; Sinha & Akoorie, 2010
Public image/reputation Certification	Barrier : Lack of action could created a negative reputation and loss of credibility Motivation : Becoming certified and/or implementing an environmental initiative can improve a business's reputation and legitimacy	Bansal & Roth, 2000; Dodds & Joppe, 2005; Gabzdylova <i>et al.</i> , 2009; Graci, 2009; Henriques & Sharma, 2005; López- Gamero <i>et al.</i> , 2009; Lynes & Andrachuk, 2008; Marshall <i>et al.</i> , 2005; Moon & deLeon, 2007; Rivera & deLeon, 2004
Regulation	Motivation : government pressure, pre- emption of future regulations, be compliant	Bansal & Roth, 2000; Delmas & Toffel, 2008; Gabzdylova <i>et al.</i> , 2009; Hitchens <i>et al.</i> , 2003; Lefebvre <i>et al.</i> , 2003; López- Gamero <i>et al.</i> , 2009; Marshall <i>et al.</i> , 2005; Revell & Blackburn, 2007; Silverman <i>et al.</i> , 2005
Employees	Motivation : employee satisfaction and support of environmental commitment	Cordano <i>et al.</i> , 2010; Graci, 2009
Industry associations	Barrier : lack of education and tools to learn about the benefits of environmental commitment Motivation : provide education and tools to learn about benefits of environmental commitment	Marshall <i>et al.</i> , 2005, 2009; Pryce, 2001; Silverman <i>et al.</i> , 2005

Table 2.2: Factors That Influence Environmental Commitment in SMEs

Owner/manager attitude, leadership Social responsibility	Barrier : leadership does not perceive environmental commitment as valuable Motivation : environmental commitment and protection of land is part of the leader's personal values	Álvarez Gil et al., 2001; Bansal & Roth, 2000; Barry & Rondinelli, 1998; Cambra- Fierro et al., 2008; Cordano et al., 2010; Darnall et al., 2008; Davis et al., 2009; Gabzdylova et al., 2009; Gadenne et al., 2009; Graci, 2009; Ghobadian et al., 1998; Hart, 1995; Henriques & Sharma, 2005; Lee & Rhee, 2007; López-Gamero et al., 2009; Lynes & Andrachuk, 2008; Marshall et al., 2005; Mauser, 2001; Mitchell et al., 1997; Parker et al., 2009; Paulraj, 2008; Pryce, 2001; Revell & Blackburn, 2007; Lee & Rhee, 2007; Rivera & deLeon, 2005; Russo & Fouts, 1997; Silverman et al., 2005; Sinha & Akoorie, 2010
Knowledge	Barrier : decision-maker(s) is not knowledgeable of potential benefits Motivation : decision-maker(s) is knowledgeable of potential benefits	Gadenne <i>et al.</i> , 2009; Graci, 2009; Graci & Dodds, 2008; Hitchens <i>et al.</i> , 2003; Parker <i>et al.</i> , 2009; Revell & Blackburn, 2007; Roy & Thérin, 2008; Simpson <i>et al.</i> , 2004; Tilley, 1999
Time	Barrier : inadequate time to implement	Hitchens et al. 2003; Revell & Blackburn, 2007; Simpson et al., 2004
Stakeholder/market/c onsumer/community pressure	Barrier : lack of stakeholder pressure Motivation : enhanced reputation	Buysse & Verbeke, 2003; Delmas & Toffel, 2008; Cambra-Fierro <i>et al.</i> , 2008; Cordano <i>et al.</i> , 2010; Forbes, Cohen, Cullen, Wratten, & Fountain, 2009; Gadenne <i>et al.</i> , 2009; Henriques & Sharma, 2005; Hitchens <i>et al.</i> , 2003; Lefebvre <i>et al.</i> , 2003; Marshall <i>et al.</i> , 2005; Parker <i>et al.</i> , 2009; Poitras & Getz, 2006; Revell & Blackburn, 2007
Financial considerations Competitive market advantage	Barrier : high capital cost Motivation : competitive advantage, cost savings	Álvarez Gil et al., 2001; Aragón-Correa et al., 2008; Bansal & Roth, 2000; Cambra- Fierro et al., 2008; Cordano et al., 2010; Gabzdylova et al., 2009; Gadenne et al., 2009; Graci, 2009; Lefebvre et al., 2003; Hart, 1995; Hitchens et al., 2003; López- Gamero et al., 2009; Lynes & Andrachuk, 2008; Marshall et al., 2005, 2009; Parker et al., 2009; Paulraj, 2008; Poitras & Getz, 2006; Rangone, 1999; Revell & Blackburn, 2007; Rivera, 2002; Rivera & deLeon, 2005; Russo & Fouts, 1997; Silverman et al., 2005; Simpson et al., 2004; Tilley, 1999

2.8 Environmental Commitment and the World Wine Growing Industry

Next, the environmental commitment and best practices of six international wine growing industries, including Canada, are explored in order to gain an understanding of the wine growing industry's environmental management regulation and current best practices.

Winery estates worldwide are facing increasing pressures from many stakeholders to improve their environmental performance. These stakeholders include local communities, government agencies and consumers (international and domestic) (Hughey, Tait & O'Connell, 2005; Marshall *et al.*, 2005, 2009; Silverman *et al.*, 2005; Sinha & Akoorie, 2010). In response, many individual winery estates as well as national wine growing industry associations have begun to adopt practices and policies to manage their negative impacts (Marshall *et al.*, 2009). In this section, the background and description of environmental stewardship for six wine growing industries will be outlined: the United States (California), New Zealand, Australia, Europe, South Africa and Canada (Ontario). These industries were chosen either because they are large wine producers; they are well-known for progressive environmental commitment industry initiatives and/or they have been closely studied in relation to environmental commitment.

Recent research on environmental commitment in the worldwide wine growing industry discusses the increasing pressures to improve environmental performance specifically in the United States (Cordano *et al.*, 2010; Marshall *et al.*, 2005, 2009; Silverman *et al.*, 2005), in New Zealand (Gabzdylova *et al.*, 2009; Marshall *et al.*, 2009; Sinha & Akoorie, 2010) and in British Columbia, Canada (Poitras & Getz, 2006), as well as in wine tourism in general (Barber *et al.*, 2009; Carlsen, 2004; Poitras & Getz, 2006).

There are two existing international wine growing industry associations which recognize the need for strong environmental credentials for industry success: the International Federation of Wines and Spirits and the International Organization of Vine and Wine.

International Federation of Wines and Spirits

The International Federation of Wines and Spirits (FIVS) is a worldwide wine growing industry trade association founded in 1951 for all sectors of the alcohol beverage industry (producers, distributors, importers, exporters and trade associations worldwide) (Russel & Battaglene, 2007). In 2006, FIVS developed the Global Wine Sector Environmental Sustainability Principles (GWSESP) which recognize "that the wine industry is entirely dependent on natural resources" (FIVS, 2009, para 1) and that aligning global wine growing industries in relation to responsible environmental performance is a challenge. Therefore, the GWSESP is a framework to "ensure there is a coordinated, efficient and result-driven approach to the international wine industry's commitment to environmental sustainability" (FIVS, 2009, para 4).

International Organization of Vine and Wine

The International Organization of Vine and Wine (OIV) is a co-chair of FIVS's Sustainability Committee. It assisted in the development of the GWSESP. They have compiled a 'Sustainable Vitiviniculture' guide that outlines more specific practice recommendations aligned with the principles of FIVS. OIV also assisted with the 'International Wine Carbon Protocol and Calculator', part of the Australian wine growing industry's EntWine scheme (see section 2.8.4) (Russel & Battaglene, 2007).

Collectively, FIVS and OIV support environmental improvement in the international wine growing industry. This assists negotiation between wine markets in the recognition of various environmental programs and activities as an alternative to compliance of third party guidelines (Russel & Battaglene, 2007).

2.8.1 United States (California) Wine Growing Industry

The United States is the world's fourth largest wine producer accounting for 10% of world wine production (Marshall *et al.*, 2009). California accounts for 90% of total United States wine production (Silverman *et al.*, 2005). Since the 1990s, wine growing industry leaders, associations and regulators in the United States have increasingly pressured the industry to achieve higher levels of environmental commitment for many reasons including its rapid growth, increasing land use and use of toxic chemicals (Marshall *et al.*, 2005). Additional regulatory and community pressures are particularly threatening to all winery estates (Marshall *et al.*, 2005). As a result, associations to help members handle and respond to pressures like this have been created such as the Wine Institute of California. Table 2.3 identifies the background of the environmental movement in the United States wine growing industry.

Table 2.3: The Background of the Environmental Movement in the United States Wine Growing Industry

Date	Development
1980s	 Environmental practices driven almost strictly by environmental regulations.
	 The legal limits for toxic chemical use in vineyards were not very stringent.
	• A few winery estates began to experimenting with vineyard and winery estate operations that
	reduced their environmental impacts
	 1980 – Frey Winery became the first organic wine producer
	 1986 – Fetzer Winery organically certified a portion of their vineyard
	 Proactive actions by individual winery estates were the leading edge of environmental initiatives in the wine industry
	• No significant association activity, community/activist pressure or market pull to improve
	environmental performance of the industry as a whole
1990s	 More winery estates began to see a need to address environmental management concerns
	• A California regional association (Lodi-Woodbridge Wine Commission) introduced an IPM
	program to address the use of toxic agricultural chemicals
	 Following success, other regions followed and implemented IPM programs
	• Growth of the wine growing industry increased rapidly and community and environmental
	activists began to protest habitat destruction and erosion from wine growing industry
	development
	 Protests directed attention to environmental practices of the wine growing industry
1997	 A program called Low Input Viticulture and Enology (LIVE) was introduced in Oregon to define a set of global standards for sustainable agricultural practices.
	The adoption of LIVE led other regional associations and individual winery estates in the United
	States to adopt similar practices
Late 1990s	 The United States wine growing industry organized an initiative called WineVision, an informal voluntary organization with three long-term goals: one being environmental and social sustainability
	 WineVision proposed a code of sustainable practices for the wine industry
2000s	 Continued land use issues and pesticide use increased tension with community residents (particularly in California)
	 Violations of the Clean Water Act nartially stopped expansion of some winery estates because of
	the presence of endangered species.
	 Pesticide use has lead neighbouring residents to debate winery estate expansions as well
2002	• With input from key stakeholders and the wine growing industry's environmental leaders the
	Code of Sustainable Practices was completed
	California Environmental Protection Agency (Cal/EPA) created a program to assist winery
	estates to develop formal environmental management systems (EMSs)

Date	Development
2003	 California Sustainable Winegrowing Alliance (CSWA) was established by Wine Institute and the California Association of Winegrape Growers (CAWG) to implement the Sustainable Winegrowing Program (SWP) SWP provides educational tools to support adoption of sustainable practices, measure and demonstrate ongoing improvement

Compiled from: Baughman et al., 2000; Cordano et al., 2010; Marshall et al., 2005, 2009; Silverman et al., 2005; CSWA, 2010

2.8.2 New Zealand Wine Growing Industry

New Zealand is very focused on maintaining a 'clean and green' reputation and inappropriate corporate activity is not easily tolerated (Gabzdylova *et al.*, 2009). The nation's wine growing industry is no exception. It is a sector that is highly valued to the New Zealand economy because of export revenue, high employment and increased wine tourism. In order to preserve their reputation and environment, the wine growing industry had to find a way to protect soil, surface and groundwater during expansion. A sustainability program called Sustainable Winegrowing New Zealand (SWNZ) was developed by a professional organization, the New Zealand Winegrowers, which "targets having all New Zealand grapes and wine produced under independently audited sustainability schemes by vintage 2012" (Gabzdylova *et al.*, 2009, p. 992).

The New Zealand wine growing industry is a small wine producer relative to the rest of the world. In 2005 it was ranked the 22nd largest wine producer accounting for 0.41% of world production (Marshall *et al*, 2009). Nonetheless, the New Zealand wine growing industry has grown rapidly in the last decade, increasing 100% between 1996 and 2005 (Marshall *et al.*, 2009).

The chemicals used by the New Zealand wine growing industry have been reduced since the introduction of SWNZ program. Overuse of fertilizers can result in a lower wine grape quality so SWNZ promotes the use of compost and organic lime to partially replace synthetic fertilizers. Meanwhile, the industry continues to struggle with wastewater management and the potential for water shortages in the future (Gabzdylova *et al.*, 2009). Table 2.4 identifies the background of the environmental movement in the New Zealand wine growing industry.

	6 .
Date	Development
Pre-1990s	• New Zealand viticulture practices not entirely consistent with the nation's 'clean, green' image.
	• E.g.: routine and/or blanket use of pesticide spraying was common practice
1995-6	 A working group of growers and industry representatives (New Zealand Winegrowers, a professional organization) developed a pilot program called Sustainable Winegrowing New Zealand (SWNZ) with five winery estates SWNZ: a framework for viticultural and winemaking practices that protect the environment, efficient and economically viable for growth of premium wine Includes a 'Positive Points System' for vineyards & winery estates and a 'Self Audit Scorecard', reports progress for participants
1997	SWNZ introduced commercially

Table 2.4: The Background of the Environmental Movement in the New Zealand Wine Growing Industry
Date	Development
	 \$150,000 and additional industry support, the SWNZ grew to include 120 winery estates
2002	 SWNZ introduced as a winery program
2003	 The SWNZ program has more than 300 members representing 60% of vineyard acreage
2007	• The industry adopts a sustainability policy with a target to have all New Zealand produced grapes
	and wines audited by sustainability schemes by the 2012 vintage

Compiled from: Gabzdylova et al., 2009; Marshall et al., 2009; Sinha & Akoorie, 2010; SWNZ, n.d.; Thrupp & Ross, n.d.

2.8.3 Australian Wine Growing Industry

The Australian Bureau of Agricultural and Resource Economics (ABARE) has estimated that Australia is the sixth largest wine producer and fourth largest wine exporter in the world. In 2006, Australia accounted for approximately 3.05% of world wine grape production (Australian Government, 2008).

In the 1980s, the Australian wine growing industry experienced a period of rapid growth (Aylward & Zankoy, 2006). Between 1997 and 1999 alone, 40,000 hectares of vineyards were planted (Australian Government, n.d.). In conjunction with this rapid growth, the industry became more conscious of their negative impacts and this prompted greater attention to environmental stewardship. Table 2.5 outlines the environmental movement in the Australian wine growing industry.

The Winemakers Federation of Australia (WFA) is an independent, not-for-profit organization whose role is to advance and protect the interests of Australia's winemakers and represent its members on relevant national and international issues. The WFA and the Australian wine industry are committed to continually improving its environmental performance. They support optimizing winery estate operations by making sure resources are used and by-products are generated in an ecologically sustainable manner (WFA, n.d.).

One Australian winery estate that is recognized for environmentally responsible practices is Banrock Station Winery. Banrock is dedicated to the welfare of their environment. The winery estate is located within a wetland area and they have a manager whose responsibility is to preserve the wetland's ecosystem. They have been successful in creating a unique tourist attraction and producing wines without compromising the surrounding environment (Banrock Station, 2009).

Table 2.5: The Background of the Environmental Movement in the Australian Wine Growing Industry

Date	Development
1992	 The Australian Government committed its citizens to a National Strategy for Ecologically Sustainable Development The wine growing industry established the Cooperative Research Centre of Viticulture, an organization for research and development. Programs include: sustainable vineyard systems, education, draft chapters on soil, pest, and water management best practices, environmental management customs.
	inaling circle of occurs.
1996	 The Australian wine growing industry launched a 30-year plan" "Strategy 2025, The Australian Wine" recognising the importance of good environmental management
1998	• First wine tourism conference held in Australia brought up issues such as wine tourism conflicting land-use, rapid growth of wine tourism

Date	Development					
	 Winemaker's Federation of Australia developed a "National Wine Tourism Strategy" 					
2000	 The Australian wine growing industry released a 10-year marketing strategy titled 'The Marketing Decade' outlined that Australia's 'clean and green' image is a critical competitive advantage, and cautioned the industry that it must "preserve this image through environmental policies which manage salinity, pollution and urban encroachment". The first National Wine Industry Environment Conference & Exhibition held in Adelaide in November 2000 					
2002	 Committed to continual improvement of its environmental performance, the industry introduced 'Sustaining Success: The Australian Wine Industry's Environmental Strategy' Government funding to support research of sustainable viticulture practices (\$4.5 M) 					
2004	 As trends toward environmental assurance in markets and governments emerged, the Australian Wine Industry Stewardship project (AWIS) was created – a national survey that all winery estates reported their environmental stewardship practices. 					
2007	 Wine Australia: 'Directions to 2025': An industry strategy for sustainable success 					
2009	 Australia's wine industry launches 'EntWine Australia', a voluntary environmental assurance scheme (replacing the AWIS) which requires independent auditing of practices, certification, measuring carbon footprints and ensuring specific standards are met. Goal to have all exports meet the new environmental standards by 2014 Working to ensure EntWine Australia is recognised internationally. 					

Compiled from: Independent Weekly, 2009; Thrupp & Ross, n.d.; Winemakers Federation of Australia (WFA), n.d, 2002 & 2009

2.8.4 European Wine Growing Industries

Wine produced in Europe accounts for approximately 66% of worldwide wine production (European Commission, 2007). There are more than 2.4 million wine producers located within 3.6 hectares in Europe. Unlike how many New World wine industries like the United States, Canada, Russia, China, New Zealand and Australia have experienced growth of wine consumption in the past 10 years, the European Union (EU) wine growing industry has slowed. The EU has had to find new ways to remain competitive as they lose market share to more dynamic wine producers in the New World wine regions (European Commission, 2007).

There is a continuous trend moving horticulture and viticulture production systems from traditional to more sustainable and/or biological. Within the EU, there are many regional programs related to environmental initiatives and commitment. Two examples are the European Integrated Production (IP) Standards and Viticulture Raisonée in Champagne, France.

The European IP standards were developed by the International Organization for Biological Control (IOBC). IOBC is a global organization established in 1955 to promote environmentally safe methods of pest and disease control in plant protection (IOBC, n.d.). The European IP standards include general principles, minimum standards and guidelines for IP of grapes. IP in this standard involves "the economical production of high quality grapes, giving priority to ecologically safer methods, minimizing the undesirable side effects and use of agrochemicals, to enhance the safeguards to the environment and human health" (IOBC, 1999, p. 4).

The 'Comité Inter-professionel du Vin de Champagne' (CIVC) in France provides technical support and advice to the winery estates of the Champagne region. In 2001, the CIVC issued a guide for the regions' integrated pest management (IPM) program titled Viticulture Raisonée (Goode, 2007). The program describes how to work with new, more environmentally conscious viticultural methods. The goals of the Viticulture Raisonée are to reduce the use of chemical fertilizers, pesticides and fungicides by 50% and have the 15,000 regional farmers in France participate (Thrupp & Ross, n.d).

2.8.5 South Africa Wine Growing Industry

The ninth largest wine producer in the world is South Africa, representing 3% of global wine output (WOSA, 2009). In 1998, the industry introduced a voluntary scheme named Integrated Production of Wine (IPW) which focuses on all stages of the wine production process in order to protect the environment and assure wines do not contain substances they should not. It was developed as a response to pressure from export markets to use integrated fruit production methods (Sustainable Wine South Africa (SWSA), 2010). The scheme is administered by the Wine and Spirit Board, whose role is to communicate wine growing-industry-related issues to the Department of Agriculture. The scheme is a pre-requisite for winery estates to be recognized and distributed by many grape and wine buyers and is internationally accepted by FIVS and OIV. Currently 90% of exporting producers (representing 95% of grapes harvested) participate in the scheme (WOSA, 2009). A seal for the IPW system will be available for the 2010 harvest year for consumers to identify wines made from producers who participate in the IPW (IPW, 2010).

Biodiversity guidelines have been integrated into the IPW, in support of an initiative called the Biodiversity and Wine Initiative (BWI). The BWI is a partnership between the wine growing industry and the conservation sector of South Africa to minimise loss of threatened natural habitat and contribute to sustainable wine production (BWI, 2010).

An alliance between wine industry associations and boards called Sustainable Wine South Africa (SWSA) steers the industry's commitment to sustainable wine production (SWSA, 2010).

2.8.6 Canada and Ontario's Wine Growing Industry

In 2008, Canada was 31st largest wine producer in the world, producing 0.0019% of global wine production (The Wine Institute, 2008). There are currently pressures to become more environmentally committed being experienced in the Canadian and Ontario wine growing industries (Martin, 2007; Poitras & Getz, 2006). To date, the only industry-specific initiative created that directly relates to environmental commitment in Ontario is a document and program, Sustainable Winemaking Ontario (SWO) Charter. Other programs and certifications that include elements related to environmental commitment are the CVA's Hazardous Analysis Critical Control Points (HACCP) model, organic and biodynamic certification in Canada, the Leadership in Energy and Environmental Design (LEED) green building rating system, and the Local Food Plus (LFP) Association.

2.8.6.1 Sustainable Winemaking Ontario Charter

In 2003, the members of the Wine Council of Ontario (WCO) first discussed the need for an industry wide proactive environmental program. Such a program was deemed necessary to assist winery estates to comply with rapidly changing regulations and identify and adopt best practices in environmental stewardship (Martin, 2007). Additionally, a major cultural shift was being observed within all businesses as well as noticeable change in public expectations surrounding sustainability and environmental responsibility (WCO, 2010).

In 2007, the WCO launched the program, 'Sustainable Winemaking Ontario: an Environmental Charter for the Wine Industry (SWO) Charter. The SWO Charter was developed with collaboration from stakeholders and interested parties: the Ontario Ministry of the Environment (MoE), the Ontario Ministry Agri-Food and Rural Affairs (OMAFRA), Liquor Control Board of Ontario (LCBO), Grape Growers of Ontario (GGO), the Niagara Escarpment Commission (NEC), the Niagara Peninsula Conservation Authority, the Municipality of Niagara-on-the-Lake, Brock University, the California Association of Wine Grape Growers and the New Zealand and Australia wine industries (Martin, 2007). The New Zealand, California and Australia wine growing industries provided advice since they had launched similar programs successfully in previous years. The SWO Charter is meant to provide benchmarking and tools for assessment and improvement for winemaking, grape growing and wine hospitality. Changes in regulation requirements (such as an amended list of allowable pesticides) and continuous improvement tools outlined in this document are designed to assist the improvement of the industry's environmental performance (Martin, 2007).

The SWO Charter incorporates information on vineyard practices, production facilities and retail management, and a self evaluation workbook. The documents and workshops are tools designed to assist the industry in the continuous improvement of its environmental performance. Information on emerging regulatory changes for winemakers and viticulturalists are identified with references for more information (Martin, 2007).

Part of the SWO Charter is a self-evaluation program that was developed through workshops with winemakers and grape-growers. These workshops identified preferred processes and prioritized the subjects to be included. The evaluation is separated into three documents, one for vineyards, one for winery estate production and one for hospitality management. They each present a series of questions and answers meant to identify a winery estates' current performance for a range of topics and ways to improve over time. Participants receive evaluation reports and rankings within the industry (Martin, 2007).

At the time of this study, there were 32 winery estates participating in the SWO Charter. The program promotes and supports the sharing of best practices and collaboration to raise industry standards. Currently, the WCO is looking at ways to improve the program and increase participation throughout the industry. The WCO is considering including a third party evaluation and incorporating an eco-certification

labelling system that would be recognized for environmental performance by consumers (similar to the Vintners Quality Alliance (VQA) for wine quality) on the labels of participating winery estates (WCO, 2009b).

2.8.6.2 Hazard Analysis Critical Control Points

In 2008, the CVA introduced Canadian wine growing industry specific Generic Good Winery Practices (GWP) and Hazard Analysis Critical Control Points (HACCP) Plan Models. HACCP is a generic model recognized and used worldwide as a systematic preventive approach to food and pharmaceutical safety. The Canadian wine growing industry specific guidelines were developed by the CVA and a technical committee including industry stakeholders, winery estate representatives and food safety consultants. The AAFC provided financial support and a final review was conducted by the Canadian Food Inspection Agency (CFIA) (CVA, 2008).

HACCP prioritizes and controls potential hazards in the production of wine. HACCP helps strengthen public health protection and ensure products are safe from microbiological, chemical and physical contaminants. There are two parts: prerequisite programs and the HACCP plan itself. The first steps to HACCP are the GWPs which are universal steps to control operational conditions, creating a favourable environment for safe wine production (CVA, 2008).

Participation in HACCP is voluntary; however, consumers may require winery estates to have the system in place or at least have implemented the GWPs. There is also no third party verification system directly watching over participants of the system. Applicable legislation does exist for food production and the CFIA or provincial health authorities do conduct inspections. The CVA HACCP program assists facilities in complying with associated regulations (CVA, 2008).

Although HACCP and GWP are not directly designed for environmental practices, many of the practices included have indirect positive environmental impacts. There are programs to assist with upgrading building interiors and exteriors, sanitation and water/steam quality and supply systems; transportation systems, receiving and storage of non-food chemicals and finished product; design, installation and maintenance of equipment; personnel training, hygiene and cleanliness; and sanitation and pest control procedures (CVA, 2008).

2.8.6.3 Organic Certification

There are many definitions for the term organic agriculture but in general it refers to "a system that relies on ecosystem management rather than external agricultural inputs" (Food and Agriculture Organization of the United Nations (FAO), 2010, Frequently Asked Question number 10). It involves eliminating from the agricultural production process synthetic inputs including: fertilizers and pesticides, veterinary drugs, genetically modified seeds and breeds, preservatives, additives and irradiation (FAO, 2010).

The Canadian federal government created the Organic Products Regulations (OPR) in 2009 which set mandatory Canadian Organic Standards (COS). Organic products that use the Canadian organic logo and will be traded across provincial or international borders are now legally required to be certified according to the COS (Canadian Organic Growers (COG), 2009). The Canada Food Inspection Agency (CFIA) is responsible to enforce the COS. Buyers of organic products also may begin to require producers to certify their organic products according to OPR as a market requirement, even within provinces (OMAFRA, 2010a).

There are several accredited certification bodies (CBs) that can certify organic farms and food processing operations in Ontario (OMAFRA, 2010a). The minimum requirement for organic CBs in Canada is to adhere to the COS. If there is a non-compliance of the COS by the producer who is organically certified, the CB can suspend or cancel the certification.

"One of the objectives [of the OPR] is to ensure that the organic integrity of a product is not compromised at any stage of preparation" (OMAFRA, 2009:1). Preparation in terms of an agricultural product such as wine includes processing, storing, inspecting, assembling, pricing, marketing and labelling (OMAFRA, 2009). The OPR outlines general principles and management standards and Permitted Substances Lists (PSL) for organic production systems. The PSL outlines all the substances permitted in the production of an organic product.

Some Canadian winery estates produce organic wine. The CBs that winery estates in Ontario have been certified with include Organic Crop Producers & Processors/ProCert (OCPRO) and EcoCert Canada. Other accredited CBs are: Quality Assurance International (QAI), Centre for Systems Integration (CSI) and the Organic Crop Improvement Association Canada (OCIA) (OMFRA, 2010a). Therefore, if a wine has the symbol of any of these certifications on its label, the consumer may be assured it is certified according to the OPR.

Transitioning to organic production can take 3-4 years before the achievement of certification for production and market sale. Application to a CB must be done 15 months before the harvest of the organic products because farm and facility inspections must occur the year before certification (OMFRA, 2010a).

2.8.6.4 Biodynamic Certification

Biodynamic is a specific type of organic farming which uses the natural resources of the vineyard to grow grapes and goes beyond eliminating the use of pesticides, fungicides, herbicides, synthetic fertilizers, or growth stimulants (Bell, 2010). The term biodynamic is a blend of 'biological' and 'dynamic' actions. Biological refers to principles of organic agriculture and dynamic refers to a 'spiritual science', which "considers the role of ethereal and cosmic forces on the individuality of the farm" (Frick, 2010, para. 3). Biodynamic farming uses unique plant, animal and mineral arrangements and rhythmic influences from the sun, moon and planetary alignments in addition to organic practices like crop rotation and composting. Requirements for organic certification are typically exceeded by biodynamic certifications (Bell, 2010). Demeter is an international certification body that oversees biodynamic agriculture. A vineyard must have obtained organic certification prior to attaining Demeter certification and it can take two years to achieve (Demeter International, 2010). Currently there is only one winery estate in Canada, Southbrook Vineyards, which has the Demeter biodynamic certification.

2.8.6.5 The Leadership in Energy and Environmental Design (LEED) Green Building Rating System

The United States Green Building Council introduced the Leadership in Energy and Environmental Design (LEED) green building rating system in 1998. In 2003 the Canada Green Building Council (CaGBC) was given permission to adapt their own version (CaGBC, n.d.). LEED is an internationally accepted standard for design, construction and operation of buildings that have a high environmental performance. It is also a third-party certification program which provides building owners and operators tools to increase their buildings' environmental performance. The program is organized around six areas of performance: sustainable site development, water efficiency, energy efficiency, materials selection, indoor environmental quality and innovation and design process. Buildings are allotted points based on these themes which are added to qualify into one of four certification levels: Certified (lowest), Silver, Gold and Platinum (highest) (CaGBC, n.d.).

There are a growing number of winery estates in North America that have earned the LEED certification for one or more of their buildings. In 2009, over a dozen winery estates were registered in the LEED certification process (Nigro, 2010). A handful of winery estates in Ontario have integrated the LEED certification into their building designs. Winemaking facilities that are LEED certified have integrated initiatives such as: geothermal energy systems, glass and translucent walls to let in natural light cutting down on energy use, furniture certified to be low in volatile organic compounds, comprehensive water management plans, capturing of storm runoff, drainage ditch lined with wetland plants that break down pollutants, wastewater cleaned by filtering through a sand and reed bed wetland system and organic and/or biodynamic certification (Nigro, 2010).

The up-front capital cost is a leading barrier to attaining LEED certification. Other barriers include: manufactured building components that meet LEED standards may be less available, meeting the LEED requirements necessitates specialized consultants and the LEED audit add costs to the project (Greg, Alevantis, Berman, Mills, & Perlman, 2003). The main benefit is the savings that result from a building's higher performance and lower operational costs once it is built (Greg *et al.*, 2003).

2.8.6.6 Local Food Plus

Local Food Plus (LFP) is a non-profit organization that certifies farmers and processors that produce local sustainable foods. LFP also connects certified members with consumers who want their products such as municipalities, universities and colleges, school boards and hospitals. Farmers and processors who become certified have reduced or eliminated the use of pesticides, care for their animals, conserve water and soils, protect wildlife habitat, provide safe and fair working conditions, reduce energy use and sell locally wherever possible (LFP, n.d.). An independent, third party inspection is conducted by an inspector accredited by the Independent Organic Inspectors Association and additionally trained in LFP standards (LFP, n.d.).

2.9 Summary

The above literature review provided an overview of current research on environmental commitment in SMEs and in particular those in the wine growing industry. This information supplied a background for the development of this study's methodology and questionnaire.

The following chapter discusses the research setting which provides a basis for the rest of the study.

Chapter 3: Research Setting

The following chapter will outline and describe the study's research setting. The research setting provides background information about where the study takes place. The history of the wine growing industry will be outlined and its structure will be discussed including the industry associations that support its recent success.

3.1 Winery Estate and Wine Growing Industry Defined

In this study, the term 'winery estate' encompasses several stages in the lifecycle process to produce wine. The majority of winery estates are vertically integrated, managing both vineyards and winery operations (Silverman *et al.*, 2005). This paper therefore addresses the entire wine making process from the grape to the glass. Environmental commitment initiatives can be used in vineyard practices where grapes are produced, in the harvest procedures, during the winery operation and finally at the retail level where the product is sold. Sales of wines produced in Ontario can be sold at a winery estate's retail shop, within Ontario at Liquor Control Board of Ontario (LCBO) retail stores and internationally. Environmental initiatives prescribed by the LCBO and in international markets are discussed further in this chapter. Figure 3.1 identifies the components of a winery estate.

Figure 3.1: Operations of a Winery Estate



Adapted from: Ziraldo, 2000, p. 11

A wine growing industry is defined in this paper as a composite of all the winery estates and their entire process from grape to glass. All winery estates are actively involved in the tourism business because it is a significant method to market their wines (Carlsen, 2004; Barber *et al.*, 2009). Some winery estates have established restaurants within the property to market wines with a food and wine (culinary) experience (Ziraldo, 2000).

3.2 The History of the Canadian Wine Growing Industry

Wine has been made in Canada for over 200 years. Ontario passed prohibition of alcohol in 1916 which restricted the development of the Canadian wine industry as did the two world wars and consumer demand for fortified and sweet wines. In addition, it was found that traditional European grape varieties (*Vitis vinifera*) did not grow successfully in the Canadian climate so wine makers focused on native Canadian grape varieties that produce decent port- and sherry-styled wines. In 1927, the prohibition was lifted but the production, distribution and sale of alcoholic beverages were controlled by the provincial governments. Ontario had also stopped issuing any new wine licences in order to better regulate alcohol in Canadian society (CVA, 2005).

Beginning in the 1960s, consumers began to demand drier and lower alcohol table wines instead of the sweet, fortified ports and sherries. This encouraged considerable improvements in wine-making technology, access to better grape varieties and disease-resistant grape clones and systematic research into viticulture (CVA, 2005).

Changes in the industry continued to occur in the mid 1970s. In 1974, a license suspension from the 1927 prohibition was lifted allowing more competition to plant, grow and produce wine. Winery estates started to plant traditional European grape varieties, and had success when grown with enhanced wine making practices (CVA, 2005).

Canada's wine industry continued to expand in the late 1980s and early 1990s highlighted by two additional events. The first was the introduction of the Canada-United States Free Trade Agreement (FTA) in 1988 which removed several trade restrictions between Canada and the United States Canada's wine industry could no longer be protected by domestic preference on their wines. This instigated a federal and provincial funded program to replant all native grape varieties with *V. vinifera* varieties. The second event also occurred in 1988 when an organization of vintners called the Vintners Quality Alliance (VQA) was formed to assist consumers in identifying wines made entirely from Canadian grown grapes. Due to the VQA, Canadian wines have increased their stature domestically and internationally and it is considered one of the most significant Canadian wine-related accomplishments of the 1980s (WCO, n.d.).

In recent years, the Canadian wine growing industry has increased its contribution to the Canadian economy. Between 1997 and 2005, the Canadian wine growing industry's gross domestic product (GDP) increased annually at an average rate of 7.1% (Hope-Ross, 2006). Between 1998 and 2007, the number of people employed by the wine growing industry in Canada had an average annual increase of 8.2% from 1,345 to 2,962 (Industry Canada, 2010). The growth of domestic wine consumption has outperformed beer and spirit consumption in recent years. The domestic per capita annual consumption of Canadian wines increased from 11.3 litres in 2000 to 14.6 litres in 2007 (Agriculture and Agri-Food Canada (AAFC),

2009a). While the Canadian wine growing industry continues to flourish, Canadian domestic consumption is still relatively low when compared to the domestic consumption of major wine-producing countries such as Italy or France (AAFC, 2009a).

3.3 Wine Growing Industry Structure

In 2008, there were approximately 300 Canadian winery estates (Industry Canada, 2010) with the majority located in Ontario and British Columbia (B.C.) (AAFC, 2009a). A smaller number of winery estates can be found in Quebec and the Maritimes (Nova Scotia primarily). Most of Canada's wine (80%) is produced in Ontario's Niagara region (AAFC, 2009a).

There are two categories for Canadian-made wines. The first category is composed of mid-topremium-priced wines produced from 100% Canadian grapes. These wines primarily hold the VQA designation which clarifies geographical indications, appellations, and vintage information on the wine label (see section 3.4.2 for further details on the VQA designation). The second category incorporates low-tomedium-priced wines which are a blend of Canadian and imported grapes. This category of wine is referred to as 'Cellared in Canada' (CIC).

Winery estates are businesses focused on wine produced from the grapes grown primarily in their own vineyards. These are generally independently owned winery estates, small to medium in size (0 - 499 employees) (AAFC, 2009a) that produce only VQA wines. There are also wine growing corporations with facilities that produce both VQA and blended CIC wines (AAFC, 2009a). These businesses vary in size based on the number of employees which can also reflect the amount of annual wine produced. The person(s) involved in making decisions related to environmental commitment varies with the size of winery estate. Table 3.1 shows the typical business sizes and people who are usually involved in decisions related to environmental commitment.

Winery Size	Number of Employees				
Micro	0-4				
Small	5 — 99				
Medium	100 - 499				
Large	500 +				

 Table 3.1: Winery Estate Size by Number of Employees and Persons Involved in Environmental Decisions

 Winery Size
 Number of Employees

Source: AAFC, 2009a

Industry Canada defines businesses with 0 - 499 employees as a small and medium enterprise (SME) (Industry Canada, 2010). This paper therefore focuses on businesses in this category as the majority of winery estates in Ontario are of that size.

Some winery estates are owned by large wine growing corporations; however, the VQA wines that they produce are grown and processed in separate vineyards and winery facilities from their non-VQA wine

production facilities. The direction of environmental commitment initiatives at these winery estates is conducted primarily by the presiding designated vineyard manager and winemaker (Key informant #1 & #2, personal communication, May 2009).

3.4 Wine Growing Industry Associations

There are a number of wine growing industry associations. Some are federal, some provincial and some are regional associations that represent different groups of stakeholders and provide several specific services including support and guidance for federal, provincial or regional regulations and industry standards. Membership to these associations is voluntary and may require the winery estate be located in a particular region in order to participate. These associations can play a significant role to motivate and promote environmental commitment. A number of these associations are described in the following subsections.

3.4.1 Canadian Vintners Association

The Canadian Vintners Association (CVA) is a federal organization dedicated to the promotion and wellbeing of Canada's wine sector (CVA, 2008). The association represents and supports the interests of their member winery estates by presenting their issues to federal government policy makers. The CVA also provides information and advice on government policies, programs and legislation. It serves as a source of information on the Canadian wine growing industry for members, consumers and general public worldwide. Approximately 90% of Canada's wine production and exports are represented by the CVA (CVA, 2008).

In 2008, the CVA developed a Hazard Analysis Critical Control Points (HACCP) program for food safety developed specifically for the wine growing industry. The program assists winery estates to prioritize and control potential hazards during the production of wine. Further discussion of the HACCP program was provided in section 2.8.6.2.

3.4.2 Vintners Quality Alliance

Members of the Vintners Quality Alliance (VQA) voluntarily comply with agreed upon rules set out in 1988. In 1999, the Proclamation VQA Act was passed by the Ontario provincial government introducing legal consequences if members violated the rules (WCO, n.d.).

The official body that monitors compliance with the VQA Act for Ontario is VQA Ontario (VQAO). The Act sets standards for the quality of wines that have VQA on their label and it regulates the terminology used. Wines must pass a laboratory analysis and taste test supervised by the Liquor Board of Ontario (LCBO) before it can be labelled and marketed as a VQA wine (CVA, 2005). In Ontario there are two sets of guidelines distinguishing the origin of the grapes: a provincial designation and a geographical designation.

In order to use the word 'Ontario' on a label, the provincial designation requires 100% of the grapes used to produce the wine be grown in Ontario; the grape varieties must be approved as *V. vinifera*

and/or French hybrids; and the wine must have been entirely fermented, processed, blended, finished and bottled in Ontario (WCO, n.d.).

The geographical designation (also known as the appellation) covers the rights to identify the specific viticultural area (the designated wine grape-growing region) on the labels. In order to state the appellation in Ontario on the label, the wines must have been produced exclusively from one or more approved *V. vinifera* grape varieties, at least 85% of the grapes used must have been grown in that viticultural area; and the wine must have been fermented, processed, blended, finished and bottled entirely in Ontario (WCO, n.d.). Wines can be further labelled with the vineyard where they originated; however, must comply with additional criteria.

The Cellared in Canada (CIC) wine designation is also regulated by the VQA. Canadian wine producers are allowed to import grapes grown in other countries to produce wines under their own wine label. In Ontario, wine designated as CIC must contain at least 30% local Ontario grapes and 70% can be made from imported grapes (WCO, n.d.).

The VQA certification provides an assurance for consumers of regulated production practices, quality and labelling integrity and has become an important marketing tool for the industry (AAFC, 2009a).

3.4.3 Wine Council of Ontario

The Wine Council of Ontario (WCO) is a non-profit, provincial industry association that establishes policy, directs marketing and leads future initiatives for the Ontario wine industry. The WCO represents the Ontario wine industry to grape growers, the LCBO, Ontario and Federal governments and their agencies. All commercial producers of Ontario wine are eligible to be a member of the WCO as long as their operations are located in the province. There are currently 82 winery properties that are members of the WCO representing more than 99% of Ontario sales and production (WCO, 2009c). Winery estates that produce VQA and/or CIC wines are eligible to be WCO members.

In 2007, the WCO created the Sustainable Winemaking Ontario (SWO) Charter to the Ontario wine industry which had been in development since 2003. It is a self-assessment workbook and provides benchmarking and tools to assist winery estates in integrating environmental initiatives into their processes. The SWO Charter was discussed further in section 2.8.6.1.

3.4.4 Grape Growers of Ontario

The Grape Growers of Ontario (GGO) represent all licensed Ontario grape growers. A primary function of the GGO is to negotiate the prices of grapes. They support the growers' interests and ensure their needs are met within the industry. The GGO also provides grape growers with current information from government, media and the community and acts as their voice to the industry. They work to expand the domestic and international markets for Ontario grapes and provide benefits and services to assist the grower members in producing the highest quality grapes (GGO, 2005).

3.4.5 Regional Wine Growing Industry Associations of Ontario

There are two regional associations that help disseminate information about more specific regional issues, regulations and subsidy programs regionally. The Prince Edward County Wine Association (PECWA) and the Southwestern Ontario Vintners Association (SWOVA) (Lake Erie North Shore and Pelee Island regions) represent their respective regional industries and work to promote the wines of each region. Both associations facilitate the sharing of knowledge and experiences in viticulture (the science, production and study of grapes in a vineyard) and winemaking techniques.

3.5 The Ontario Wine Growing Industry

The Ontario wine growing industry is expanding while many agricultural and manufacturing industries in Canada are shrinking (WCO, 2009c). The production of wine preserves agricultural land while also creating a relatively new tourism destination. Total wine sales in Ontario for 2007/2008 (this includes domestic and foreign wine sales) was approximately \$1,818 million which was a 5.8% increase over the previous year (Statistics Canada, 2009). This means that wines produced in Ontario consisted of approximately 30% (\$545 million) of the total wine sales in Ontario in 2008.

In 1999, the establishment of the VQA Act had a significant positive effect on the Ontario wine growing industry. VQA wine sales in Ontario have tripled in the last ten years growing from 2.5 million litres in 1996-97 to 9.9 million litres (\$2 billion in sales) in 2006-07 (AAFC, 2009a). The transformation of the wine growing industry dramatically improved the quality of wine produced, and Ontario wine is now considered among some of the best in the world. In 2004-05 Canada's wines won 121 awards in ten international wine competitions (WCO, 2004).

3.5.1 The Ontario Wine Growing Regions

With adequate water, sunshine and nutrient rich soil, wine grapes will grow in a large variety of geographical locations. Areas with warm, dry summers and mild winters are the best for growing grapes. Grapevines need a period of winter dormancy; however, if there is a long period of very cold temperatures, grapevines may suffer and potentially die. The growing season must be long enough to allow grapes to mature, but very humid conditions can result in diseases.

Ontario has four viticultural areas (also known as regional appellations): The Niagara Peninsula, Lake Erie North Shore, Pelee Island and Prince Edward County.

Figure 3.2 shows a map of Southern Ontario and includes the locations of each wine region as well as the number of winery estates in each region.

Figure 3.2: The Wine Growing Regions of Ontario and Number of Winery Estates



Adapted from: Vintners Quality Alliance Ontario, 2010

A complete list of Ontario winery estates and their regions is in Appendix A.

3.5.1.1 Niagara Peninsula

Eighty percent of Canada's grape growing volume is grown in the Niagara Peninsula viticulture area (AAFC, 2009a). There are seventy-three (73) winery estates located in this region. Bordered by Lake Ontario to the north and the Niagara Escarpment to the south, this region has an ideal climate for viticulture. Offshore winds from Lake Ontario produce a constant flow of air while the Niagara Escarpment plays a key role, cycling back offshore winds from the lake. This flow prevents cold air from settling in lower-lying areas during the coldest months of winter, creating a warming effect on the Niagara Peninsula. In the spring, cool breezes from the winter-cooled lake prevents early fruit bed development by warmer air until the constant warm summer weather begins. Grape ripening is slowed by this at the beginning of the growing season and then in the fall the air keeps the area relatively warm which gives the grapes more time to grow (CVA, 2005).

The Niagara Peninsula incorporates Niagara-on-the-Lake which is located below the ridge of the Niagara Escarpment and continues to the Niagara River and Lake Ontario. Niagara-on-the-Lake is a hub of Ontario wine culture and a recognized wine country destination.

3.5.1.2 Lake Erie North Shore

The Lake Erie North Shore Region is a suitable grape growing climate that has over 500 acres of vineyards. There are seven (7) winery estates located in this region. The area is located along the bow-shaped north shoreline of Lake Erie stretching between Amherstburg and Leamington, Ontario. The region

benefits from southern exposure and a moderating effect from Lake Erie since is it the shallowest of the Great Lakes which has the warmest surface water temperature in the area. This wine region also benefits from having the most sunshine hours in Canada (VQA, 2010).

3.5.1.3 Pelee Island

Pelee Island is one of Canada's most southerly points allowing it the longest growing season of any other wine growing region in Canada. The island has 500 acres of vineyard, located approximately 25 kilometers south of the mainland. There is only one (1) winery estate located in this region which, in 1866, was the first commercial wine growing business in Canada, making it the oldest wine region in the country. Similar to many vineyards in Canada in the 1980s, the vineyards were replaced with *V. vinifera* vines (VQA, 2010).

3.5.1.4 Prince Edward County

The most recent addition to Ontario's wine regions is Prince Edward County. There are eighteen (18) winery estates located in this region. It is located 200 kilometers east of Toronto, bordering Lake Ontario and the Bay of Quinte. The area is almost entirely surrounded by water which is ideal for taking advantage of winds from the Bay of Quinte that moderate the air temperatures (VQA, 2010).

Since 2000, the number of vineyard acres in this region has increased from 20 to 600 making the county the second largest viticultural area in Ontario. The increase in new winery estates in the region is due to the unique limestone soils that are very good for growing *V. vinifera* vines. The climate is also favourable for cool climate ripening (VQA, 2010). There are eighteen winery estates located in this region.

3.6 Federal, Provincial and Municipal Regulation That Govern Ontario Winery Estates

There are a number of federal, provincial and municipal regulations that winery estates must comply with in order to conduct business. A number of these will be described in this section to provide a general understanding of the regulations that exist.

With so many requirements and approvals required in order to operate, winery estates spend a great deal of time making sure they are compliant. Many of these authorities will visit winery estates periodically to verify their compliance (AAFC, 2009a).

3.6.1 Federal

All liquor sold within Canada is controlled by a provincial liquor board. The Liquor Control Board of Ontario (LCBO) controls all distribution and sale of alcoholic beverages in Ontario. The LCBO stipulates requirements for the products they list for distribution and sale. A handful of Ontario winery estates have a permit to operate a limited number of establishments which allow them to sell strictly their own wines. Aside from the sale of their wines on site and online within Ontario, winery estates that are not listed with the LCBO have no other means to distribute their wines. As a result, there is significant pressure to adhere to the stipulations made by the LCBO (AAFC, 2009a).

There are many additional criteria that winery estates must adhere to in order to be eligible to be listed at the LCBO (WCO, 2009a). For example, the LCBO has introduced an Environmental Sustainability Strategy that incorporates initiatives such as waste reduction, opening a few new stores with LEED green building certification and launching a 'Buy Local' marketing campaign. One specific initiative that they plan to establish in the near future is a required standard glass weight for wine bottles. This is an environmentally conscious initiative that will reduce the amount of glass used and recycled as well as reducing the amount of gas used during production and transportation. For winery estates that currently do not use bottles in that weight range however, it imposes new challenges to find a bottle supplier that can produce the adjusted weight-bottle and means implementing changes to their production and bottling processes.

The Canadian Food Inspection Agency (CFIA) and the LCBO oversee the Food and Drugs Act which stipulates that alcoholic beverages must conform to Canadian standards for product content such as alcohol content and toxins. They also oversee the Consumer Packaging and Labelling Act which regulates compositional labelling, net quantity and standardized container size requirements of alcoholic beverages (AAFC, 2009a).

The Canada Revenue Agency and Department of Finance oversee the Excise Act which provides the structure for tax revenue generated by alcohol sold in Canada. When winery estates start up they must request a business number, apply for an excise tax license and various other business related requirements, permits and approvals in relation to Federal and Provincial taxes (AAFC, 2009a).

3.6.2 Provincial

As discussed in section 3.4.2, the VQA Act defines standards for winery estates who wish to carry the VQA designation on the labels of their wines. These standards include rules of origin, manufacturing, bottling and labelling of wines made from 100% provincially-grown grapes. The Ontario Wine Content and Labelling Act includes standards for the minimum content and labelling requirements in Ontario. For example, in order to be allowed to use the title Icewine on the label of their late harvest wine products, a winery estate must adhere to specifications for Icewine production and labelling standards (AAFC, 2009a). The most dominant of the Icewine standards is that all grapes must naturally frozen on the vine, be harvested at a temperature of -8° Celsius or below and pressed immediately after picking in a continuous process. (Ontario Regulation, 1999).

The Ontario Farm Products Marketing Commission (OFPMC) requires winery estates to have a license to process grapes and tender fruit. The Ontario Ministry of Agriculture, Food and Rural Affairs (Ontario Ministry of Agriculture, Food and Rural Affairs, OMAFRA) require approvals for the production and management of solid waste at winery estates (Martin, 2007).

The Ontario Ministry of Environment (MoE) require winery estates to acquire approvals for water use, wastewater disposal, air emissions, solid waste disposal, storage and management of hazardous waste and the disposal and management of solid waste (Martin, 2007).

3.6.3 Municipal

Local municipalities and agencies require planning approvals for building design and renovations. Regional municipalities regulate waste, water and wastewater management methods used by winery estates. The Niagara Escarpment Region (NER) has been identified as a World Biosphere reserve. In order to establish a winery in this region one must receive approval from the Niagara Escarpment Commission (NEC) (Martin, 2007).

Local conservation authorities and the Ontario Ministry of Municipal Affairs and Housing have power under the Conservation Authorities Act to mandate environmental protection of the local region. These bodies are primarily concerned with watershed and water management (Martin, 2007).

3.7 Cost Sharing Programs

Winery equipment and initiatives can be very expensive for most winery estates. There are a few programs available to assist winery estates with these costs.

A federal-provincial-territorial initiative called the 'Growing Forward' framework was introduced in 2008 to invest and develop several programs to support the profitable and innovative agriculture, agrifood and agri-based products industry in Canada (AAFC, 2009b). 'Growing Forward' supports the development of best practices in four key areas: environment and climate change; food safety and traceability; business development; and bio-security (OMAFRA, 2010a). The following plans and programs have been initiated because of the 'Growing Forward' framework. They are some of the financial incentives provided by the government that exist to encourage farmers to implement environmental initiatives.

3.7.1 Environmental Farm Plan

The Environmental Farm Plan (EFP) was created in 1993 to help Ontario farmers adopt more environmentally sustainable practices. The Ontario farm community helped to develop the EFP and has been involved in its development since the beginning. The four organizations involved in leading the EFP are called the Ontario Farm Environmental Coalition (OFEC). The OFEC consists of the Ontario Federation of Agriculture, the Christian Farmers Federation of Ontario, the Ontario Farm Animal Council and the Agricultural Groups Concerned about Resources and the Environment (AGCare).

Agricultural producers who want to increase their farm's environmental awareness can voluntarily prepare an EFP assessment. Information sessions, workshops and one-on-one training, and technical assistance are available to assist farmers in highlighting their farms' environmental strengths and identify areas of environmental weakness. They then develop strategies and an action plan in order to make improvements. There are 28 categories to increase environmental awareness including pesticide storage improvement, wetland for winery runoff control, irrigation management and wildlife damage (OMAFRA, 2010a).

Environmental cost-share programs are available to assist farmers with the implementation of projects. Each producer is eligible for \$30,000 over 4 years. Since April 2005, 17,000 environmental improvement projects have been funded (OMAFRA, 2010a).

The EFP is delivered locally in part by the Ontario Soil and Crop Improvement Association (OSCIA) and technical expertise is provided by OMAFRA. Funding for the EFP is through Growing Forward, supported by Agriculture and Agri-Food Canada (AAFC) and OMAFRA, under the Best Practices suite (OMAFRA, 2010a).

3.7.2 Food Safety and Traceability Initiative

The Food Safety and Traceability Initiative (FSTI) is another program offered by OMAFRA to encourage agriculture producers to implement food safety and traceability initiatives. It is also funded through the Growing Forward commitment. Any farm that produces and/or processes food products for animal and/or human consumption is eligible to apply for the FSTI (OMAFRA, 2010b). FSTI provides 75% reimbursement of eligible expenses up to a maximum of \$20,000 to:

- 1. implement written food safety programs;
- 2. implement a working traceability system;
- 3. assist in the purchase and installation of equipment that improves food safety or traceability; and,
- 4. train staff to increase the adoption of food safety and traceability.

(OMAFRA, 2010b)

This program can be beneficial to winery estates by, for instance, tracing a wine bottle of poor quality. The location of the grapes in the vineyard or a particular barrel with which the wine was fermented and aged can be traced and the source of the problem can be remedied (OMAFRA, 2010b).

3.7.3 Canada-Ontario Farm Stewardship Program

The Canada-Ontario Farm Stewardship Program (COFSP) encourages producers to improve management of agricultural operations by adopting best management practices (BMPs) through voluntary cost-sharing. The program promotes implementing new BMPs that contribute to water and air quality, improve soil productivity, enhance wildlife habitat and/or result in energy conservation (Eastern Ontario AgriNews, 2009).

Ontario agricultural producers need to satisfy certain program eligibility criteria in order to take advantage of the cost sharing initiative. Once satisfied, the producers may implement environmental projects specified in their EFP Action Plans. AAFC and the OMAFRA support both EFP and COFSP through Growing Forward under the Best Practices Suite (Ontario Soil and Crop Improvement Association, 2009).

3.8 Summary

The Canadian wine growing industry has gone through major transition over the past few decades. Over this quarter century, new industry legislation and programs have been created to enhance the industry's quality and safety. As the largest wine producer in Canada, Ontario is an excellent case study of an agri-food based industry in transformation.

The next chapter will go on to outline the methodology of this thesis and how the influencing factors identified in the literature review were tested and analyzed in relation to their influence in the wine growing industry of Ontario.

Chapter 4: Methodology

This chapter outlines the methodology, reasoning and processes that were followed during this study. A multi-method research strategy was chosen in order to identify the significant factors and their influence on the level of environmental commitment.

4.1 Purpose and Objectives of Study

The purpose of this thesis was to study the level of environmental commitment and the factors that influence the implementation of environmental practices within the wine growing industry of Ontario. The study is intended to build on past research related to environmental management, business and SME decision making criteria that has already been conducted within a variety of industries. It also looks at Stakeholder Theory and Resource Based Theory as a theoretical base to identify factors that would be tested in the study's questionnaire.

4.1.1 Objectives of Study

The following four objectives were explored in this research:

- Review the current business and environmental management literature to determine factors that influence environmental commitment in SMEs and to examine them in the context of the Ontario wine growing industry;
- Identify the number, ownership, age, size, management structure and location of winery estates in Ontario and establish the number and type of environmental initiatives implemented;
- Explore what factors influence the decision to become more environmentally committed in the Ontario wine growing industry; and,
- 4. Identify recommendations to increase the level of environmental commitment in the Ontario wine growing industry.

This study informs and offers advice that could improve the guidelines put forth by the government and industry associations about environmental performance. In addition, this research discusses potential strategies that can encourage winery estates to implement environmental practices.

4.2 Case Study Approach

The factors that are observed to influence the environmental commitment level of a SME using Stakeholder and Resource Based Theory are applied in this case study of the wine growing industry of Ontario. Case studies are conducted to explore whether a theory is generally applicable to all types of organizations/industries or to determine whether, under certain conditions, some modification is required (Brotherton, 2008). Case studies can contribute to the knowledge of individual, organizational, social and political phenomena.

During this study, both deductive and inductive approaches were used to expand understanding of the factors that affect environmental commitment in the wine growing industry of Ontario.

The aim of deductive methodology is to confirm arguments and assumptions based on theories and proven facts (Lannon & Klepp, 2009). Theories and models identify what factors influence organizations to become more environmentally committed. A deductive methodology is usually conducted in conjunction with quantitative research.

This case study also utilizes an inductive approach in order to investigate unique factors, specific to influencing environmental commitment within the wine growing industry of Ontario that may not have been identified in the theory. The aim of an inductive methodology is to observe a case's condition within a specific context rather than from a predetermined theoretical basis (Lannon & Klepp, 2009). An inductive methodology is usually conducted in conjunction with qualitative research.

4.3 Research Methods

This study uses a multi-method approach that includes qualitative and quantitative methods to determine the factors that influence environmental commitment in the wine growing industry. A multi-method approach is used because it offers greater flexibility than a single method can provide (Sommer & Sommer, 2002). Individually, each method has limitations, but they are not always the same limitations. Combining several methods can fill gaps and can often bring to light diverse aspects of the subject that may be missed when only one method is used. A multi-method approach also increases the validity of the findings and the understanding of the phenomena being examined since individual methods can be compared and results can be corroborated from different perspectives (Sommer & Sommer, 2002).

The research approach used in this thesis is exploratory, descriptive and applied. It is exploratory because it brings to light the factors that influence environmental commitment in the wine growing industry in Ontario and generates insight and understanding into the subject. It is descriptive because it illustrates the general level of environmental commitment within the wine growing industry of Ontario. The research is applied because it is concerned with finding practical solutions to real-life circumstances (Brotherton, 2008).

4.3.1 Quantitative Research

Quantitative research focuses on collecting data that can be used to conduct statistical and numerical analysis (Wellington & Szczerbinski, 2007). It is used to test, validate and confirm theory and hypotheses using precise measurement of variables and provides causal explanations (Munhall & Chenail, 2008).

This research approach is a systematic investigation of quantifiable properties such as the organization size, frequency of occurrence, phenomena and their relationships. The weakness of quantitative

research is that it is limited to only providing facts (Brotherton, 2008). The quantitative data provides background statistics that assist to set the scene for the more in-depth qualitative portion of the study.

4.3.2 Qualitative Research

Qualitative research is used to understand the meaning behind experiences and responses (Munhall & Chenail, 2008). It is generally based on the examination and interpretation of behaviour and provides insight into an individual's or community's experiences relating people's attitudes, opinions and perspectives.

Qualitative research is valuable because it gathers an in-depth understanding of behaviour and explores the reasoning that governs such behaviour. It can also be used to answer questions about relevance, unintended effects and the impact of various influencing factors. The advantage of using a qualitative method in research is that it allows for a larger diversity in responses and it has the capacity to adapt to new developments or issues during the research process. Qualitative research is usually related to the examination and interpretation of a case (Sommer & Sommer, 2002). A disadvantage of conducting qualitative research in interview form as the only method is that the information gathered is based on the completeness of the researcher's notes, observations and their interpretation of the respondent's answers (Sommer & Sommer, 2002).

4.3.3 Data Collection Methods

As both quantitative and qualitative research methods are being used, a two-part questionnaire was chosen to collect the data. Studies that gather data on SMEs are often inconclusive because of low response rates (Merrit, 1998) or respondents have difficulty with interpretation of the answers to questions asked (Smith & Kemp, 1998). For these reasons, data were ascertained using the two-part questionnaire as a guide, while the researcher conducted one-on-one, semi-structured interviews with each study participant. Casual observation was used during the in-person interviews and the opportunity was given to respondents to comment freely on any issues raised during the interview.

In order to gather quantitative data, the first part of the questionnaire was a survey that included close ended and five-point Likert scale questions suited for statistical analysis. Qualitative data were gathered in the second part of the questionnaire through open-ended questions.

4.3.3.1 Questionnaires

Questionnaires "are made up of a series of written questions on a topic" and are used for "systematic gathering of information about people's beliefs, attitudes, values, and behaviour" (Sommer & Sommer, 2002: 136). The benefit of questionnaires is that they are generally efficient in terms of time and effort for both the researcher and the respondents (Sommer & Sommer, 2002). Data can be collected from a large group and assist in determining prominent themes related to the research issues (Sommer & Sommer, 2002).

Quantitative and qualitative aspects were both incorporated into the questionnaire by how the questions were written. To gather quantitative information, closed-ended questions include multiple choice and rating prescribed items in a list. As well, the respondent was asked to choose between several alternatives. Close-ended questions were chosen as part of the questionnaires for the benefit of easily comparing responses from a number of respondents and gathering quantifiable organizational data of the wine growing industry in Ontario such as the size and number of environmental initiatives that winery estates have implemented. To gather qualitative information, open-ended questions were included in order to understand underlying reasons for people's behaviour, attitudes, preferences and/or opinions. Open-ended questions allow respondents to provide their own answers in their own words and avoid bias and suggested answers from the questions (Sommer & Sommer, 2002).

Rating questions were used to measure the attitude and/or opinions of the respondents toward the level of significance the various influencing factors were on the level of environmental commitment. A Likert rating scale with five degrees of agreement (1 = strongly disagree to 5 = strongly agree) was chosen because of its simplicity and because it is one of the most commonly used scoring systems to explore intermediate positions between positive and negative responses. Rather than asking a yes or no question, the scale invites respondents to indicate the 'extent' to which they find an item important (Brotherton, 2008). They are used to rate people's judgment of objects, events, or other people (Sommer & Sommer, 2002). Reliability of attitude scales has been questioned in research, particularly because people's opinions and attitudes are often complex and multi-dimensional (Sommer & Sommer, 2002). This is the reason why both close-ended, rating and open-ended questions were included in the questionnaire for this study.

4.3.3.2 Interviews

Interviews allow the exploration of complex feelings and attitudes, give the researcher the opportunity to pursue ideas and themes, and encourage more specific and detailed answers from respondents (Sommer & Sommer, 2002). They are used to assess beliefs and opinions and focus on personality characteristics rather than on content. The disadvantage of interviews is that they can be subject to personal interpretation and bias depending on the interviewer. As well, they are time consuming and often costly as the interviewer needs to travel to each respondent or pay long distance telephone fees.

There are three types of interview styles, structured, semi-structured and unstructured. In structured interviews, the questions are formulated and put in a specific order ahead of time. Unstructured interviews do not have questions in a set order. The interviewer has the general topic in mind and may have some specific questions, but overall the interviewer's goal is to explore the respondent's reasoning and discover factors that may not have been thought of previously (Sommer & Sommer, 2002). Semi-structured interviews ensure that comparable and reliable information is gathered and allow respondents the freedom to express their views in their own way (Sommer & Sommer, 2002).

A semi-structured interview style was used in this research. There were a set number of questions included in the questionnaire however respondents were allowed to elaborate on their answers as they went through in the questionnaire. The semi-structured interview style was chosen because it allowed ascertaining similar data from every respondent as well as allowing them to give additional details and opinions that might not be gathered from a structured questionnaire.

4.3.3.3 Casual Observation

Casual observation was used in combination with the other data collection methods. This method provides an increased depth and context of the participant's responses. Personality, tone and body language can offer insight into a person's feelings and attitudes on a subject. The disadvantage to casual observation is that it is based on personal interpretation and perception of a situation; hence it lacks reliability (Sommer & Sommer, 2002). Therefore it was only used in combination with the other methods described above.

Questionnaires, interviews and casual observation were all used for the collection of data in this study.

4.4 Research Process

This section will outline in detail the methods that were used during each phase of this research study. Figure 4.1 outlines the phases of the study.





There were several stages involved that are described including a literature review, development of the questionnaire, gathering data, data analysis, discussion and conclusions, and recommendations. This

section will illustrate how primary and secondary information and qualitative and quantitative methods were used throughout the study.

4.4.1 Phase One: Literature Review

The purpose of a literature review is to examine the existing environmental management and business research to discover the factors that influence environmental commitment in SMEs, and then relate it to the Ontario wine industry. The literature review was conducted to give the researcher an overall understanding and insight on the subject. Books, academic journals and articles, trade and industry pamphlets and websites were reviewed in this stage of the research study.

The literature review resulted in the determination of theories relevant to the research topic, gaps in the current literature and an understanding the context of this study's research objectives. The discovery of new relevant information and facts assisted in formulating ideas and methods to improve the project. It also provided an understanding of the factors that influence environmental commitment in SMEs in various industries including wine industries and helped compose appropriate questions for the primary data collection phase.

4.4.1.1 Key Informant Interviews

Key informant interviews were performed during the primary data collection between May 1st and August 15th, 2009. These interviews were conducted with knowledgeable people in the industry including a chair on the WCO, a VQA representative and a marketing consultant for winery estates in Ontario. These three people were chosen as key informants because they are each members of the Ontario wine growing industry in different capacities and have an intimate knowledge of the industry and the climate of environmental commitment. Appendix B outlines their positions in the industry.

The key informant interviews were included to gain information regarding the atmosphere of the wine growing industry of Ontario. They assisted in identifying current related environmental regulations that are applied to winery estates, opinions about whether winery estates are more or less willing to increase their commitment, and what are the key factors that influence the commitment level of the industry as a whole. Detailed notes were taken during the three key informant interviews and the information was used as context on the industry throughout the study.

4.4.2 Phase Two: Developing the Questionnaire and Interview Questions

The knowledge gained from the literature review informed the questions asked and how the questionnaire was developed.

The questionnaire was created with reference to previous studies of similar subject-matter and to the SWO Charter. Previous studies include Marshall *et al.* (2005) who used interviews to evaluate the validity of their model of proactive environmental behaviour by asking participants to rate the importance of various drivers. Another study by Gabzdylova *et al.* (2009) used quantitative and qualitative research methods and semi-structured interviews including Likert scale and open-ended questions for clarity to gather information. The SWO Charter provided a basis of understanding of environmental regulation and practices of the wine industry and general knowledge of grape growing and wine making specific to Ontario.

The two components of the questionnaire are described in detail below. A description of the pilot testing of the questionnaire is also provided. The questionnaire can be found in Appendix C.

4.4.2.1 Questionnaire Part One

The purpose of the first part of the questionnaire was to obtain accurate organizational information from the respondents such as the ownership and management structure of the winery estate, specific winery estate characteristics and the number and type of environmental initiatives that have been implemented.

The categorized environmental initiatives included in part one of the questionnaire were primarily derived from the SWO Charter. The SWO Charter offers an extensive collection of regulations, due diligence industry standards and proactive guidelines of environmental initiatives for the Ontario wine growing industry. As discussed in Chapter 3, it was developed in collaboration with many industry and non-industry stakeholders and was guided by similar documents developed by other wine growing industries worldwide. It therefore was a trustworthy source for relevant environmental initiatives (regulated and proactive) practiced by the Ontario wine growing industry.

The SWO Charter is a comprehensive workbook with over 300 environmental initiatives that are organized into eight environmental performance categories. These categories are Water and Wastewater, Solid Waste Management, Materials Handling, Energy Efficiency, Integrated Pest Management, Relationship with Neighbours and the Community, Industry Standards Awareness, and Expansion or Renovation of an Existing Winery. Each of these categories had a range of 13 to 71 questions. One category, Expansion or Renovation of an Existing Winery, was not included in this study, as not all participating winery estates may have done renovations and/or an expansion. Each one of the question categories had to be potentially relevant to all of the participants in order to be included.

In order to facilitate an interview that could be of a manageable time, it was necessary to reduce the number of questions in each category. The SWO Charter list goes into in-depth detail and some initiatives were not applicable to all winery estates. For example, questions regarding using a water well on the property do not apply to all winery estates. Therefore questions on this topic were not included in the study. An approximate proportional selection of initiatives from each of the SWO Charter's environmental performance categories was chosen through careful review of the number of initiatives included in each. Any initiatives chosen had to be applicable to all winery estates. Often several initiatives in the SWO Charter list were similar to one another. In these cases only one would be chosen in a group of similar items. Each category was carefully analysed, and the most pertinent questions included or adapted into this study's questionnaire.

In the literature review it was discovered that questions about suppliers as well as employee training and involvement might be relevant, therefore these categories were added. The category of general environmental practices was included as a first category in the survey in order to begin with more broad questions, all of which would be relevant to every business.

A list of 52 pertinent initiatives was finalized for the purpose of this research and incorporates a balanced assortment of regulated standards and initiatives that go beyond regulation. The last initiative added to the list was a question about whether the winery estate was a member of the SWO Charter.

The reduced list was then reviewed by two key-informants in the wine growing industry of Ontario (one winemaker and one WCO representative that was closely involved in the development of the SWO Charter) to confirm that the number and type of initiatives chosen for the questionnaire was a reasonable and balanced assessment of environmental initiatives (regulated and proactive) practiced by the industry and that nothing was missing. No additions or other changes were suggested.

The final section of part one of the questionnaire incorporated Likert rating questions. Respondents were asked to identify on a scale of 1 to 5 (where 1 = 'not at all influential' and 5 = 'significantly influential'), the level of influence each factor had on the decision to implement a new environmental initiative. They were also asked to rate the level of importance various potential benefits had on implementing environmental initiatives; the level of significance several barriers had on impeding the implementation of environmental initiatives.

4.4.2.2 Questionnaire Part Two

The second part of the questionnaire was used to probe respondents for greater detail of their opinions and included open-ended questions. Specifically, respondents were asked to explain why they rated various factors as being particularly influential or not. Similar questions were asked based on respondents' ratings of various benefits, barriers and incentives to implementing environmental initiatives. Respondents were also asked a number of additional questions including what the environment means to the winery estate, how they define sustainability, where they look for information on environmental initiatives and if they were planning to implement any specific initiatives in the future and why.

4.4.2.3 Piloting the Questionnaire

Pilot testing of the questionnaire was conducted with a wine maker and a member on the WCO involved in development of the SWO Charter. They were chosen because of their in-depth knowledge of the wine growing industry of Ontario and the applicable environmental initiatives currently being discussed and implemented. The wine maker was chosen for the pilot study to represent a person that works in an SME sized winery estate with knowledge both of vineyard and winery estate practices typical of the rest of the study participants. The WCO chair was chosen because he has worked closely with many of the winery

estates on several environmental initiatives and participated in the development and integration of the SWO Charter.

Conducting a pilot study of the questionnaire was valuable to identify problems such as confusing, misleading or irrelevant questions and to ensure directions were easily understood. The pilot study allowed fine-tuning of the research questions such as the re-ordering of questions and making sure the wording was specifically relevant to the wine growing industry of Ontario. Changes made helped ensure the interview flowed properly. Minor changes to the questionnaire were carried out such as clarifying the terms used for certain initiatives, specific processes, regulations and programs to reflect the language of the industry and changing the order of some of the questions. No significant changes to the questionnaire were made. The pilots were conducted in May 2009.

The information obtained during the pilot study verified that the questionnaire would be sufficient in gathering the appropriate data for the study. The pilot interviews also helped to ascertain a reliable estimate of the anticipated time to complete the interview which could be included in the initial email to respondents asking for participation. They were conducted by going through both parts of the questionnaire with the respondent while the researcher took detailed notes. The notes were typed directly after the interviews. The piloting results were used to establish the coding and analytical procedures for the entire study. The information gained from the pilot interview with the wine maker was retained because the changes made were minimal and did not compromise the information collected.

4.4.3 Phase Three: Primary Data Collection

4.4.3.1 Study Sample

Ontario winery estates that grow and produce wine from traditional *V. vinifera* grapes were selected as the study sample. The size of population was relatively small winery estates making it feasible to contact and include the whole population in the study.

Contact information for the winery estates was gathered from several sources. The WCO provided a list of their members which included 81 winery estates. This list was supplemented with information found in wine tourism brochures for each of the four wine regions and from regional wine industry associations. Winery estates that were observed or referred by others were also included in the study. Since the wine growing industry of Ontario is growing at an accelerated pace; only winery estates that to date had had at least one vintage year and available contact information were included in the study.

The respondents identified to complete the questionnaire were the winery estate owner, a winemaker or a senior manager of the operation. People who hold these positions are the most knowledgeable about the business as a whole and often hold a key role in designing environmental strategies, particularly in the context of SMEs (Aragón-Correa *et al.*, 2008). The interviews were conducted between May 1st and August 15th, 2009. The intention was to complete them before September to avoid the busiest

and most critical time of year for winery estates, which is the fall harvest. The winter months would not have been ideal since the season is a slower period for the industry and many winery estate owners and managers take vacations (Key Informant #2: personal communication, May 20, 2009).

Several measures were taken to ensure that as many of the 99 Ontario winery estates participated. The questionnaire and format were designed to offer minimal time commitment from the respondents. In addition, many interview dates were made available to create a flexible schedule where participants could choose a date and have the ability to change it if necessary. An initial email was sent to each winery estate explaining the purpose of the research study and asking for their participation. A second follow up email and at least one telephone call was made to every winery estate. A list of all 99 winery estates and their region is included in Appendix A.

If they chose to participate, respondents received a confirmation email of the interview date and time with a copy of the questionnaire attached. This allowed participants to understand and become comfortable with the study objectives and let them follow along during the interview. To be certain that all of the questions were understood and answered, the researcher went through each part of the questionnaire and interview guide together with the respondent. The length of the interviews averaged approximately 60 minutes.

4.4.3.2 Primary Data Collection

Comprehensive notes were taken during the interview by the researcher. The notes were carefully transcribed and typed the same day as the interview in order to preserve the information gathered and so that the researcher could elaborate and clarify any context and meaning in relation to respondents' answers. Minimal time was left between conducting the interviews and typing the notes in order to reduce the chance that context and meaning was lost.

The advantage of having a typed hard copy of the interview notes is that they can then be referred to easily and quickly (Thames Valley University, n.d.). It also facilitates re-organization and coding notations during later data analysis. Referring to typed notes is faster than listening to a tape recording and ensures familiarity with the material (Thames Valley University, n.d.).

The quantitative data gathered from the questionnaire were recorded by the researcher during the interviews and later inputted into Statistical Package for Social Sciences (SPSS) software. SPSS software was chosen to collect and analyze the quantitative data because it is one of the most widely used suites of programs used by students and researchers to perform quantitative (statistical) analysis in the social sciences (Bryman, 2001). It is often used when a large amount of data are collected requiring verification, validation and recording before analysis can take place.

4.4.4 Phase Four: Data Analysis

Quantitative and qualitative analyses of the gathered data were conducted between September 2009 and April 2010.

4.4.4.1 Quantitative Data Analysis

SPSS software was used to calculate the quantitative data response frequencies. The five point Likert scale questions were used to measure a factor's level of influence to implement environmental initiatives. Calculating the mean of ratings was not done because they are ordinal data. Therefore the frequencies of the ratings for each factor were observed to assess which factors should be rated with the highest influence.

The level of statistical significance used in this study (p = 0.05) is the generally acceptable significance level for social science research (Healey, 2009). The statistical analysis conducted calculates a z-score. Results that present a z-score between +/- 1.64 will be statistically significant.

Representativeness of the Sample

The more participants in the study, the more representative it is of the industry (Sommer & Sommer, 2002). There is an inverse relationship between a survey's response rate and level of non-response error. In order to reduce non-response error, great efforts were made to obtain as high a response rate as possible.

A statistical analysis was conducted to discover how representative the study population was to the general population. The difference between the general population and the sample population was calculated using the 'differences between proportions' test. This analysis helps to decide whether an observed difference between two sample percentages is significant or whether the observed difference is reasonably attributed to chance (Freund, 1967). The difference between proportions was also conducted to assess if the number of SWO Charter member winery estates in the study sample was representative to the number of winery estates that are SWO members in the general population by region.

It is important to ascertain a study sample that is representative of the population so that the results can be related to the whole population. Several measures were taken to increase participation in the study including:

- 1. Creating a questionnaire that is easy to complete;
- 2. Having the researcher go through the questionnaire in person with the respondents;
- 3. Providing the questionnaire ahead of time and allow three months for the data collection phase; and,
- 4. Allowing some leeway for the respondents to find a time to participate at their convenience.

Within this study, all of the participating winery estates produce wine from traditional *V. vinifera* grapes (as outlined in section 4.4.3.1), and none make wine from any other fruit. Industry Canada's definition of the wine growing industry includes establishments that produce wine and brandy from fruit as well as from traditional *V. vinifera* grapes (Industry Canada, 2010). For this reason, statistical analysis of the representativeness of the sample with respect to size of the winery estate in terms of the number of employees could not be compared to Industry Canada's SME data.

4.4.4 Qualitative Data Analysis

The qualitative data were analyzed by highlighting key themes using a coding method. A coding process classifies responses from open-ended questions into common themes. This process reduces, sorts and groups lengthy answers into response categories and themes (Sommer & Sommer, 1991; Yin, 1989). Great efforts were made during the coding process to accurately report the respondent's comments and opinions.

First, the transcribed interview notes from the qualitative part of the questionnaire were divided by question. A spreadsheet was created for each question and common themes and words were identified by colour coding and labelling from each respondent's answers. The number of respondents that made similar comments was noted. Further, all transcribed interview notes were read in their entirety to ascertain common themes and group repetitive words. Any comment or note found in an interview referencing one of several identified themes was marked and put into a separate spreadsheet. The result was a clear indication of what factors were the most discussed and in what way respondents felt they were, or were not, influential.

Analysis of both the quantitative and qualitative data collected assisted in the identification of factors that influence implementation of environmental initiatives in the wine growing industry of Ontario.

4.4.5 Phase Five: Discussion and Conclusions

The key factors that influence the level of environmental commitment in the wine growing industry of Ontario were identified in the final phase of the research from the analysis of the data gathered.

Conclusions that address the objectives of this study and recommendations to increase environmental commitment in the wine growing industry of Ontario were made. This was completed through the identification of key influencing factors (motivating and impeding), incentives and, strategies to overcome barriers that are considered by respondents when looking to implement an environmental initiative.

4.5 Limitations

There are some limitations to the research methodology used in this study. Great efforts were made to attain a high response rate and acquire quality data from those who participated. The following are potential limitations that may have limited the study.

4.5.1 General Population and Contact Information

Every effort was made to collect contact information of all the producing winery estates throughout Ontario at the time of the study. Some winery estates are very new or small that finding information that they exist can be a challenge. The population list was created based on available information from the WCO, regional industry associations and word of mouth.

4.5.2 Biased Study Population

If certain characteristics are favoured over others in the sample then error can be introduced due to sampling bias (Sommer & Sommer, 2002). It could be suggested that winery estates who are engaged in environmental initiatives may have chosen to participate in this study while those not so committed may have chosen not to participate. Winery estates that were less environmentally committed may not have wanted to participate because they did not want to discuss their disengagement. Efforts were made to minimize this limitation by contacting the entire population of winery estates in Ontario regardless of perceived environmental commitment.

4.5.3 Self-reporting

The score for environmental commitment is based entirely on the answers self reported by the respondents which could create biased scores. In order to understand context and maintain accuracy of the answers, the interview was completed with the respondents at the same time as the questionnaire. During the discussion, respondents were able to identify what initiatives were implemented and why in order to determine if the practices were legitimately in place.

4.6 Summary

This section outlined the methodology that was followed during this research to collect and analyze the research data. Each stage in the methodology was chosen based on review of previous research in this subject area and from methods that had proved to be the most appropriate. This was done in order to gain an understanding of the various factors that influence environmental commitment initiatives in the wine growing industry of Ontario. Despite the mentioned limitations, the research method is believed to provide valuable and reliable data about the current level of environmental commitment and the factors that influence environmental commitment in the wine growing industry of Ontario.

Chapter 5: Structure of Winery Estates in Ontario

This chapter identifies the number, age, ownership, size, management structure and location of the participating winery estates in Ontario. It also outlines the number and type of environmental initiatives that they estates have implemented. These data fulfills the second objective of this study.

The goal of this thesis was to study the entire general population of winery estates in Ontario. This includes all the winery estates that were producing table wines from traditional *V. vinifera* grapes in Ontario in 2009. All 99 winery estates located within the four official Ontario wine growing regions were contacted by telephone and email to participate. A list of the general population is presented in Appendix A.

Thirty seven (37) of the 99 winery estates participated in the study resulting in a response rate of 37%. Table 5.1 identifies the number of winery estates in the general and study populations by region.

			Proportion	
	General	Study	Representation	
Untario wine Regions	Population	Population	(Percentage)	z-score
Niagara	73	25	34	0.71
Lake Erie North Shore	7	3	43	- 0.21
Pelee Island	1	1	100	- 0.73
Prince Edward County	18	8	44	- 0.45
Total	99	37	37	-

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z-score_{0.05} = +/- 1.64

The test of Difference of Proportion was used to assess the representativeness of the sample. Looking at the results in Table 5.1, it cannot be said that the study population and the general population are significantly different nor significantly the same. The z-score results do show, however, that the number of winery estates participating in the study is reasonably representative to each of the four regional populations.

Due to the small study population, response frequencies and representativeness tests are the only valid analyses for the data, as discussed in section 4.4.4.

5.1 Organizational Data

Organizational characteristics for each participating winery estate were gathered including the year of the first vintage (to determine the age of the winery estate), the number of employees and cases produced annually (to determine the size of the winery estate) and the type of ownership. Table 5.2 summarizes the characteristics of the study population.

1-9 68 10-19 8 20-29 16 30 + 8 Annual average number of employees [full-time and part-time] 19 Micro (1-4) 19 Small (5 - 99) 75 Medium (100 - 499) 3 Large (500 +) 3 Cases produced annually 3 1 to less than 50,000 68 50,000 to less than 100,000 16 100,000 to less than 150,000 5 Over 150,000 51 Private (individual or partnership) 81 Publicly owned (corporate) 8 DK/NR 11	Years since the first vintage	Percentage			
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20 - 29 16 30 + 8 Annual average number of employees [full-time and part-time] 19 Micro (1 - 4) 19 Small (5 - 99) 75 Medium (100 - 499) 3 Large (500 +) 3 Cases produced annually 3 1 to less than 50,000 68 50,000 to less than 100,000 16 100,000 to less than 150,000 5 Over 150,000 11 Type of ownership 81 Private (individual or partnership) 81 Publicly owned (corporate) 8 DK/NR 11	10 – 19	8			
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Type of ownershipPrivate (individual or partnership)81Publicly owned (corporate)8DK/NR11	Over 150,000	11			
Private (individual or partnership)81Publicly owned (corporate)8DK/NR11	Type of ownership				
Publicly owned (corporate)8DK/NR11	Private (individual or partnership)	81			
DK/NR 11	Publicly owned (corporate)	8			
	DK/NR	11			

Table 5.2: Age, Size and Ownership of Ontario Winery Estates Within the Study Population

n = 37

DK/NR = Do not know or no response

The Ontario wine growing industry has experienced recent growth. Just over two thirds of the winery estates in the study sample (68%) were established and began producing wine in the last 10 years. For the purpose of this study, the criterion of being an established winery estate was defined by having produced one wine vintage. This would mean that grapes were harvested, produced, bottled and sold by the winery estate.

The size of the participating winery estates was assessed by the average total number of full-time and part-time employees working over one year. The vast majority of winery estates in Ontario employ less than 100 people (95%) and three quarters (75%) employ between 5 and 99 people. In terms of production, more than two thirds (68%) of winery estates in Ontario produce less than 50,000 cases of wine per year. The number of employees and annual wine production data indicates that most winery estates in Ontario are SMEs. The ownership and management of winery estates in Ontario are primarily private (81%), either individual or partnership, and only 8% of winery estates are publicly owned (corporate).

5.2 Responsibility for Environmental Commitment Practices

It is very important to determine who is responsible for implementing environmental initiatives within the business as this can influence the decisions made by the winery estate. Internal leadership and managerial characteristics have been seen to be significant factors for successful implementation of environmental initiatives (Cambra- Fierro *et al.*, 2008; Cordano *et al.*, 2010; Gadenne *et al.*, 2009; Lefebrvre

et al., 2003; Marshall *et al.*, 2005). Table 5.3 identifies the persons responsible for directing and coordinating environmental initiatives within the study sample.

Table 5.3: Persons Responsible for Directing and Coordinating Environmental Initiatives in an Ontario Winery Estate Within the Study Population

Persons responsible for directing and coordinating environmental	
initiatives	Percentage
Multi-departmental committee/team	57
Owner	29
Winemaker	5
Environmental coordinator	3
Other (manager)	3
There is no specific person(s) responsible	3
n = 37	

Just over half of the winery estates studied (57%), have placed the responsibility for directing and coordinating environmental initiatives with a multi-departmental committee or team. A multi-departmental committee or team may include the winery estate owner and any employees responsible for an area that might create, or be affected by, environmental social and/or economic impacts such as the winemaker, a vineyard or cellar manager. It was found that in several of the smaller winery estates, the owner and the winemaker were the same person. Only one participating winery estate identified having an environmental coordinator.

Winery estate owners tend to be closely involved and ultimately responsible for directing and coordinating environmental initiatives (29%). Senior management level (owner or CEO) support and endorsement of policies regarding environmental commitment was discovered to be required by 86% of the study sample (Table 5.4).

Does there need to be senior management/executive level support and	
endorsement of policies?	Percentage
Yes	86
No	11
DK/NR	3

Table 5.4: Percentage of Ontario Winery Estates That Require Owners or Senior Management Level Support and Endorsement of Environmental Commitment Policies Within the Study Population

n = 37

DK/NR = Do not know or no response

The above quantitative results were corroborated during the interviews. Winery estate owners are involved in all operational decisions and must approve all major financial expenditures. In small and medium winery estates, the winemaker and owner(s) work closely together (if they are not the same person) and make decisions as a team. The wine maker generally has more knowledge about initiatives that increase (or affect) wine quality and inform the owners about those that could and/or should be implemented. The
owners tend to support environmental initiatives as long as they make economic sense. The support of the winemaker and the owner was found to be required as environmental initiatives can affect both the final product and the bottom line.

It is a similar situation in larger winery estate corporations. Winemakers of larger winery estates may have a budget to do what they want, but if there is a project that is above the budget then it must be approved by management before it can go ahead. "Management (owners) support is required, particularly for projects with a large capital cost" (Interview #9, 2009). One of the large corporations that operated a winery estate discussed that they had a 'Green Team' made up of individuals from all departments that came up with ideas and projects to increase environmental commitment of the entire company. However, these projects required management approval prior to implementation: "The multi-departmental team creates environmental plans and an executive sponsor is needed for any new policies" (Interview #36, 2009).

5.3 Environmental Audits

Environmental audits at a winery estate involve determining the amount of energy and water consumed and/or waste produced. Table 5.5 shows the percentage of winery estates participating in this study that had conducted an audit for water usage and wastewater production, energy usage, waste production and/or to calculate a carbon footprint. Winery estates could have implemented more than one type of audit.

Previous environmental audit conducted	Percentage
No audit conducted	38
Energy Consumption	16
Waste production	14
Water (consumption and wastewater production)	11
DK	5
Carbon footprint analysis	3

Table 5.5: Percentage of Ontario Winery Estates Within the Study Population That Have Conducted an Environmental Audit (multiple response)

n = 37

DK = Do not know

Just over half of the winery estates (57%) had conducted an audit of some kind at the facility. Audits are initiated for several reasons such as requirements by municipal and/or provincial regulation, local industry association membership and/or for a carbon footprint analysis.

5.4 Environmental Initiatives Currently Implemented in Ontario Winery Estates

An inventory of environmental practices that participating winery estates had implemented was conducted. This information was collected to identify the environmental, social and economic initiatives of in which winery estates are currently engaged. It will facilitate understanding how many and what types of environmental initiatives winery estates in Ontario have implemented. Table 5.6 presents the full list of environmental commitment initiatives that winery estates in Ontario have implemented. As outlined in Section 4.4.2.1, the initiatives included in this inventory were chosen and categorized based on the SWO Charter.

Environmental Initiative	Percentage
Broad environmental management strategies	100
Ongoing, continuous improvement of environmental commitment	100
Turn lights off when not in use	100
Recycle/biodegrade pumice and by-products (not trucked to landfill)	95
Maintain and repair leaks to keep the water system in good repair	95
Share knowledge of environmental practices with the entire industry, among wineries	95
Encourage employees to contribute innovative suggestions and solutions to environmental	92
Denate to charity and contribute to community environmental and social issues	92
Donate to charity and contribute to community environmental and social issues	92
Recycle common materials (glass, cardboard, metal cans, plastic, etc.)	92
Relevant environmental training and education for employees	89
Know the potential source of any hazardous wastes	89
Energy conservation and efficient use	89
Water conservation and efficient use	89
Communicate the benefits of environmental management to employees	87
Waste reduction, reuse and recycling	86
Reduction in, and proper use and handling of hazardous and toxic substances	86
Established a team or person to identify ways to reduce water use and improve efficiencies	84
Evaluate containers for wines to identify lighter and more energy efficient packaging (e.g. lighter bottle materials)	84
Know the locations of all bulk fuel storage tanks both underground and aboveground	84
Ensure tanks have protection to catch all spills including a lip or containment wall where required	84
Monitor how much energy is consumed	84
Aware of the development of the Hazardous Analysis and Critical Control Points (HACCP) program with the Wine Council of Ontario	84
Integrated pest management	84
Training and/or instruction provided to staff in the area of environmental considerations and	84
awareness	
Incorporate energy efficiency designs into the building design or renovations whenever possible	81
Investigated alternative pesticide application methods	81
Monitor water that is consumed in the winery	78
Opportunity for individuals to instigate initiatives or are they all instigated by higher up management	76
"Eco-purchasing" – factoring environmental considerations in purchasing decisions/strategies	76
Have an environmental management system in place	73
Customer education on environmental management	73
Have clean-up materials at hand in case of spills, including materials (e.g. kitty litter)	70
Have a procedure for dealing with complaints	70
Have you requested suppliers to provide (environmental) product information	68
Monitor how much waste is produced	65
Communicate the environmental impacts and environmental management initiatives implemented at the winery	62
Created any partnerships in relation to environmental initiatives	57

Table 5.6: Full List Environmental Initiatives That Ontario Winery Estates Within the Study Population Have Implemented

Control and monitor the temperature of the water used	54
Recycle corks	54
Investigated a gravity run production system	54
Participates in the SWO Charter	54
Promotion of eco-wine or environmentally sensitive wine making	49
Keep track of all energy savings	49
Participated in a HACCP course	43
Participate in the development of watershed management plans in your area	41
Taken advantage of government grants for audits and for increasing energy efficiency	38
Established targets for reduction of water use	30
Investigated LEED certified buildings and/or renovations	22
Have suppliers take back excess packaging	22
Reuse rinse water (grey water)	19
Initiated a HACCP program at your winery/processing facility	19
Organic certification	14
n = 37	

-

All 37 respondents reported that they were engaged in broad environmental management strategies (100%) and ongoing, continuous improvement of environmental commitment (100%). All study participants also identified that they turn lights off when not in use (100%). Contrastingly, the initiatives that study participants are least likely to have implemented are reusing rinse (grey) water (19%); initiating a Hazardous Analysis Critical Control Points (HACCP) model (19%) and being organically certified (14%).

Each category of initiatives is discussed in further detail below.

5.4.1 General Environmental Commitment Practices

Table 5.7 shows an account for general environmental commitment practices in which the study population is engaged.

Table 5.7: General E	invironmental	Commitment	Practices	That	Ontario	Winery	Estates	Within	the	Study
Population Have Impl	lemented									

Environmental Commitment Practices	Percentage
Broad Environmental Management Strategies	100
Ongoing, continuous improvement	100
Share knowledge of environmental practices with the entire industry, among winery	95
estates	
Energy conservation and efficient use	89
Relevant environmental training and education for employees	89
Water conservation and efficient use	89
Waste reduction, reuse and recycling	86
Reduction in, and proper use and handling of hazardous and toxic substances	86
"Eco-purchasing" – factoring environmental considerations in purchasing	76
decisions/strategies	
Customer education on environmental management	73
Promotion of eco-wine or environmentally sensitive wine making	49

n = 37

Almost all of the study population (95%) shares knowledge of environmental practices with the entire industry and 89% provide relevant environmental training and education to their employees. A number of winery estates are practicing energy (89%) and water conservation and efficient use (89%), waste reduction (86%) and proper use of hazardous waste (86%). Just over three quarters (76%) of the study population factor environmental considerations into their purchasing decisions and strategies. Almost three quarters (73%) of winery estates educate customers on their environmental management practices whereas just under half (49%) promote eco-wine or environmentally sensitive winemaking.

5.4.2 Water Initiatives

Study participants were asked to provide details of the winery estate's water efficiency and conservation initiatives. Almost the entire study population (95%) reported that they maintain their water system in good repair. Either one individual or a team is tasked by 84% of winery estates to continually identify ways to reduce water usage at the facility. More than three quarters (78%) of the study population monitor the water they consume. This was often based on monthly and annual reductions in their water bills. Winery estates that are not directly connected to the municipal water system may have to pay for water to be trucked to the winery estate and therefore they knew exactly how much water they used and made conscious efforts to reduce their consumption in order to reduce costs. Table 5.8 identifies the water efficiency and conservation initiatives that participating Ontario winery estates have implemented.

Water	Percentage
Maintain and repair leaks to keep the water system in good repair	95
Established a team or person to identify ways to reduce water use and improve efficiencies	84
Monitor water that is consumed in the winery estate	78
Control and monitor the temperature of the water used	54
Established targets for reduction of water use	30
Reuse rinse water (grey water)	19

Table 5.8: Water Efficiency and Conservation Initiatives That Ontario Winery Estates Within the Study Population Have Implemented

n = 37

During the wine production process, water often needs to be a certain temperature for cleaning and sterilizing purposes. Tanks and barrels must be cooled or heated according to proper fermentation and ageing needs. Over half (54%) of the participating winery estates control and monitor the temperature of the water they use. Almost a third (30%) of participating winery estates have established targets for water reduction. Production equipment, tanks and barrels need to be cleaned continuously in order to comply with strict regulated standards of food production. Respondents described how a large amount of sterile water is required for this process and capturing the water to reuse is difficult. Grey water usually goes directly into municipal water drains or into the soil. The percentage of study participants that reuse their rinse water is 19%.

5.4.3 Wastewater Initiatives

Table 5.9 identifies the percentage of winery estates that treat wastewater on-site (57%) and those that have their water treated by the municipality or privately taken off-site (41%). In many cases, winery estates that treat water on-site do so because a connection to the municipal system is not available. It should be noted that these wastewater initiatives are not included in the list of 'environmental initiatives' total because the way in which a winery estate treats their wastewater is primarily based on where they are located (whether there is a connection to a municipal water system) and not on their environmental commitment.

Table 5.9: Method of Wastewater Treatment Used by Ontario Winery Estates Within the Study Population

Method of Wastewater Treatment	Percentage
Treat wastewater on-site	57
Treat wastewater by municipality	40
DK/NR	3
n = 37	

DK/NR = Do not know or no response

The method for wastewater treatment on-site varies based on facility location and capability. Over half (57%) of study participants treat their wastewater on-site. These winery estates either have a wetland, natural or constructed pond(s) or a septic tank that filters wastewater used at the facility. Over half of the winery estates that treat their wastewater on-site have investigated a system that allows reuse of treated wastewater.

Two thirds of the other 41% of study participants (those that are connected to the municipal system) have investigated a pollution prevention program to reduce their wastewater production.

5.4.4 Solid Waste Initiatives

Several kinds of solid wastes are created during wine production, each requiring diverse disposal treatments. Organic waste materials (called 'pumice and lees' in winemaking) remain after the grapes have been pressed which includes grape seeds, stems and skins. Almost all study participants (95%) recycle or biodegrade their organic material. Often it is used as fertilizer for the vineyard. Five winery estates transport excess organic material to a nearby greenhouse that uses it to produce biomass energy. Table 5.10 outlines the solid waste initiatives that participating winery estates perform.

Solid Waste	Percentage
Recycle/biodegrade pumice and by-products (not trucked to landfill)	95
Recycle common materials (glass, cardboard, metal cans, plastic, etc.)	92
Evaluate containers for wines to identify lighter and more energy efficient packaging (e.g. lighter bottle materials)	84
Monitor how much waste is produced	65
Recycle corks	54

Table 5.10: Solid Waste Initiatives That Ontario Winery Estates Within the Study Population Have Implemented

n = 37

Just under two-thirds (65%) of participating winery estates consciously monitor the amount of waste they produce. Common materials such as glass, cardboard, metal cans and plastics are recycled by the majority of the study population (92%). The glass bottles used for wine are an energy intensive material for the industry. Transportation of the bottles to the winery estate and then to the consumer is often based on weight. Heavier glass requires more energy and, as a result, costs more to transport. Many of the participating winery estates (84%) have evaluated lighter glass bottles and/or looked at alternative containers for wines such as tetra-packs in order to reduce their costs and impacts on the environment.

Corks are another material that winery estates use regularly for part or all of their wine bottle closures. More than half (54%) of the corks used at winery estates are recycled and many winery estates give corks away to people who use them for crafts.

5.4.5 Energy Efficiency

Study participants were asked about initiatives related to energy efficiency that were implemented at the winery estate. Table 5.11 identifies the energy efficiency initiatives that the participating winery estates had implemented.

Table 5.11: Energy Efficiency Initiatives That Ontario Winery Estates Within the Study Population Have Implemented

Energy Efficiency	Percentage
Turn lights off when not in use	100
Monitor how much energy is consumed	84
Incorporate energy efficiency designs into the building design or renovations whenever possible	81
Investigated a gravity run production system	54
Keep track of all energy savings	49
Taken advantage of government grants for audits and for increasing energy efficiency	38
Investigated LEED Certified buildings and/or renovations	22
Future plans to implement LEED into buildings	5
Implemented LEED into buildings	3
- 27	

n = 37

All of the winery estates (100%) turn lights off when they are not in use (which includes the use of sensor or timer lighting systems). The majority (84%) of winery estates monitor how much energy they consume (mostly by their energy bills). Half of the winery estates (49%) keep track of all the energy savings they have achieved. This is mostly based on monthly and annual reductions in their energy bills.

A large number of winery estates (81%) had incorporated energy efficient design into their buildings including construction of a climate controlled barrel cellar below ground to keep wines cool in the summer and reducing the dependence on costly air conditioning. Just over half of the winery estates (54%) had investigated a gravity run production system. There are government grants available to assist winery estates financially in performing audits to increase energy efficiency. Only 38% of winery estates had taken advantage of grants that subsidize energy efficiency initiatives.

Less than a quarter (22%) of winery estates had investigated in LEED building certification. However, many winery estates had integrated aspects of green buildings without becoming LEED certified. One of the participating winery estates is recognized as the first building in Canada to receive LEED certification from the CaGBC and the first winery estate worldwide to attain this designation.

LEED building rating system certification is well recognized and credible but only a small number (3%) of winery estates had implemented and 5% of study participants planned to implement into future building plans.

5.4.6 Material Handling Initiatives

The hazardous wastes that winery estates use are mainly pesticides, herbicides, insecticides and/or fungicides. Limited amounts of gas and oil are kept on-site for machinery or farming equipment. Table 5.12 outlines the material handling initiatives of the study population. The majority of winery estates (89%) are aware of the sources of hazardous wastes on-site. The location of all fuel and hazardous waste storage (above and underground) are known by 84% of the study population and these areas had protection as required by law. Over two thirds (70%) of winery estates were prepared with clean up materials on-site in case of an accidental spill.

Implemented	
Material Handling	Percentage
Know the potential source of any hazardous wastes	89
Know the locations of all bulk fuel storage tanks both underground and aboveground	84
Ensure tanks have protection to catch all spills including a lip or containment wall	84
where required	

Table 5.12: Material	Handling Ini	tiatives That	Ontario	Winery	Estates	Within	the Study	Population	Have
Implemented									

Have clean-up materials at hand in case of spills, including materials (e.g. kitty litter) 70n = 37 The rest of the study population (16%) did not store any hazardous wastes onsite. This was because they were organic and did not use any hazardous products and/or they had a contracted vineyard management team that store these products and equipment off-site.

5.4.7 Industry Standards and Awareness

Industry standards and awareness are crucial particularly with the handling of hazardous wastes on site. For the most part at a winery estate, hazardous wastes include gas and oil for farming equipment and pesticides, herbicides, insecticides and fungicides. Table 5.13 outlines the industry standards and awareness for the study population. The majority of respondents (84%) were aware of the HACCP program while less than half of the participants (43%) had employees participate in a course based on the program. Only 19% of winery estates had initiated the program at their facility. Many said it was an initiative they planned to implement in the future. Just less than three quarters (73%) of participating winery estates have some kind of environmental management system in place, HACCP or other.

Table 5.13: Industry Standards and Awareness of Hazardous Materials That Ontario Winery Estates Within the Study Population Have Implemented

Industry Standards and Awareness	Percentage
Aware of the development of the Hazardous Analysis and Critical Control Points (HACCP) program with the Wine Council of Ontario	84
Have an environmental management system in place	73
Participated in a HACCP course	43
Initiated a HACCP program at your winery estate/processing facility	19
n = 37	

5.4.8 Vineyard Management

Winery estates are very focused on producing a sufficient yield of good quality grapes. In Ontario's climate, mold and fungus growth within the vines are a well-known issue. Pests and insects can also cause damage to the grapes due to the high levels of humidity and many winery estates use pesticides, herbicides, insecticides and/or fungicides to prevent these issues. Alternative pest management methods exist and are often used concurrently which is called Integrated Pest Management (IPM). Most of the study population (84%) performs IPM initiatives to some degree. Table 5.14 identifies the pest management initiatives implemented by the study population.

Table 5.14: Vineyard Management Initiatives That Ontario Winery Estates Within the Study Population Have Implemented

Pest Management	Percentage
Integrated Pest Management (IPM)	84
Investigated alternative pesticide application methods	81
Organic certification	14
Biodynamic certification	0
n = 37	

68

Alternative pesticide application methods involve proper timing. Often these substances are applied on a regular schedule, but the vines may not require it regularly. Respondents who use an IPM approach to crop management and/or have investigated alternative application methods (81%) are very involved and closely monitor the climate and vineyard conditions such as temperature and precipitation in order to limit over application of pesticides.

Only 14% of winery estates who participated in this study hold organic certification and none were bio-dynamically certified. Only 11% of participating winery estates said they planned to become organically certified in the future.

5.4.9 Employee Training and Involvement with Environmental Commitment

Training and/or instruction provided to staff in the area of environmental

considerations and awareness

n = 37

Employees are able to instigate initiatives

Employees are more connected and motivated to their work when they understand the goals of the organization and their role to achieve them (Álvarez Gil et al., 2001). It is important to properly train and communicate the reasons policies and practices are in place to employees. It is also vital for all employees to be knowledgeable of all health and safety procedures. Table 5.15 outlines the environmental training and involvement observed within the study population.

Have Implemented	j ir i
Environmental Training and Involvement	Percentage
Encourage employees to contribute innovative suggestions and solutions to	92
environmental management	
Communicate the benefits of environmental management to employees	87

84

76

Table 5.15: Employee Training and Involvement That Ontario Winery Estates Within the Study Population

Many study participants (84%) provide training and/or instruction to staff on environmental
considerations and awareness. Four participants added that training was not always specifically directed as
environmental but that environmental issues were included in overall training. All employees working with
machinery and hazardous wastes such as pesticides had taken a certification/handling course as required by
regulation.

Employees from 92% of the study participants are encouraged to contribute innovative suggestions and solutions to environmental management. The benefits of environmental management and procedures were communicated to employees by 87% of the study population. Just over three quarters of the winery estates (76%) were open to employees instigating environmental initiatives after being approved by owners or management.

5.4.10 Community Relationship

Community initiatives involve engagement through charity donations, program or event volunteering, contributing to community issues and programs and sponsoring or initiating a community event. Most of the winery estates (92%) contribute to community issues or programs in some way. Table 5.16 presents the community initiatives with which winery estates in Ontario are involved.

Implemented	1
Community	Percentage
Donate to charity and contribute to community environmental and social issues	92
Have a procedure for dealing with product, noise or similar complaints	70

Table	5.16:	Community	Initiatives	I nat	Ontario	winery	Estates	within	the	Study	Populatio	n Have
Impler	mented	l										
C											n	

-----1

Participate in the development of watershed management plans in your area

implemented at the winery estate to the community

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Communicate the environmental impacts and environmental management initiatives

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62

41

- 27
n – 37
The local community and customers can be affected by a winery estate's actions, from waste
disposal, noise, pesticide use or a bottle of wine that has gone off. Many of the winery estates (70%) have a
specific procedure or person to manage community and customer relations and complaints. Almost two
thirds of the study sample (62%) provide the local community and consumers with information on
environmental impacts and management initiatives. Less than half of the winery estates (41%) participate in
watershed management plans in their region.

5.4.11 Suppliers

T 11

Comprehensive environmental programs include requirements for suppliers that they must adhere to in order to be selected by the organization. Table 5.17 shows the supplier initiatives that the study population initiated. Just over two thirds (68%) of the study population request their suppliers provide environmental product information. More than half of the study population (57%) had created partnerships with suppliers in relation to environmental initiatives such as developing bottle and packaging designs that are lighter and stronger.

Table 5.17: Supplier Initiatives That Ontario Winery Estates Within the Study Population Have Implemented

Supplier Initiatives	Percentage
Requested suppliers to provide (environmental) product information	68
Created any partnerships in relation to environmental initiatives	57
Have suppliers take back excess packaging	22

n = 37

Less than a quarter (22%) of suppliers in the Ontario wine growing industry take back excess packaging such as packing boxes and crates. Respondents often qualified their answer to explain there is little excess packaging to take back and that most of it can be recycled. If packaging materials cannot be recycled or reused then it is taken to a waste landfill.

5.4.12 Participation in Industry Associations

As discussed in Chapter 3, Ontario winery estates are members of several industry associations. Table 5.18 identifies the number of winery estates which are members of each industry association.

Table 5.18: Ontario Wine Growing Industry Associations That Ontario Winery Estates Within the Study Population Have Membership (Multiple Response)

Industry Association Membership	Percentage
Vintners Quality Alliance (VQA)	91
Wine Council of Ontario (WCO)	84
Canadian Vintners Association (CVA)	51
Grape Growers of Ontario GGO	51
Ontario Vintners Association (OVA)	27

n = 37

Industry association membership can support research of best practices, offer winery estates information, representation to other stakeholders of the industry, grant programs for innovation and marketing for tourism. The majority of the study population is a member of the VQA (91%), and the WCO (84%).

5.4.13 Participation in the SWO Charter

Study participants were asked whether their winery estate participates in the SWO Charter. Approximately one third (32%) of the 99 winery estates in Ontario are members of the SWO charter. Comparatively, just over half (54%) of the winery estates in the study population are members of the SWO charter. Table 5.19 shows the number of winery estates that are members of the SWO charter for both the general population and the study population.

· ··· / ·F···· /									
			Proportion						
	General	Study	Representation						
	Population	Population	(Percentage)	z-score					
Participate in SWO	32	20	63	2.32					
Charter									
Total winery estates	99	37	37	-					

Table 5.19: Percentage of Ontario Winery Estates That Participate in the SWO Charter (General Population and Study Population)

z-score_{0.05} = +/- 1.64

It is noted that one of the expected limitations of this research (section 4.5.2) was that winery estates that are more engaged in sustainability issues would be more likely to agree to be part of a voluntary study such as this. As presented in Table 5.19 above, a z-score of 2.32 indicates that the sample of SWO is

not statistically significant, but that there is an obvious tendency that people from winery estates that are more environmentally committed are more likely to volunteer to participate in a study such as this.

Although the number of SWO Charter members participating in this study is above proportional representation, this is not a negative outcome. This study did not set out to size the market; its goal was to identify the factors that influence winery estates to implement environmental initiatives. The fact that a larger number of SWO Charter members chose to participate in the study does not affect its ability to achieve its goal. This study includes winery estates that have implemented environmental initiatives, ones that have not, SWO Charter members as well as non-members. By including winery estates with all levels of environmental commitment, it is suitable for identifying the factors that influence implementation of environmental initiatives in the Ontario wine growing industry.

5.4.14 Number of Initiatives Winery Estates Have Implemented

The number of environmental initiatives that winery estates have implemented was totalled to evaluate the environmental commitment level of the wine growing industry in Ontario. Table 5.20 presents the percentage of winery estates that had implemented various numbers of environmental initiatives. The distribution of the percentages is shown in Figure 5.1.

Number of Initiatives	Percentage of Winery Estates
0 - 5	0
6 - 10	0
11 - 15	0
16 - 20	3
21 - 25	3
26 - 30	8
31 - 35	19
36 - 40	35
41 - 45	27
46 - 50	5
51+	0

Table 5.20: Percentage of Ontario Winery Estates Within the Study Population That Have Implemented Environmental Initiatives

n = 37

Overall, the level of environmental commitment of the study participants is high. The minimum number of initiatives that winery estates had implemented is 19. The average number of environmental initiatives implemented is 37 (mean).

The environmental initiatives that a majority of winery estates have implemented were ones that are relatively easy to execute. Further, although they are considered by the SWO Charter as environmental initiatives, may of them could also be considered general tasks of a business. For example, turning lights off when not in use is generally common sense and an easy way for businesses to save energy costs. Recycling of common materials is also an initiative that although certainly a positive environmental practice, has become more customary in business and society. Most participating winery estates, regardless of the total number of environmental initiatives they have implemented, reported that they did these activities.

Figure 5.1: Percentage of Ontario Winery Estates Within the Study Population That Have Implemented Environmental Initiatives



The environmental initiatives that few winery estates had implemented include investigating LEED building certification, have suppliers take back excess packaging, reuse rinse water, initiated a HACCP program and becoming organically certified. These initiatives are less popular either because they take time to become ready to implement (HACCP, organic certification), not applicable in many cases (LEED, suppliers take back excess packaging), requires a significant dedication and is risky (organic certification), requires a significant financial investment (LEED), and/or are very difficult to do in practice (reuse rinse water). They are not practical, easy to implement and/or inexpensive activities and therefore regardless of a winery estate's environmental commitment level, they are less popular.

5.5 Summary

The results in this chapter provide information on the number, size and ownership of the winery estates in this study and whether it is representative of the general population. The number of environmental initiatives each winery estate had implemented is also shown and most and least popular environmentally related activities were discussed. Chapter 6 follows by presenting how respondents rated the influential factors, benefits and barriers and the reasoning behind their choices.

Chapter 6: Factors That Influence Environmental Commitment in the Ontario Wine Growing Industry

This chapter presents the data gathered on how factors identified in the literature review influence the implementation of environmental initiatives in the Ontario wine growing industry. The ratings, reasons respondents provided for their ratings, and additional descriptions of how and why they make decisions related to environmental commitment are presented in this chapter. Appendix D shows an example of the qualitative interview data coded as described in section 4.4.4.2. All of the tables in this chapter are presented in descending order based on the frequency of responses for each rating and starting with the factors with the largest frequency of high ratings at the top of each table.

6.1 Influencing Factors

The literature review highlighted many factors that can influence the level of environmental commitment of an SME. Table 6.1 outlines how the respondents of this study rated each of the factors.

	Frequency							
Factor	Not at all Influential (1)	Not very Influential (2)	Somewhat Influential (3)	Influential (4)	Significantly Influential (5)	DK/NR		
Increase wine quality	0	0	4	1	30	2		
Protection of land	0	0	3	12	20	2		
Compliance with existing regulations	3	1	4	3	24	2		
Social responsibility	1	0	6	15	13	2		
Public image	1	1	7	11	15	2		
Internal leadership	3	0	5	10	17	2		
Cost savings	3	1	6	8	17	2		
Employee satisfaction	1	3	6	11	14	2		
Market differentiation (competition)	1	1	8	13	12	2		
Consumer pressure	5	4	7	12	7	2		
Certification bodies	5	3	8	13	6	2		
Pre-emption of future regulations	6	1	12	9	7	2		
Community pressure/relationship	7	3	8	13	4	2		
Industry associations	8	2	8	12	5	2		
Other: moral obligation*	-	-	-	-	5	-		

Table 6.1: Rating Frequency of Factors That Influence Ontario Winery Estates of the Study Population to Implement Environmental Initiatives

n = 37

DK/NR = Do not know/no response

*Respondents were asked if there were any additional factors not listed and 5 respondents indicated that moral obligation was very significant.

During this study, respondents were asked to rate how influential each factor is when considering whether to implement an environmental initiative using a Likert scale where 1 = not at all influential and 5 = significantly influential. The rating frequencies for each factor and the corresponding interview results are presented in this section.

Wine quality received the highest ratings with 30 respondents rating this as a significantly influential factor. Protection of land received the next highest rating, followed by compliance with existing regulations, social responsibility and public image. Respondents rated pre-emption of future regulations, community pressure/relationships and industry associations the lowest of all the influential factors. Five respondents reported moral obligation as an additional significantly influencing factor. This was not included in the original list.

During the interviews respondents were asked to discuss the reasons why they rated certain factors as having a high or low influence. The following sub-sections present the reasons for their ratings and additional related comments.

6.1.1 Wine Quality and Protection of the Land

Wine quality is a key influence when winery estate owners, managers or winemakers are making decisions. "It's more about the product than the business" (Interview #4, 2009). The main objective for winery estates is to produce and maintain a high quality product based on the choices they make throughout the production lifecycle. The process begins with the practices applied in the vineyard. Often environmentally safe practices are used in order to produce great wine and not solely because of wanting to be good to the environment, but these appear to be closely related. "The wine is the ultimate proof of how environmentally good the winery estate is. To obtain great wine, you obtain it in the vineyard" (Interview #6, 2009). Similar opinions that quality is based on the quality of the harvested product and that good wine cannot be made without good grapes were stated by eleven respondents.

Two respondents used the word 'terroir' when further discussing their high ratings for wine quality and protection of the land. Terroir is a term used in wine making that means 'a sense of place' (Sinha & Akoorie, 2010). These respondents feel that a high quality wine will embody the unique qualities of their vineyard soils, local weather conditions and farming techniques they use. "The terroir is of key importance, it's a sense of place that's only possible when the soils are alive. You need living active soils to taste the terroir in a great wine" (Interview #4, 2009). Another respondent referred to the terroir as the winery estate's home and discussed how they treat it with respect: "The environment is our workplace, it's everything pretty much. As we work with the terroir, it's our home as well. We pull weeds by hand and are careful. We don't go into our homes and kick holes in the wall and we wouldn't do that in our vineyards. The viticulture team uses preventative instead of curative means" (Interview #1, 2009).

Three respondents directly related their opinion of wine quality as the most influential factor in terms of the use of pesticides, either by efficient, reduced or no application. "The environment is closely

related to the product. We spray [pesticides, herbicides, insecticides or fungicides] to keep the fruit healthy, but use it efficiently" (Interview #2, 2009). Another respondent suggested: "By reducing pesticides there is a direct correlation to the wine quality, [since] residual pesticides can be detected in the wine" (Interview #9, 2009).

The interviews showed a strong sense that the environment was important to the business and to the hearts of many respondents. Protecting the land is something that they do for many reasons. "We work with the environment in a conscientious way. Not inputting un-natural substances or forcing it in ways that it's not meant to be forced" (Interview #11, 2009). Another respondent stated: "[We] do what's best for the field" (Interview #21, 2009). The land is their home and their livelihood; if they begin to damage it then it will not grow the grapes that they need to produce a high quality wine.

The high rating of wine quality and protection of the environment was strongly reflected in the qualitative data gathered highlighting that these factors go hand in hand and are a significant influence toward environmental commitment.

6.1.2 Compliance with Regulations

Six respondents commented further about compliance with regulations as an influential factor saying that it is influential because they are regulated to do it. If a winery estate is found not compliant with a regulation, they may have to pay fines and experience negative publicity. It is interesting that only six respondents commented further on this factor when it was rated the third most highly influential factor by all respondents.

Four respondents commented about how pre-emption of future regulations was highly motivating to implement environmental initiatives. Meanwhile two said pre-emption of future regulations was not influential and the rest of the study population did not have any further comment about this factor. This may be due to the fact that current regulations are seen as not being very strict. "[Future regulations] are a consideration, but are not influential. Most of the current regulations for environmental initiatives are not as strict as they should be or the government is not monitoring as they should be. We're well ahead of the regulations in terms of knowing what has to be done [for the environment]. Usually government regulations follow [industry initiatives]" (Interview #26, 2009). Others felt the same way: "I can't complain [about government regulations]. The regulations placed on us compared to those for steel factories for instance [are minimal]. The regulations on us will inevitably get worse" (Interview #14, 2009). There is some belief that current regulations are not adequate enough to enforce high levels of environmental commitment from the industry. One respondent stated: "If I am just meeting [the current] regulations, then I am probably not doing that great [for the environment]. Regulations are often just the minimum requirement" (Interview #8, 2009). Three of the respondents and one of the key informants felt that more regulations are expected in order to force the industry to raise their environmental commitment. The high rating but limited comment from respondents could also be because winery estates are regulated to do certain initiatives. Therefore everyone will do an initiative if it is regulated, but regulation does not influence them to implement additional or beyond regulated environmental initiatives.

6.1.3 Social Responsibility

During the interviews, respondents described the notion of social responsibility and how it influenced them in several ways. A number of respondents (8) discussed the influence of social responsibility after rating it as the fourth most influential factor. "Social responsibility goes with protection of the land. It is all of our responsibility to manage it" (Interview #14, 2009). Some respondents said their motivation based on social responsibility was often rooted in the opinion that it is the right thing to do (Interviews #4, #5, #17, #25 and #33, 2009). One respondent stated: "[It is important that you] leave a positive environment behind as part of your legacy and it feels good to do good" (Interview #16, 2009). While another said: "The influencing factors relate to being responsible. The savings are good for business, but it is better to be responsible regardless of the business benefits" (Interview #1, 2009). As stated by a respondent from an organic winery estate, "it's a natural tendency for us to think that way, [we] never really considered doing anything but organic" (Interview #25, 2009).

Social responsibility appears to be a differentiating influential factor among the study participants. It was rated highly influential by many, but the respondents that commented further were the winery estates that were highly proactive in environmental improvement.

6.1.3.1 Moral Conscience and Personal Satisfaction

Seven respondents discussed that they had implemented environmental initiatives because it was the right thing to do. These respondents said that beyond the numerous benefits that are important to motivate and sustain environmental initiatives, their decisions are also based on their moral conscience and for personal satisfaction. "My family lives here, I want to preserve the land and their health. We also have to make money to stay in business" (Interview #11, 2009). Another respondent stated: "Other influences are [having a] personal mentality [towards environmental commitment]. I can [only] do what I can do within the limits of the company" (Interview #33, 2009).

Similar to social responsibility, the respondents that suggested moral conscience was an influential factor were all from winery estates that had implemented a number of environmental initiatives and were generally proactive about environmental commitment.

6.1.4 Public Image

The level of influence of public image was discussed further by six respondents during the interviews. Four other respondents said it was a positive benefit but not the main reason why they would implement an environmental initiative. Having a positive public image is very important to winery estates, although it is not always the main motivation for implementing environmental practices: "marketing is

important, we have to make money, but that is not the reason we do it" (Interview #11, 2009). A similar view was stated by three respondents. "An enhanced public image isn't going to influence [our decisions]. We're not necessarily doing it for the marketing [and enhanced public image], but it is a bonus" (Interview #31, 2009). One of the larger winery estates interviewed stated that public image was a significant influence to implementing environmental initiatives because they wanted to be seen as industry leaders (Interview #1, 2009).

Another respondent discussed how their biggest market was overseas and their wine's visual appearance, particularly that a heavier bottle is a sign of high quality, was of high importance (Interview #35, 2009). One of the interviewees had recently moved from Europe and discussed the differences between the two wine markets: "Everything is about image here. Image is so important [in North America]. So much money is spent talking about the winery estate. Public image is not the main motivation for us, but in North America you have to think about it" (Interview #14, 2009). He further discussed how since European industries are more mature, they can rely on their longstanding reputation and name unlike New World wine industries such as Canada that need to find other ways to increase their reputation as they do not have as long a history for making high quality wines.

Public image therefore is influential, but not a main motivation to implement environmental initiatives. It is closely connected to market pressures and the perceived value of the environmental initiative by consumers.

6.1.5 Internal Leadership

Many (18) respondents commented about this factor further as being influential. The people in leadership positions seem to be open to new initiatives as long as they make sense for the business. "The owner and the wine maker have the same philosophy: If the initiative is good for the environment and within budget, then they go for it" (Interview #4, 2009). Although they have to consider financial factors, internal leaders often believe in doing the right thing for the environment as well, when possible. "It is (because of) our own sense to do the right thing [that we have implemented environmental initiatives]. It is not all because of money, and if we can do it we will" (Interview #5, 2009).

As was shown in Table 5.4, 86% of winery estates need owner/senior management support and endorsement of policies and therefore they have the final decision on most projects. As a result, having an internal leader driving the initiative is highly influential in environmental commitment level. "The number one driver (of environmental initiatives) is support from leaders at a sufficiently high level. A retail manager or engineer will not have as big an influence. Having at least one person in a leadership position (that is supportive) and a strategic plan is needed to drive it along" (Interview #36, 2009). "It [instigation of environmental initiatives] is mostly coming from the top, which is good" (Interview #34, 2009). "The owners are very environmentally conscious" (Interview #7, 2009).

Several owners and wine makers (10) are thinking proactively in terms of the environment and are the ones that instigate environmental initiatives. "Ownership definitely affects the decisions made and [the owners] are very proactive and environmentally committed" (Interview #25, 2009).

The impression from the interviews is that internal leadership is a highly influential factor for implementation of environmental initiatives. Respondents from winery estates that had implemented several initiatives had leadership that valued and supported environmental commitments.

6.1.6 Cost Savings

During the interviews cost savings was found to be highly influential as respondents discussed its significance to their level of environmental commitment.

Financial considerations are a concern for many study participants as 24 of the 37 interviewees discussed this factor in greater detail during the interview questions. Respondents agreed that they need to be pragmatic when it comes to implementing new initiatives: "What we can practically implement in a cost efficient way, we will" (Interview #22, 2009). Respondents often said it comes down to balancing the benefits with the costs. "Initiatives are rarely cheap. It's a balance of corporate social responsibility and costs. Dollars and cents are always a top influencer" (Interview #16, 2009). While the ultimate decision came down to wine quality for some (4) of them. "While an initiative may be financially beneficial, the final decision will come down to maintaining the quality of the wine. "[We] have to find a balance [between maintaining wine quality and the bottom line] because we have to do both" (Interview #32, 2009).

There were a few study participants (6) that were not as concerned about the costs. "Cost would not be a main factor in the decision to implement an initiative. Even if it might cost slightly more, we have no problem with that" (Interview #25, 2009). These respondents were some of the same ones that said they were influenced by doing what was right.

6.1.6.1 Return on Investment

During the interviews, participants were asked if there was a return on investment (ROI) on an environmental initiative. Many respondents (21) answered positively to the notion that an environmental initiative had a return on investment (ROI). Examples include using less water and pesticides, geothermal heating and cooling, energy efficiencies such as insulation and sensor lighting and using lighter bottles. "Yes, there is an ROI and it is a huge [influencing] factor. [We look at the] cost of a conventional technology versus the cost of a newer technology. If the business will fail in order to do the 'right thing' then we won't do it. It depends on the issue" (Interview #5, 2009). Nine of the participants said they did not know or return on investment was not applicable. "It's not applicable. It (an environmental initiative) is a good thing to do, if it's the right and responsible thing to do, then it doesn't matter what the return on investment is" (Interview #1, 2009). Another respondent agreed saying that one does not get into the wine making business to make money. "You get into it because you have a passion for it. If you go into it to make money you have it all

wrong. It's a very long process and if you go bankrupt, then that's not good. But it's not a fast money maker" (Interview #5, 2009). Others could not answer definitively: "I have yet to see one, hopefully one day" (Interview #10, 2009) and "I hope so" (Interview #11, 2009). ROI was hard for seven of the respondents to define as there are more than just financial returns.

When asked what time period would be acceptable for the return on investment, respondents gave a range of answers. The shortest acceptable time period for the ROI was six months and the longest acceptable time period was ten years. However, eleven respondents could not specify a specific acceptable time, as it depends on numerous factors beyond financial returns. "It's hard to quantify. It depends on the resources. It's not all just a monetary thing" (Interview 22, 2009). Several respondents (15) said that implementing an initiative was not about gaining a financial return: "Doing the right thing may not [always] be economically beneficial, but it's right. It doesn't matter the time period [for the return]" (Interview #17, 2009). A similar attitude was voiced in another interview: "No, we don't think of [implementing an environmental initiative] in terms of a return on investment. Sustainability means it has to work forever and just keeps improving" (Interview #14, 2009). However, there was generally a limit to what they can do since they are running a business. "It's a function of what you can afford to do versus what you would like to do" (Interview #19, 2009). Similarly, "The time period depends on the item and the kind of other nonmonetary returns" (Interview #34, 2009).

An environmental initiative that has a return on investment is a strong influencing factor. Financial consideration in general and knowing that there will be a return on investment is another factor that differentiates between the winery estates that are strongly environmentally committed and those that are less so.

6.1.7 Certification

Overall, certification was not found to be particularly influential during the interviews. Only seven respondents mentioned certification and related it to increasing the winery estate's credibility during the interviews. "Certification is proof that you're doing something, properly" (Interview #14, 2009). The majority of respondents rated certification as influential however it does not appear to be as significant a factor as many others.

6.1.7.1 Organic and Biodynamic Certification

During the interviews, many (30) respondents discussed the methods they used in order to reduce the amount of chemical pesticides they apply to their vineyards in order to increase wine quality. "Reducing pesticides will directly correlate to a better wine quality. Residual pesticide can end up in the wine" (Interview #9, 2009). Integrated pest management (IPM) was often identified as a method used to diminish pesticide application.

One reason stated against organic certification was how it would affect reputation. "We're worried about greenwash. We don't want to use the environment to sell our wine. Some people are promoting environmentally sensitive winemaking as a niche. We qualify to be certified organic but organic wines have a reputation for not being very good. We hold the niche of having high quality wines. It happens to be organic, if anyone wanted to know, but we're not promoting it" (Interview #9, 2009). Another respondent stated: "We don't need a certification but we are doing it [organic winemaking] so that's good" (Interview #7, 2009).

Another reason for not being organically certified was that it required a significant commitment. "We don't have organic certification, but not because we don't believe in it. It's too early on for us and I don't think we can manage it right yet" (Interview #37, 2009). The winery estates that were already organically certified had chosen to do it from the beginning as they believed it was the only way to go about agriculture practices.

None of the winery estates that participated in this study had biodynamic certification while 5% said they planned to in the future. One study participant had incorporated biodynamic practices but had not become officially certified. Another respondent discussed how becoming biodynamic was complicated and required a lot of understanding. "To be fluent in biodynamic practices takes a long time. You have to tailor your activities in the vineyard in sync with the rhythm of nature" (Interview #25, 2009).

Overall organic certification did not appear to be something with which respondents were preoccupied. Winery estates that have chosen to use organic practices and/or are organically certified have done so because it is part of their personal values. It is a large commitment with significant risk that is not highly demanded for by the market currently, and therefore few winery estates are adopting this practice.

6.1.7.2 LEED Certification

All the respondents had heard of the LEED certification but unless they were planning to construct a new building for the winery estate in the future they were not incredibly interested in it. A couple of respondents thought that LEED was mostly about marketing (Interviews #6 and #19, 2009). The primary barriers to LEED certification are that it costly to implement and best initiated prior to building construction. The respondents (2) that were interested in LEED had looked into it and were considering getting LEED certification on a new building project. There was no indication that LEED certification was integral to environmental commitment.

6.2 Important Benefits

There are several benefits that result from increasing environmental commitment. Respondents were asked to rate the level of importance each benefit had on motivating and sustaining environmental initiatives at their winery estate. Table 6.2 indicates the rating frequency for each benefit.

The benefits that were most often given a rating of 4 or 5 by respondents were improving wine quality and protection of the natural environment. Competitive market advantage only received 3, 4 and 5 ratings and therefore the third highest rated benefit to motivate winery estates to implement environmental initiatives having received. Employee satisfaction received many (30) positive ratings (3, 4 or 5), tied with competitive market advantage.

	Frequency						
Benefit	Not at all Important (1)	Not very Important (2)	Somewhat Important (3)	Important (4)	Very Important (5)	DK/NR	
Improved wine quality	0	1	2	2	30	2	
Protecting the natural environment	0	0	2	9	24	2	
Competitive market advantage	0	0	12	12	10	3	
Employee satisfaction	2	1	6	14	12	2	
Cost benefits	4	2	6	10	14	1	
Pre-emption of future regulations	4	2	12	12	5	2	
Trade association certification	4	2	13	12	4	2	
Other: moral conscience, personal satisfaction*	0	0	0	0	1	2	

Table 6.2: Rating Frequency of Benefits That can Motivate and Sustain Environmental Initiatives in a Winery Estate Within the Study Population

n = 37

DK/NR = Do not know/no response

*Respondents were asked if there were any additional factors not listed and one respondent indicated that moral obligation and personal satisfaction were very significant influential factors.

Cost benefits, pre-empting future regulations and trade association certification received mostly ratings of 3 and 4 (24 total), making it important, but were not rated in the top important benefits that motivate respondents to implement environmental initiatives.

Respondents were asked during the interviews to discuss the reasons why they rated certain benefits as having a high or low ability to influence and motivate them to implement an environmental imitative. The following sub-sections present the comments made by respondent during the interviews in relation to the benefits.

6.2.1 Improved Wine Quality and Protecting the Natural Environment

High ratings for both of these benefits provided further evidence that study respondents think of wine quality and protecting the natural environment as going hand in hand. One respondent commented during the interview: "I rated increased wine quality as an important factor because that is what tells us what we need to do. The grapes tell us. We take our cue from them. We live and learn on the land" (Interview #7, 2009). Another respondent said: "Preserving the environment, keeping it healthy is absolutely critical.

We also have to think of future generations. Everything comes down to quality of the wine. (Production of) waste, pollution of air, water and soil – all of it will end up in a bottle of wine" (Interview #16, 2009).

Improved wine quality was highlighted by nine respondents while fourteen mentioned protecting the natural environment during the interviews. "Protecting the environment is the main benefit even if it doesn't make me any more money" (Interview # 14, 2009).

Comments in relation to wine quality and protecting the natural environment further agree with section 6.1.1 that these are highly influential factors. If they are perceived as a benefit from implementing an initiative, then it is more likely that it will be implemented.

6.2.2 Competitive Market Advantage

The relationship between implementing an environmental initiative, increasing competitive advantage and market visibility was made by four respondents during the interview portion of the questionnaire. "Competitive advantage is not as big a benefit unless it's 'intensely cool' what you are doing and often those environmental initiatives are really expensive to do" (Interview #31, 2009). Winery estates in Ontario that have implemented specific initiatives such as being organic or having LEED certified buildings can be marketed to enhance the brand (see section 6.1.4: public image) and cater to the group of consumers who are becoming more aware of the environmental impacts of their purchasing decisions.

Three respondents were uncertain about how much consumers really valued higher levels of environmental commitment when it came to their wine purchases. So far these respondents had not felt pressure from consumers to implement environmental initiatives, while two other respondents believed that consumer pressure was on the horizon, but since this pressure is not yet very strong, implementing environmental initiatives would need to be beneficial for other reasons other than simply increased market visibility.

Three of the study participants from the smaller wine growing regions Prince Edward County and Lake Erie North Shore felt that success in industry was not about being competitive against each other. They were happy to share information in order to help the whole industry become more well-known. Success and attention for a winery estate in the area would eventually benefit all winery estates in the area as it would spread the word that great wines are being produced there. "A greater benefit would be cooperative market advantages, market the whole county" (Interview #26, 2009).

There is some uncertainty among the respondents about whether environmental commitment can create a competitive advantage. However if there is a clear, understood competitive advantage to implementing an environmental initiative, and it does not 'break the bank', then winery estates are likely to do it.

6.2.3 Cost Benefits

During the interviews, many of the respondents (19) discussed how cost benefits were a key part of their decision to implement an environmental initiative. The decision is often based on several factors and financial considerations are very important. Five respondents referred to the need to do a cost benefit analysis before they consider implementing an environmental initiative. One respondent said: "There has to be a financial benefit. We want it to be beneficial [in other ways], but when there is a financial benefit we jump on it" (Interview #35, 2009) and another: "There are benefits outside the cost benefit analysis. Cost isn't the driver [to implement environmental initiatives], but it's important" (Interview #26, 2009).

Several (8) respondents said they recognize the potential monetary benefits of various environmental initiatives. One winery estate in Niagara had recently purchased a two-row sprayer based on economic and environmental considerations. The capital cost was high, but the new sprayer is more efficient reducing the number of times it needs to be passed through the rows. This in turn reduces the use of the equipment, fuel and lessens the soil compaction which is better for the vine root exploration which benefits the grapes (Interview #35, 2009). The Environmental Farm Plan (EFP) subsidy program (discussed in Chapter 3) assisted the purchase of another piece of equipment (a leaf puller) which results in better spray penetration, reducing the amount of pesticides they need to buy and use, decreasing the operational cost. Another winery estate purchased a recycling (pesticide) sprayer over seven years ago, based on many similar economic and environmental benefits including less diesel and pesticide used, greater pest control (penetration), reduced soil compaction and water use. This piece of equipment helped them become more efficient and saved them money. Conversely, some winery estates felt that capital costs for environmental initiatives were too high. The amount of financial subsidy available through grants is not enough for all winery estates. The respondents agreed that the decision to implement depended on the situation and financial considerations can vary project to project.

Interestingly, a few (4) respondents from winery estates that had implemented environmental initiatives described how they did not do so because they were environmentally responsible decisions, but because they made sense on a financial and production efficiency basis. In these cases, the environmental aspect of certain choices was found to be a benefit but was secondary to the initial influence. The environmental benefit was appreciated; however, the primary driver was that the initiative had other benefits.

These findings agree with those discussed in section 6.1.6 above about cost savings. Winery estates that are aware of cost advantages from environmental initiatives, and that not all environmental initiatives are require a large capital investment, are much more likely to implement them.

6.2.4 Pre-emption of Future Regulation

A few respondents (5) said they would go beyond regulations in part to discourage new, more stringent regulations "Whenever we can pre-empt future regulations, [we do]. We don't want the regulations to increase" (Interview #32, 2009). One interviewee felt that pre-empting future regulations was very important at the industry level: "regulation comes when government have exhausted efforts to get people to do the right thing, when they need to send a message of moderation due to too much abuse" (Interview #16, 2009). Overall, however, this was not found to be a significant influence.

6.2.5 Other Benefits

The other benefits including employee satisfaction, trade association certification, moral conscience and personal satisfaction were not mentioned more than one time during the interviews. This suggests that these benefits are not highly important compared to the ones brought up often by respondents which are: improved wine quality and protecting the natural environment, competitive market advantage and cost savings, as described above.

6.3 Significant Barriers

There are several barriers that can impede implementation of an environmental initiative. Respondents were asked to rate the level of significance each barrier has on implementing environmental initiatives at their winery estate. Table 6.3 indicates the rating of each barrier.

	Frequency						
Barrier	Not at all Significant (1)	Not very Significant (2)	Somewhat Significant (3)	Significant (4)	Very Significant (5)	DK/NR	
Inadequate resources (financial)	1	2	6	7	15	6	
Threat to wine quality	7	0	5	5	18	2	
Inadequate time to implement	4	1	9	14	7	2	
Inadequate knowledge	4	6	10	10	5	2	
Inadequate skills	8	9	9	5	2	4	
Lack of leadership from top management	20	1	6	5	3	2	
Lack of knowledge of local behaviour	15	7	9	3	1	2	
Multiple stakeholders with conflicting interests	19	5	6	1	4	2	
Organizational structure not amenable to change	24	1	5	2	3	2	
Environmental initiatives incompatible with corporate structure	25	5	0	1	1	5	

Table 6.3: Rating Frequency of the Barriers That Impede Ontario Winery Estates Within the Study Population to Increase Their Level of Environmental Commitment

n = 37

DK/NR = Do not know/no response

The highest rated impeding barrier to the implementation of environmental initiatives was inadequate resources. A threat to wine quality was also rated very high with 18 respondents giving it a 5

(very significant) rating. Inadequate time, knowledge and skills received the next highest ratings (respectively).

Lack of leadership, lack of knowledge of local behaviour, multiple stakeholders with conflicting interests, organizational structure not amenable to change and environmental initiatives incompatible with corporate structure each received lower ratings on the questionnaire.

Respondents discussed the reasons why they rated certain barriers as having a high or low ability to impede the implementation of an environmental initiative during the interviews. The following sub-sections present their reasons for their ratings and additional related comments.

6.3.1 Inadequate Financial Resources

Many respondents (23) said financial considerations would limit what they could implement during the interviews. If the cost benefit analysis does not make economic sense for the business, then it does not matter how good it is for the wine or the environment. A respondent from a larger winery estate said: "An initiative has to [have a return on investment], or else it won't matter. You won't do it; the shareholders are looking at the dividend" (Interview #36, 2009). Another respondent commented: "The capital investment of initiatives is a factor. If there is a chance that the business might suffer due to the implementation of an environmental initiative then we can't do it" (Interview # 12, 2009). This point was re-iterated: "If we can't make it [an environmental initiative] cost effective, then we can't do it. The margins [in this industry] are so tough" (Interview #20, 2009). "The environment always links back to the economic reality. We need to see an economic incentive [in order to implement an initiative]" (Interview #5, 2009).

Three respondents recognized that large capital costs can be a barrier discouraging implementation of environmental initiatives but said that it was not necessarily a large barrier depending on the potential benefits. One respondent from a micro sized, organic winery estate stated: "Cost would not be a main factor for us to decide to implement environmental initiatives. We have no problem if [an initiative] might cost slightly more" (Interview #25, 2009). A respondent from another micro sized, organic winery estate had a similar view: "Cost can limit what we would like to do but if it has a massive environmental benefit, then the cost is not an issue" (Interview #11, 2009).

It became evident that the perceived value of an environmental initiative depends on a winery estate's knowledge of the potential direct and indirect financial benefits which would result.

6.3.2 Threat to Wine Quality

During the interviews some respondents (4) brought up that a threat to wine quality would be a barrier while eight respondents could not think of an environmental initiative that could pose a threat to wine quality. These respondents felt that environmental initiatives would either be neutral or a positive influence on wine quality as opposed to a threat. "I'm not aware of any threat that could come of an environmental initiative, but if there were, then it would be significant barrier" Interview #16, 2009).

Another interviewee (Interview #17, 2009) believes "there is never a threat by doing an environmental initiative." A respondent from a certified organic winery estate said he rated improved wine quality an important benefit explaining that the reason they were organic was to improve the vineyard and wine quality (Interview #14, 2009). Wine quality as an influential factor was given a high mean score because it is the most valuable aspect of the product. A threat to wine quality was not rated highest here because not all respondents agreed that there were any environmental initiatives that could be a threat.

Three interviewees felt that threats to wine quality did exist from certain environmental initiatives. One respondent mentioned how becoming organically certified could be a barrier. In order to be certified organic, vineyards must not use any chemical fertilizers, pesticides, fungicides and herbicides (Morganstern & Springarn, 2008). The high humidity of the region, however, promotes rotting vines and fungus growth and fungicides can be used to prevent these issues from affecting grape yields. This respondent said they did not want to become officially certified as organic (requiring them not to use pesticides, no matter the circumstances) just in case there is a very wet summer. The risk of losing their grape harvest in order to be organically certified is not benefit enough. The summer of 2009 did not see a great deal of sun but there was a lot of rain: "what are organically certified winery estates doing this year [to maintain enough grapes to produce their wines]" (Interview #29, 2009)? Concerns that heating and cooling conservation initiatives could threaten the wine ageing process were voiced by another respondent: "controlling cellar temperatures [to conserve energy] could affect wines by not giving them the cold or heat that they require for ageing which can be a significant barrier" (Interview #36, 2009).

Overall an environmental initiative will not be implemented if it could threaten the vineyard and terroir. No initiatives, however, (other than possibly organic certification) are believed to be harmful. There is uncertainty whether becoming organically certified would be a true benefit or threat to the business. The Ontario climate can make it difficult to cultivate a full wine-grape harvest without toxic substances. It is also somewhat uncertain how much consumers and the market are willing to pay more for organic wines.

6.3.3 Inadequate Time to Implement

During the interviews, 16 respondents revealed beyond their rating that it is often hard to justify dedicating time to begin the process, particularly if the benefits are not clearly seen. One respondent stated: "It may be an easy change but it takes time to make it happen. We are so busy every day that it depends on how important it is on the 'to-do' list. We have to analyze new initiatives for a while, perform tests ourselves to see if it can really work for us before we consider implementing it" (Interview #13, 2009). Another respondent agreed: "Our workloads are overloaded and time is tight. [We are trying to complete the] HACCP plan but it is buried under more pressing issues" (Interview #35, 2009).

A lack of time can relate to not having enough man-hours available to do research on new initiatives and educate themselves on various projects that could be beneficial. It can be due to not having enough people available do the work or that the environmental initiatives are not perceived to be important enough to dedicate precious time resources. "It is hard to dedicate one person to each job, and it all ends up mostly on one person. We have to find the time for these things because 'no time' can't be an excuse" (Interview #35, 2009).

The time and people commitment that is required to apply for funding, obtain various stakeholder approvals or research the details for implementing an environmental initiative is often perceived as too much effort in relation to the an unknown potential efficiency and benefits that might be achieved.

6.3.4 Inadequate Knowledge

Several respondents (13) said during the interviews that inadequate knowledge was a barrier and felt that information about the benefits of environmental initiatives could be more readily available. It is possible to have inadequate knowledge and become confused with what information does exist. "There is a lack of knowledge of the specific details. There is so much information out there and so many buzz words. There needs to be science behind the initiatives to validate the benefits" (Interview #29, 2009). Two of the respondents felt that the information was easy to access but that many people are unaware or do not know the benefits that can result from implementing environmental initiatives to spend time and learn more. "You can't come into this industry without knowledge and then you have to learn fast. A lot of it is not hard, and you can get a lot of help" (Interview #26, 2009). Another respondent agreed that information on environmental initiatives was available and believed that a winery estate has to want to make a commitment first before putting in effort to look for information.

Many respondents (26) agreed that if information and education on environmental initiatives were (more) easily accessible they would be more likely to implement such practices. While four respondents said they felt the information existed, it was not necessarily straightforward, easily accessible and/or directed at the Ontario wine growing industry specifically. Some respondents feel there is a lack of clarity in some of the resources. "The information and requirements for implementing initiatives and applying for grants can be vague. Often you don't know what you're really doing" (Interview #33, 2009). Another respondent wanted to see "accurate, timely information that is easily sourced. Farmers in this industry tend to not like too many complex things. There is currently too much paperwork which needs to be simplified" (Interview #37, 2009).

In general, respondents from winery estates that had implemented none or few environmental initiatives were those that said that inadequate knowledge was a large barrier. Knowledge about the potential benefits, low cost initiatives, and practical, easy to follow directions on how to implement environmental initiatives differentiates between the winery estates that are more environmentally committed and those that are less so.

6.3.5 Government Regulation

Government regulation can be a barrier to implementing environmental regulation, cited by 6 respondents during the interviews. In particular these comments related to how the regulations can be inflexible and impede the implementation of some initiatives. "There are so many regulations to get through in order to build a winery estate on the escarpment" (Interview #8, 2009). "There are many regulatory issues. We wanted to do a few projects and it was just too hard to implement them" (Interview #9, 2009). "We are thinking about incorporating energy efficiency into renovations, solar maybe, but it's difficult to get through government system" (Interview #10, 2009).

Although this was said to be a barrier for some, it is not a significant barrier. Winery estates that wanted to implement environmental initiatives that required time and effort to navigate regulations would do so if they were motivated by other influencing factors.

6.3.6 Other Barriers

The other barriers including inadequate skills, lack of leadership, lack of knowledge of local behaviour, multiple stakeholders with conflicting interests, organizational structure not amenable to change and environmental initiatives incompatible with corporate structure were not mentioned more than one time in the interviews. This suggests that they these barriers may not be significant or that respondents had already discussed related issues previously.

6.4 Strategies to Overcome Barriers

Respondents were asked what strategies they use in order to overcome the barriers to environmental commitment previously discussed. The percentage of study participants that have used various strategies are shown in Table 6.4.

Table 6.4:	Strategies	Used	by	Winery	Estates	Within	the	Study	Population	to	Overcome	Barriers	to
Environmen	ntal Comm	itment											

Strategies P	Percentage	
Sharing resources and information with other winery estates		
Introducing 'low hanging fruit' initiatives first	86	
Discussing the benefits of cost reduction and market differentiation with decision makers		
Employee education and training	81	
Consumer education	59	
Include environmental responsibility in employee job descriptions		

n = 37

The most popular strategies used to overcome barriers mentioned by the respondents are sharing resources and information (89%), introducing the simple and low-cost initiatives first (86%), discussing the benefits to cost to decision makers (84%) and employee education and training (81%).

Respondents described the Ontario wine growing industry as friendly and that they often share information and resources amongst each other during the interviews. "We collect information from people

you know that have bought new equipment or have tried something new already" (Interview #15, 2009). This also connects to cost savings and implementing the easy initiatives first. If a winery estate has tried something and had success, then it is less of a risk for other winery estates to implement.

Consumer education is rated much lower than the education of decision-makers and employees about environmental commitment. This is likely because the industry is still in the early stages and the leaders need to be convinced that implementing an environmental initiative is valuable long before the winery will begin to discuss what commitments they have made to their consumers.

6.5 Incentives

The rating frequencies of the incentives that encourage Ontario winery estates to increase their level of environmental commitment are shown in Table 6.5.

	Frequency							
	Not at all Not very Somewhat				Very			
	Important	Important	Important	Important	Important			
Incentives	(1)	(2)	(3)	(4)	(5)	DK/NR		
Other	4	1	4	5	17	6		
subsidies/incentives								
Government grants	3	0	8	4	20	2		
Greater market	1	2	7	12	13	2		
visibility								
Sharing information	2	2	9	11	11	2		
between winery estates								
Certification(s)	5	3	9	8	10	2		
Guidance from industry	6	0	10	13	6	2		
associations								
Guidance from	12	4	12	3	3	3		
government								

Table 6.5: Rating Frequency of the Incentives That Encourage Ontario Winery Estates Within the Study Population to Increase Their Level of Environmental Commitment

n = 37

DK/NR = Do not know/no response

The quantitative data indicate that financial subsidies, grants and enhanced marketability are the most important incentives to motivate respondents to implement environmental initiatives. Guidance and information from government and industry associations received low ratings.

Study participants were also asked if they currently employ any of these incentives and, if so, which ones. The incentives that respondents said they have employed the most were financial grants. Additional incentives mentioned were market visibility, winery estate image, competition, cost savings that make an initiative practical to implement, and grant applications that are easy and straightforward to follow. Sharing information with other winery estates about the benefits, such as the implementation process and their experiences was considered an incentive as well. If they can learn and observe the successful implementation by other winery estates then there is less risk to implementing it themselves. During the interviews, respondents were asked to discuss the incentives that they rated as most encouraging to implement environmental initiatives. Financial incentives, regardless of where they come from, were said to be the most motivating by many respondents. Any financial assistance is greatly appreciated as there are many initiatives that winery estates would like to integrate into their business, but they are limited by the cost and ability to make investments that have a long return on investment. One respondent commented: "Getting money to do certain things could be a big incentive because money is the biggest barrier. If there was more money available we could do more" (Interview #2, 2009). "It's all a question of [financial] resources. If there's money available to help, then it's more likely to get integrated" (Interview #9, 2009). Another respondent felt similar as he discussed the decision to build a bio-filter in the vineyard: "It was too expensive to do until the government came in to help [with grants]" (interview #4, 2009).

It was noted by 5 respondents during the interviews that the application for financial incentives was cumbersome and lengthy. Although there was some money available it was difficult to attain. "There is a large amount of work to apply for them. It's almost as much work to apply as it is to implement the initiative" (Interview #24, 2009).

Another highly encouraging incentive discussed by 14 respondents when asked to comment on their rating of incentives was receiving guidance and information from reliable sources including the government, industry associations, and shared experiences from other winery estates. These respondents said the more information available on the benefits of implementing environmental initiatives the more motivated they would be. "Guidance is good. It can help save time. Government and industry associations gather some information and conduct research and development and then pass it onto us [the industry]" (Interview #14, 2009).

Certification was mentioned by 6 respondents during the interview as being an incentive to implement environmental initiatives. Becoming officially certified for an environmental initiative is said to provide credibility to the winery estate which is good for the business in terms of financial considerations as well as marketability and competitiveness with foreign wines. "Certifications are always important. We are driven to do them because we can sell more wine with them" (Interview #26, 2009). Another respondent described how certification was important: "Certification gives the winery estate credibility. It provides a standard that is then marketable" (Interview #4, 2009). "We don't use organic practices to get the organic certification, but we need the certification in order to gain credibility, it's important" (Interview 11, 2009).

There were four respondents who said the incentives were not important to them and their decision to be environmentally committed. Their choice to implement environmental initiatives was based on them being 'the right thing to do': "None of the mentioned incentives are important. We do it because of the resulting good wine and environmental quality" (Interview #3, 2009).

The incentives that motivate all winery estates the most were related to money and education. Regardless of the environmental commitment level of the winery estate, these two incentives are very important. It is essential that application to funding is straightforward and information is reliable and practical otherwise these incentives can become barriers.

6.6 Information Sources

Respondents were asked what information source(s) they use if they are interested in learning more about environmental initiatives and best practices in the wine growing industry. Table 6.6 shows the various information sources available and the percentage of respondents that use each.

Situato while Growing industry Environmental initiatives and Dest Practices (Multiple Response)					
Information Source	Percentage of winery estates that use source for information				
Industry associations	84				
Publications	76				
Websites	73				
International industry	51				
Government	46				
International centers	32				
Local centers	16				
Regional centers	8				
National centers	0				

Table 6.6: Percentage of Study Participants That use Various Information Sources to Gather Information on Ontario Wine Growing Industry Environmental Initiatives and Best Practices (Multiple Response)

n = 37

The majority (84%) of respondents seek information on environmental initiatives and best practices from industry associations. Just over three quarters (76%) of respondents use publications and 73% look to websites for information on environmental initiatives. A little over half of study participants (51%) look to international industries for information on environmental initiatives. Less than half (46%) of study participants seek information on environmental initiatives from government sources.

Respondents were asked during the interviews if information and education on environmental initiatives were (more) easily accessible, would they be more likely to implement such practices. Twenty-six study participants said yes.

During the interviews, some respondents (5) said that the information and guidance available was often too complex and therefore not helpful. "The information is too high level and not suitable for the real world. People who are in the farm need to make changes but the information is not easily understood or practical" (Interview #32, 2009).

A number of respondents (6) commented further about how they felt industry associations were valuable for passing on news or information about new issues. "Industry associations guide and inform us of potential initiatives and programs. They give us the heads up and let us know what is coming down the pipe such as new regulations or best practices" (Interview #34, 2009). Another respondent agreed saying that

guidance from industry associations was helpful to save time since they gather research and development information to pass onto its members (Interview #14, 2009).

Meanwhile two respondents mentioned that they thought the industry associations did not supply consistent assistance and information. "Guidance from industry associations are hit or miss" (Interview #18, 2009). One respondent from a new winery estate in Lake Erie North Shore appreciated their regional association over provincial associations because they felt they had poor penetration. "All of the information and sessions are conducted in the Toronto area. We can not go to most of them [because of the distance]" (Interview #31, 2009).

Similar to incentives discussed in the previous section, winery estates want access to reliable, practical information about the benefits of environmental initiatives and clear descriptions about how to implement them. Regardless of how much information they perceive there is currently available, study participants are more likely to implement environmental initiatives if there is more information made available as long as it is reliable and relevant.

6.7 The Role of the Environment in the Ontario Wine Growing Industry

The environment is incredibly important to study participants as 17 out of 37 respondents in the interviews related the environment as their home, their livelihood and it must be treated with respect. "We have a philosophy of being sustainable. We have a moral obligation. I live here, I'm bringing up my kids here and want to create a better environment, [the environment] is my home" (Interview #4, 2009). "The most important [factor] is to maintain [the environment]. We make our living from the land. If we don't manage it properly, it's our livelihood at stake" (Interview #9, 2009). Other respondents had a similar comments "It's the land, the farm. In farming you are nothing without [the environment] (Interview #29, 2009). "The environment means everything to the winery estate. Without it there would be no grapes, no wine. We are 'wired to mother nature'" (Interview #3, 2009). The environment is incredibly valuable to the respondents. "The value of this company is 270 acres of vineyards. The most valuable asset is the land" (Interview #16, 2009).

The environment is an integral part of the winemaking process. Six respondents mentioned this and discussed how the quality of the wine started with the quality of the environment. "At the end of the day it's about making the best wine. It's in our interest to be environmentally friendly. It's about wine quality. We are living off the land, what you put in is what you get out, it's sort of a self-interest at that level" (Interview #5, 2009). "As our product is derived from nature, the environment has a direct impact on our product. As a winery estate that is focused on quality, the environment where our grapes are grown is very important to us" (Interview #2, 2009). "I am a farmer. The quality of my product is dependent on the health of my environment" (Interview #17, 2009).

Twelve respondents said the word sustainability while describing the land and related it to preserving the environmental for future generations. "Preserving the environment and keeping it healthy is

absolutely critical. We have to think of future generations as well. Everything comes down to the quality of the wine. Our waste, air, water and soil quality – all of it will end up in a bottle of wine. So we can't be selfish, we must leave the planet in good shape for the next generations" (Interview #15, 2009). Another responded said: "This industry goes way beyond one generation. So we try to be sustainable and do what we can for the people that come after us. It's a long term proposition" (Interview #22, 2009). "The environment and sustainability go hand in hand. They are the same for me" (Interview #23, 2009).

Study participants agree that the role of the environment is integral to what they do. The environment encompasses their home and is vital to their livelihood.

6.8 Sustainability Defined

As this study is focussed on understanding what factors influence implementing environmental initiatives by winery estates, respondents were first asked to discuss what initiatives they had implemented and what factors most influenced their decisions. It was then thought to be useful to find out how they define the term sustainability since this may suggest further insight on their previous choices. As noted in the previous section, a few respondents said the environment and sustainability were the same. In general, the common definitions used for sustainability had to do with how treatment of the environment, land preservation, responsible management of the business and home for future generations, and maintaining a good balance between all aspects of the business. How each respondent described the term sustainability was slightly different, but the general themes were the same.

Fifteen respondents discussed sustainability in terms of the future and preservation of the environment for next generations. "With regard to our winery estate [sustainability] is the ability to produce quality grapes year to year with as small an impact on the environment as possible" (Interview #2, 2009). "[Sustainability] has to do with being a good citizen to the environment, keeping a level of efficiency, making a winery estate better with better quality wines, healthy vineyard, consistently" (Interview #13, 2009). A similar response was made by other respondents: "We are always thinking of the next 20-25 years. What about the next 100-200 years and the effects that could occur onsite in that time" (Interview #25, 2009)? "Sustainability is about future forward thinking" (Interview #16, 2009). One respondent related their view of the future as more than just the environment, but for the winery estate as a whole: "It has to do with long term planning and doing it better year after year" (Interview #17, 2009).

Nine respondents connected their definition of sustainability with being conscientious at all times. "It's being able to continue what we do without intervention" (Interview #27, 2009). Another described is as "everything you take out, you put back into the land. It is best to balance and replenish. It's how we use vineyard and winery estate practices everyday" (Interview #4, 2009).

A few respondents (5) described sustainability as a balance of the environmental, economic and social aspects of the winery estate and being responsible. One respondent discussed how the definition of sustainability would be different for every person at the winery estate: "For the business and marketing people it means thinking of the economics. For the winemaker it means thinking of the vineyard. For the wine growing industry as a whole it means to prosper for years to come" (Interview #20, 2009).

People who work in the wine growing industry have a close connection to the environment and being sustainable means respecting their home and the terroir for future generations. These SMEs need to make a living and the winery estate is often a family-run business which they plan to pass on to their children. Although SMEs in all industries want to succeed, winery estates are unique in that their success is so closely related to the protection of their environment (vineyards).

6.9 Influential Stakeholders With Respect to Implementing Environmental Initiatives

When it comes to making decisions on environmental initiatives the most influential stakeholders are the winery estate owners or management. Twelve respondents said during the interviews that the winery estate owners are the most influential because they have the final say on every issue. "The influence starts at the ownership" (Interview #16, 2009).

Consumers are also an influential stakeholder as cited by eleven study participants. "The consumer is voting when they make their purchases, so we must produce something they would want to buy" (Interview #11, 2009). Restaurants and the LCBO are also considered consumers that were highly influential. As the only province-wide distributor for wine, having a listing with the LCBO is important. "The LCBO and the large wholesale buyers are influential in our decisions. If environmental commitment becomes a larger part of their buying decisions then we would [implement more]" (Interview #10, 2009).

The key influential stakeholders in terms of motivating winery estates to implement environmental commitments are the owner/managers as was discussed in section 6.1.5. Consumers are a significant stakeholder for decisions in general; however for those related to environmental commitment they do not currently impart significant pressure on winery estates to make environmental improvements.

6.10 Competitiveness and Acceptance of Environmental Practices

Respondents were asked during the interviews if they felt competitiveness of the industry was dependent on the widespread acceptance of environmental practices. Many (16) respondents said they felt this was true. "[Environmental commitment] has significant advantages and can [help] make a great case against foreign competitors" (Interview #8, 2009). These respondents felt that environmental commitments are part of the industry and necessary to remain competitive against other wine growing regions. "It is part of the picture. More than five years ago when we started [environmental commitment] was new. It was a niche, and now it is more normal" (Interview #12, 2009). Another respondent saw environmental commitment as a key differentiator in the coming years: "If you are not a good environmental steward you will be left in the dust. We see it as basic business" (Interview #16, 2009).

Respondents were also asked to provide their opinion on whether the competitiveness of the industry as a whole depended on the acceptance of environmental initiatives and greater levels of

environmental commitment. Three respondents felt that wine quality would remain the key factor to competitiveness of the industry. However, competitiveness depends on economic considerations, and many respondents (16) said that this was related to experiencing pressure from consumers to be environmentally committed. These respondents said that in general they are not experiencing this pressure. If consumers were willing to pay for environmental products then environmental commitment levels in the industry would certainly increase. "When the environmental initiative goes hand in hand with the perceived value to the consumer makes it more meaningful to producers [the winery estates]" (Interview #20, 2009). Seven respondents said they thought consumer pressure was on the horizon though and, in time, winery estates that were not committed to a certain level would suffer as environmental awareness was beginning to become the norm.

Conversely, there were a number of respondents (10) who felt that winery estates could still be competitive in the market without being proactive about environmental commitment. They related their opinion to the fact that environmental commitment was not at the top of the list for most wine consumers.

There is some uncertainty among respondents about how acceptance of environmental commitment plays a role in the industry's overall competitiveness. Respondents that said that it does play a role were likely to be from winery estates that had implemented many environmental initiatives. Those that said it did not play a part in the industry's competitiveness were also those that place less importance on environmental commitment overall. To note is that added pressure from consumers, if they begin to demand for winery estates to make environmental commitments, will motivate all winery estates.

6.11 Attitudes That Could Support Proactive Environmentalism Within the Industry

When asked if there were any attitudes that could significantly support proactive environmentalism in the industry during the interview, fifteen respondents said that a greater understanding of the benefits that can result from environmental initiatives is necessary. A handful (7) of respondents said that government support with grants and information could provide encouragement. A few respondents (5) discussed how consumer pressure for proactive environmental behaviours from the wine growing industry would need to increase appreciably in order to change the attitudes and actions of people with attitudes opposed to environmental initiatives. "The consumer wants to buy environmentally responsible products but they don't want to pay for it" (Interview #4, 2009).

There were some (11) respondents who believe consumers do not care about the environmental commitment level of a winery estate when making their wine purchases. They felt that ultimately the pressure to raise environmental commitment level would need to come from business responsibility, keeping up with changing regulation and staying competitive, not from consumer pressure.

A handful of respondents (3) disagreed that competitiveness of the industry relied on the acceptance of environmental practices because they felt it was about doing the right thing for the environment not to achieve greater marketability.
People that possess attitudes opposed to environmental commitment are most likely to change if reliable information regarding, in particular, economic benefits is clearly communicated. Current industry leaders of environmental commitment need to share their experiences in order to demonstrate the benefits. Consumer pressure would be likely to help change attitudes and motivate adoption of environmental commitments, but most of all greater education on is required.

6.12 Participation in the SWO Charter

The general impression from participants and non-participants is that although the SWO Charter is a good start in assisting and informing winery estate environmental initiatives, it has weaknesses. In particular, it takes a significant amount of time to complete, it is not third party verified and it is not yet well recognized by consumers. "Weaknesses of the SWO Charter are that there is so much to complete and it is a self-evaluation. There is no audit checking that winery estates are doing what they say they are. There should be levels to the certification - right now it is set up as either you participate or you don't. There is no recognition for those participants who are doing more than anyone else" (Interview #17, 2009). This participant also felt that in order to motivate greater industry participation, it needs to be better promoted. "The SWO Charter will help with this and for marketability" (Interview #9, 2009). A few (3) respondents compared the weaknesses of the SWO Charter with the strengths of the VQA standard. The VQA symbol has become very valuable because it symbolizes wine of high quality throughout Canada. The SWO Charter is less credible because it is not audited and it is not as recognizable because there has been limited awareness of it to consumers so far.

While the SWO Charter program has not been perfected, there are some advantages to winery estates who participate. As pressures from international environmental standards grow, having a program that helps winery estates set goals, use tools to assist them along, track their progress and market their involvement is valuable to some. "We don't do [environmental initiatives] to be more compliant with regulations. We do them to be more competitive with foreign industries" (Interview #9, 2009).

With improvements to its credibility, enforcement and recognition by consumers, the SWO Charter would become even more valuable and likely expand its membership. With this expansion would help to increase the overall environmental commitment of the Ontario wine growing industry.

6.13 Future Implementation Plans

Almost all (34) of the winery estates that participated in this study had plans to implement one or more environmental initiative in the future. Reductions in water and wastewater (12), energy use (19) and waste production (6) were mentioned often, along with changes in vineyard management (11). Respondents referred to a new grant program promoting food safety that they plan on taking advantage of in the near future. Promotion and marketing of environmental commitments (such as certification, reduced energy and water use, recycling, and worker health and safety) and local food production were also cited as initiatives study participants planned on looking into. A few respondents said that in the next couple of years they planned on becoming HACCP certified (5) and participate in the SWO Charter (2).

It is encouraging to find that on the whole winery estates in Ontario report the intention to implement environmental initiatives. With greater support and education this can be further increased.

6.14 Summary

The qualitative results as outlined in this chapter illuminate the respondents' reasoning why they rate certain factors more influential than others in decisions related to environmental commitment. The five factors that appear to be dominant (wine quality and protection of the natural environment, financial considerations, regulatory compliance and certification, internal resources and leadership and knowledge of practical information will be discussed in Chapter 7.

Chapter 7: Discussion of the Study's Key Findings

Several interesting dynamics regarding the factors that influence environmental commitment in the Ontario wine growing industry are brought to light by this study. Some are similar to those found in existing literature and one is very unique to this industry, the significance of wine quality. Listed below are the five dominant factors found to motivate and/or impede environmental commitment in the Ontario wine growing industry:

- 1. Wine quality and protecting the environment;
- 2. Financial considerations;
- 3. Regulatory compliance and certification;
- 4. Internal resources and leadership; and
- 5. Knowledge of practical information.

As the conceptual framework outlined in Chapter 1, the above key factors and a number of others (consumer and community pressure, inadequate time, social responsibility, industry associations, employees, public image/reputation, certification) influence the environmental commitment level of Ontario winery estates. Depending on the context, which factors are present, how they are perceived (either as benefits or barriers) and knowledge of strategies and incentives, winery estates achieved varied levels of environmental commitment.

Many of the factors are closely interrelated. For example wine quality and financial considerations are connected in the wine growing industry since a winery estate relies on their quality to build their reputation and enhance their competitiveness. If a grape harvest is threatened it can significantly affect the business. Similarly, if a winery estate does not comply with regulations they will be fined. If they want to sell their product internationally and do not become certified in a recognized standard practice, then they will have difficulty entering the market. Without the availability of practical information not only about the potential benefits of an environmental initiative but also how to implement it step by step, owner/managers may decide against putting time and money into it as they do not see its value.

It was discovered in this study that many Ontario winery estates have implemented environmental initiatives; however the industry is still in the beginning stages of growth in terms of environmental commitment. Some winery estates have made a number of environmental commitments while others have done less. The following sections describe the five key influencing factors in greater detail and identify how they are interrelated to one another. Three criteria that differentiate whether a winery estate is more or less likely to become environmentally committed are outlined in the summary of this chapter.

7.1 Wine Quality and Protecting the Environment

A high quality wine begins in the environment – the vineyard – and therefore protection of the environment is deemed equal in importance to wine quality.

Among participating winery estates that were already dedicated to environmental improvement, the influence of wine quality and protecting the environment were both shown to be significantly connected to their choice to include environment commitment in their business decisions. These SMEs strongly believe that wine quality and environmental improvement go hand and hand. Other winery estates that are less likely to implement environmental initiatives are less liable to identify a significant connection between wine quality and environmental improvement. For these winery estates, there are other factors that impede their choice to implement environmental initiatives that supersede the potential wine quality benefit.

The Ontario wine growing industry relies heavily on the quality of their product in order to succeed. Winery estates will not implement an environmental initiative if the quality of their wine could be compromised in any way. This is a unique finding within the wine growing industry (Gabzdylova *et al.*, 2009; Marshall *et al.*, 2005), not identified prominently in the existing literature on other industries. Interestingly, however, few of the respondents could think of an environmental initiative that would have a negative effect on their wine quality. Most felt that environmental initiatives could improve the quality of their wines or have a neutral effect while providing other benefits. The only initiative that some said could have a negative impact was becoming organically certified. This makes sense as the humid climate in Ontario makes growing and maintaining a full harvest without pesticides and fungicides a significant challenge. While organic production is becoming more popular for other foods and agriculture, this is not the case in the Ontario wine growing industry. Winery estates that have chosen to become organic or biodynamic do so primarily because of their personal values. For example, Redtail Vineyard in Prince Edward County is entirely solar powered and uses non-interventionist practices in the vineyard and winery production, because the owners believe in letting 'nature take is course'.

It is clear that in the wine growing industry, wine quality is directly linked to the success of the business and a better environment. The quality of the wines produced, as well as the winery estate's image and reputation definitely influence the consumer. These factors also can influence export markets, and the securing of listings in restaurants and the LCBO. Wine quality is a valuable, costly-to-copy resource for a winery estate and this is a key source of competitive advantage. This finding relates to RBT, discussed in the literature review, where a SMEs internal capabilities can lead to financial success. It is not surprising then, that both wine quality and winery estate reputation are factors that were rated and discussed as highly influential. An improvement in brand and reputation can increase financial success of the business. This is directly related to the next key finding, financial considerations.

Most respondents in this study stated that implementing environmental initiatives could enhance their wine quality. This means that environmental initiatives such as environmental management policies (even if informal) could increase a winery estate's environmental performance and thus create competitive advantage.

Another unique influential factor often described as an attachment to a vineyard's terroir and striving to incorporate a sense of place in the wines produced, was discovered in this study. Being connected culturally and professionally to the environment (the vineyard) was repeatedly reported as a way of life – a 'raison d'être' – of a winery estate owner/manager/winemaker. This factor is far less likely to be influential in other industries based on the SME literature reviewed whereas research of environmental commitment in other wine growing regions found a similar idealism (Gabzdylova *et al.*, 2009; Marshall *et al.*, 2005; Sinha & Akoorie, 2010).

7.2 Financial Considerations

Winery estates that are more environmentally committed understand that there are financial benefits to implementing environmental initiatives and that they do not all require a large capital expense. The winery estates that are less environmentally committed are less likely to have this understanding.

All winery estates aim to attain a high quality wine with a limited financial investment. Winery estates in Ontario achieve a profit through production cost savings and efficiencies, improved market visibility, and a heightened reputation. This is consistent with the existing environmental management literature which recognizes that economic considerations significantly influence an organizations' level of environmental commitment (Álvarez Gil *et al.*, 2001; Cambra-Fierro *et al.*, 2008; Gadenne *et al.*, 2009; Graci, 2009; Lefebvre *et al.*, 2003; Marshall *et al.*, 2005; Pryce, 2001; Rangone, 1999; Simpson *et al.*, 2004).

Although a large capital cost can be a barrier to implementation of an environmental initiative (Gadenne *et al.*, 2009), a gain in competitive advantage is a driver for environmental commitment in SMEs (Lefebvre *et al.*, 2003; Cambra-Fierro *et al.*, 2008; Graci, 2009). This is also the case in the Ontario wine growing industry. Certainly there are limitations to what a winery estate can implement based on capital cost, but depending on the initiative and the benefits that result, the cost is not always perceived as a barrier. Particularly for winery estates that are proactive regarding environmental commitment, the financial considerations are often not a factor. Initiatives are implemented because 'it is the right thing to do'. For example, Frogpond Farm Organic Winery Estate in Niagara-on-the-Lake uses organic practices in their vineyard operations. They chose to do this because it is a natural way to work with the environment and be conscientious, not for financial considerations.

As RBT stipulates, internal resources such as implementing an environmental initiatives can result in greater efficiencies, competitive advantages and financial benefits. In this study, a number of respondents had implemented environmental initiatives because of the resulting benefits. Although none of the winery estates interviewed has formalized environment management systems or policies in place, many will implement environmental initiatives based on the increased efficiency, competitive advantage and financial benefits they could enjoy. This was similar to the findings of several existing studies of the drivers of environmental commitment in SMEs (Álvarez Gil *et al.*, 2001; Cambra-Fierro *et al.*, 2008; Graci, 2009; Graci & Dodds, 2008; Lefebvre *et al.*, 2003; Marshall *et al.*, 2005; Pryce, 2001; Revell & Blackburn, 2007).

In the Ontario wine growing industry competitive advantage can be attained from the influence of cost and/or differentiation. Winery estates implement initiatives in an effort to increase their efficiency, wine quality and/or differentiate them from the rest of the market as was also found in studies of environmental commitment in the New Zealand wine growing industry (Gabzdylova *et al.*, 2009; Sinha & Akoorie, 2010) and in the United States wine growing industry (Cordano *et al.*, 2010; Marshall *et al.*, 2005, 2009).

An example of an ROI is illustrated by Vineland Estates Winery in Vineland. The cost to build a sewage connection to the municipal pumping station was going to be \$50,000 plus taxes on the disposal of water. The cost to build a wetland bio-filter system which is all natural and continuously fed was \$30,000. The ROI of this imitative was beneficial for both the short and long-term since it reduced their capital cost and eliminated the need to pay to dispose their sewage water.

As Stakeholder Theory postulates, the values and demands of consumers are extremely influential to the decisions make by Ontario winery estates. This finding is similar to a number of studies that found that consumers were an influential stakeholder for SMEs to implement environmental initiatives (Lefebvre *et al.*, 2003; Rangone, 1999; Simpson *et al.*, 2004). There is uncertainty, however, about how much consumers are aware or care about the environmental commitment of a winery estate. For example, there is limited consumer knowledge about the SWO Charter and what it entails, and only winery estates that are using environmental initiatives to take advantage of a niche market to highly environmentally conscientious wine consumers, are promoting the environmental initiatives they have implemented. As an example, the environmental standards and practices maintained by Stratus Winery in Niagara-on-the-Lake exceed most others in the industry, and are marketed to their very loyal and environmentally conscious consumers.

Without consumer recognition of the SWO Charter membership there is minimal advantage seen by the industry. However, as consumers become more informed about the products they purchase it may prompt greater attention to the overall environmental commitment of the industry (and the SWO Charter).

7.3 Regulatory Compliance and Certification

Winery estates in Ontario will implement environmental practices that are required of them by regulation. Those that are already environmentally committed do not consider regulatory compliance as significantly influential because the practices they employ go well beyond what the regulations require of them. Meanwhile, those that are less environmentally proactive are very concerned with the regulations. These winery estates comply in order to avoid fines and any negative affects on their reputation. This finding agrees with that of Gabzdylova *et al.*, 2009 (wine study) but differs from other of studies on environmental

commitment drivers in the United States and New Zealand wine growing industries that found that regulations were not a significant influence (Marshall *et al.*, 2009; Sinha & Akoorie, 2010).

Regulatory bodies strongly influence Ontario winery estates to implement environmental initiatives that have been legislated as shown from Stakeholder Theory. This is also in line with existing environmental management and SME research which suggests SMEs comply to regulations in order to avoid costly fines and negative publicity (Cambra-Fierro *et al.*, 2008; Gadenne *et al.*, 2009; Hitchens *et al.*, 2003; Lefebvre *et al.*, 2003; Marshall *et al.*, 2005; Revell & Blackburn, 2008).

In this study, a handful of respondents felt that current regulations related to environmental commitment were not strict enough. Comments such as this were from respondents that are environmentally proactive. These winery estates are already going above and beyond domestic regulations and some even comply with stricter international market regulations. Another reason they go above and beyond domestic regulations is to achieve their own personal value standards. This is discussed further in section 7.4.

Compliance to regulations and standards in international wine growing industries is influencing the Ontario wine growing industry to develop environmental commitment initiatives and standards of their own. The progress of the United States, New Zealand, Australia, South Africa and European industries, as outlined in the literature review, have prompted the Ontario wine growing industry to develop the SWO Charter to educate and promote implementation of initiatives by winery estates.

A few winery estates see the advantage of pre-empting future regulations as they believe increased regulations and consumer pressure for higher standards are imminent. These respondents foresee environmental initiatives as eventually becoming standard practice. Overall though, there is limited consideration to pre-empting future regulations and it does not influence winery estates to implement environmental initiatives. Pre-emption of future regulations was found to be a (secondary) driver for environmental commitment in the United States wine growing industry (Marshall *et al.*, 2005).

Certifications and standards (other than VQA) appear to carry little value without third party verification and consumer recognition. Similarly, if there is no legislation or no enforcement of a particular action then winery estates feel less obliged to do it. Other benefits or influences need to be present in order for them to be prompted to implement environmental initiatives.

Certification can enhance the value of the wine because it signifies a certain level of quality or standard practice. The most recognized certification in the Ontario wine growing industry is the VQA standard assuring the consumer a high quality wine made from Ontario grown grapes. The SWO Charter is still relatively new, not third party verified and it is not yet well recognized by consumers. Recognized standards that are properly enforced are more valuable to winery estates, similar to findings from existing research on SMEs and environmental commitment (Revell & Blackburn, 2007; Simpson *et al.* 2004). A necessary step for the SWO Charter is making it third party verified.

7.4 Internal Resources and Leadership

The attitude, values and knowledge of the people in leadership positions of a winery estate strongly influence the decisions made (Cambra-Fierro *et al.*, 2008; Cordano *et al.*, 2010; Gadenne *et al.*, 2009; Graci, 2010; Lefebvre *et al.*, 2003; Silverman *et al.*, 2005). As was seen in Stakeholder Theory, the owner/manager has a strong influence on the environmental commitment of an SME. How this leader perceives environmental commitment has an effect on the number and type of environmental initiatives implemented, making him/her a highly influential stakeholder, which is identified through Stakeholder Theory. In this study, winery estates with a proactive internal leader were much more likely to have implemented environmental commitments than winery estates whose leaders do not share these values.

The internal leader has the final say on what initiatives are implemented. If that person or group of people does not have sufficient knowledge of the benefits that environmental initiatives can provide, then he/she is not likely to be supportive of their implementation. Support from a winery estate's internal leader helps to drive the implementation of environmental initiatives forward. The winery estates that had the highest level of environmental commitment are influenced at least in part by the personal satisfaction and moral conscience of the individual or group of people in leadership roles. This result is similar to a number of existing studies discussed in Chapter 2 (Henriques & Sharma, 2005; Marshall *et al.*, 2005; Sinha & Akoorie, 2010). Illustrating the influence of proactive leadership in the Ontario wine growing industry, the winemaker of Tawse winery (Vineland) is very proactive in terms of environmental practices. Under his direction, the winery estate was designed and built to include a six level gravity flow processing system which follows the natural contours of the property. A geo-thermal energy system to reduce their energy use was included. At Viewpoint Estates winery located in Lake Erie North Shore, the owner is very involved in the continuous development of new grape vine strains that are more able to withstand the region's climatic and geographical stresses.

The impression found in this study was that most winery estate leaders seem to be open to new initiatives as long as they make sense for the business. The issues that they are most concerned with have to do with previously discussed factors, in particular wine quality and financial considerations.

As was found in the literature review, RBT specifically discusses how internal resources are an integral source of environmental competitive advantage (Hart, 1995). In this study, time, knowledge of technology, innovation and benefits of implementing environmental initiatives, and support from top leadership were key internal resources necessary to increase environmental commitment. This correlates with a number of existing studies on environmental commitment in SMEs (Cambra-Fierro *et al.*, 2008; Cordano *et al.*, 2010; Gabzdylova *et al.*, 2009; Gadenne *et al.*, 2009; Graci, 2009; Graci & Dodds, 2008; Hitchens *et al.*, 2003; Lefebvre *et al.*, 2003; Marshall *et al.*, 2005; Parker *et al.*, 2009; Revell & Blackburn, 2007; Roy & Thérin, 2008; Simpson *et al.*, 2004; Tilley, 1999).

Human and technical skills are needed to accomplish goals, without which the implementation of environmental commitments is limited. Employees of many Ontario winery estates are tasked with multiple responsibilities which limit their capacity to take on new projects. This finding is similar to those in existing literature that more expert assistance than owners/managers seek, or realize they need, is required (Hitchens *et al.*, 2003). Many winery estate leaders with multiple responsibilities do not prioritize implementing environmental initiatives among their other projects if they do not see the value, do not have the specific equipment and/or manpower to see it through. The winery estate owners/managers who strongly value environmental commitments on a personal level and/or because they understand the benefits are more likely to overcome the barriers of size, lack of resources or knowledge.

7.5 Knowledge of Practical Information

The most significant barriers to implementing environmental initiatives identified in this study were inadequate time and knowledge. This was found in a number of existing studies of environmental commitment in SMEs (Gadenne *et al.*, 2009; Graci, 2009; Graci & Dodds, 2008; Hitchens *et al.*, 2003; Parker *et al.*, 2009; Revell & Blackburn, 2007; Roy & Thérin, 2008; Simpson *et al.*, 2004; Tilley, 1999). Communicating the message about the various benefits and educating the wine growing community with practical ways to implement initiatives is critical to get winery estates on board with environmental improvement.

It became clear that there was a lack of specific, practical and reliable knowledge about the benefits of, and how to implement environmental initiatives. If decision-makers do not have resources at hand that help them understand available initiatives, financial benefits and other potential positive outcomes, then they are not given priority. In the absence of clear information through direct, easy to find resources, a lack of time and knowledge can be a significant barrier to implementing environmental initiatives. Additionally, it was found that many respondents were very open to gathering custom assistance for their specific situation (vineyard, winery estate production).

The winery estates that had knowledge about the benefits and understood step-by-step how to go about implementing an environmental initiative were more likely to have a higher level of environmental commitment. Winery estates with proactive and supportive leadership were more likely to spend the time seeking out the information they needed to implement various environmental initiatives. When the owners of Henry of Pelham Estate Winery, St. Catharines, learned about the achievable benefits of a bio-filter wetland system and the existence of government-funding, it was an easy decision to look further into how to implement the project. It is now located within their vineyards. Less proactive winery estates reported that the information was hard to find and consequently they were less likely to allocate precious time and energy to look for it.

7.6 Summary

The key findings discussed above reveal that not only are there several factors influencing a winery estate's level of environmental commitment, but these factors are closely interrelated. The most influential factors are: wine quality, financial considerations, regulatory compliance, certification, internal resources, supportive and proactive leadership and knowledge of practical information.

Beyond the key influential factors there appears to be three criteria that, when all are present, it is significantly more likely that a winery estate will engage in environmental improvement. If any one of these three criteria is absent, it is much less likely that a winery estate will implement environmental initiatives. The three criteria are:

- 1. Proactive leadership who value and support environmental commitment;
- 2. Knowledge of the benefits, particularly financial, by implementing environmental initiatives; and,
- 3. Clear understanding and practical knowledge about how to implement environmental initiatives.

It became evident during the study that the winery estates that were the most environmentally committed were those with supportive owner/managers who had knowledge of the business benefits, and clearly understood how to go about implementing various initiatives. Previous studies of the drivers of environmental commitment in other wine growing industries have found similar results. Particularly how important the owner is (Cordano *et al.*, 2010; Gabzdylova *et al.*, 2009; Marshall *et al.*, 2005, 2009; Silverman *et al.*, 2005)

Prior to starting Stratus Winery Estate in Niagara-on-the-Lake, the owners grew a successful business in manufacturing other sustainable products. This strong motivation for environmental commitment is displayed in their choice to design and build a LEED certified winery estate building. Their background gave them knowledge of the benefits and an understanding of how to implement environmental initiatives.

Owners of Pilliteri Estates Winery in Niagara-on-the-Lake are always looking at ways to be more efficient, take care of their vineyards and produce high quality wines. They decided to purchase new biodiesel farming equipment because they knew there was government funding available to assist with the purchase, it would reduce the vineyard soil compaction and increase the overall health of their vines.

Whether they had chosen to become organically certified, purchase a tractor that ran on bio-diesel, build a LEED certified building or had a movement sensor installed on their outdoor lighting systems, these decisions were made when all three criteria above were present. The winery estates that had implemented fewer environmental initiatives did not have one or more of the three criteria present. Winery estates may be well intentioned and understand some of the potential benefits that are experienced from environmental commitment, but without one or more of these criteria they are less likely to make the final decision to go ahead. For these winery estates, absence of one or more of these criteria was seen as a barrier to environmental commitment.

The findings in this study could be applicable to wine growing industries beyond Ontario. This is because the general process to produce wine (from grape to glass) is the same in all of the world's wine regions. The wine industry's close connection to their environment is also common to all. Producing a wine that represents a specific region (reflecting the terroir) is a goal shared by winemakers worldwide.

The following chapter provides recommendations to assist wine growing industries and winery estates to overcome the barriers to implementing environmental initiatives and encourage greater success of environmental commitment in the Ontario wine growing industry.

Chapter 8: Recommendations

The following recommendations identify initiatives that could increase the level of environmental commitment in the Ontario wine growing industry. They also identify the specific roles and responsibilities of industry stakeholders in order to sufficiently support improvement in this area. The objectives of these recommendations are provided with the purpose to:

- 1. Provide suggestions to improve the existing SWO Charter;
- 2. Inform individual winery estates of tools to improve environmental commitment; and,
- 3. Inform industry associations and associated government departments of what to include in new policies and/or to enhance current programs and policies related to environmental commitment issues and initiatives.

It is believed that the level of environmental commitment of the Ontario wine growing would greatly improve if the industry reached these goals. Enhancing the level of environmental commitment would consequently increase the industry's competitiveness, and assist its continued growth.

Stakeholder collaboration may be important to improve the level of environmental commitment in the Ontario wine growing industry. Research from numerous industries (including wine tourism and agriculture) identify that with collaboration and involvement of all stakeholders, sustainable strategies can be created and implemented successfully (Poitras & Getz, 2006). Stakeholder partnerships or collaboration can be described as situations in which organizations and individuals come together with shared objectives which could not be attained individually (Graci, 2009; Selin, 1999). Grey (1989, p. 11 as cited in Selin, 1999) stated that the collaborative process has five essential characteristics: "stakeholders are interdependent, solutions emerge by dealing constructively with differences, joint ownership of decisions is involved, stakeholders assume collective responsibility for the future direction of the domain and collaboration is an emergent process" (p. 262).

An additional benefit of greater stakeholder collaboration would be the sharing of experiences and knowledge between winery estates. Significant learning could occur in a forum where leaders from winery estates successful implementing environmental initiatives impart information to those that might consider adopting them.

The points outlined above form the basis of this study's recommendation to create a multistakeholder partnership. Stakeholders would each have certain roles and responsibilities that would contribute to the overall goal of the group which, in this case, is an increased level of environmental commitment for the Ontario wine growing industry.

The results of this study suggest winery estates are particularly influenced to implement environmental initiatives by factors of wine quality, financial considerations, internal resources, leadership support, regulatory compliance and certification and knowledge. Complimentary industry programs, tools and standards with some regulatory requirements could encourage higher levels of environmental commitment. Cooperation and collaboration by winery estate owners and/or managers, industry associations and regulators in a multi-stakeholder partnership would further work to develop programs, tools and regulations. All of these initiatives would facilitate wider industry awareness and increase the level of environmental commitment of the wine growing industry of Ontario.

Third party verification, standardization and legislation regarding specific environmental practices could also encourage greater attention to environmental commitment. Without substantial value and consequence placed on environmental impacts, the importance of environmental commitment may not spread effectively throughout the industry. The success of the industry could rely on the diffusion of best practices, as standards for high quality as environmental practices grow in international wine industries (Key Informant #2, personal communication, May 20, 2009; Marshall et al., 2009). As consumers begin to demand environmental commitments (Buysse & Verbeke, 2003), the need to engage in environmental practices may become more important in order for Canadian wine to become and remain competitive in the world market.

All stakeholder groups should work together to promote and educate each other of the benefits of increased environmental performance for an industry. Existing research of SMEs (Hitchens *et al.*, 2003) and the United States and New Zealand wine industries (Cordano *et al.*, 2010; Marshall *et al.*, 2005; Poitras & Getz, 2006; Silverman *et al.*, 2005) have offered similar recommendations. Two programs in the Ontario wine industry currently exist that are excellent first steps towards the development of superior programs, tools and regulations. The SWO Charter and HACCP programs have begun to promote and educate the industry about environment, health and safety.

8.1 Specific Recommendations

The following eight recommendations are offered to assist the Ontario wine growing industry to increase their level of environmental commitment.

8.1.1 Dedicated Environmental Wine Cooperative

In order to successfully integrate (of) strong environmental commitment in the industry, a designated wine growing industry cooperative/body is recommended. This body could establish, define and set environmental performance standards. It could improve (on) the cooperation that occurred with the development of the SWO Charter. An 'Environmental Wine Cooperative' (EWC) could be responsible for overseeing all of the initiatives presented here including increasing awareness, enhancing program marketing, improving industry training, managing the enforcement of industry standards and regulatory requirements, conducting ongoing research, directing a forum to share experience and knowledge, and improving access to financial support of environmental initiatives. Establishing a cooperative or council to

manage and oversee environmental practices, similar to how the VQAO is set up to manage and enhance the quality and reputation of Ontario wines, would be very beneficial.

Currently the WCO includes a sub-group comprised of chair members who meet periodically to discuss the SWO Charter program; however no one is dedicated to increasing SWO Charter participation, developing it as a standard for environmental performance in the industry or promoting it to the public. Without a group dedicated to maintaining the program's goals, it will not get the emphasis it needs in an industry that is required to comply with a number of other regulatory requirements. A dedicated EWC could also ensure ongoing collaboration with industry stakeholders and consequent continuous improvement of the program.

Ideally the EWC would be dedicated to oversee and manage all of the recommended initiatives. The cooperative would ensure that all stakeholders were involved, connect with stakeholder representatives, coordinate training seminars and third-party certification audits, maintain the website and manage promotional marketing of the environmental commitments made by the Ontario wine growing industry. Each of these is described in detail below.

8.1.2 Unified Goals and Objectives

All wine growing industry stakeholders that come together in a partnership should agree on and commit to a set of goals and objectives to lead the industry to greater environmental commitment. The partnership could allow all stakeholders to share their expectations, needs and concerns and work together towards a long-term strategy for environmental commitment. This has already begun with the development of the SWO Charter. Having the same goals and objectives could assist to bring all parties together to develop an ongoing dialogue and plan for the future.

8.1.3 Legislation

In order to guarantee the industry integrates a certain level of environmental commitment, regulation of minimum standards is recommended. A portion of the industry is not likely to prioritize environmental initiatives without enforcing a certain minimum environmental standard since they are busy maintaining already regulated standards. Minimum standards for activities, products and/or services relevant to environmental requirements should be identified, regulated and enforced. Information on ever-changing regulations should be easily accessible and updated for all industry stakeholders. Cooperative means for monitoring and rewarding proactive environmental management should be incorporated into new legislation as well. Complimentary industry and regulatory programs and tools will assist winery estate owners/manager to make the decision to adopt initiatives more likely (Silverman *et al.*, 2005).

8.1.4 Certification and Third Party Verification

Credible and recognizable certifications can be a valuable initiative towards improving the level of environmental commitment in the Ontario wine growing industry. Based on this study's results, enhancing certifications to include standards practices such as minimal fertilizer and pesticide application, erosion management, and water use are recommended.

Currently, membership to the SWO Charter is voluntary and participants conduct a self-evaluation to assess and identify environmental issues. Without third party verification of the evaluation, the significance of the program is weakened because participating winery estates are not held accountable. Respondents from this study (both participants and non-participants of the Charter) agree that the program needed to be third party audited in order to be develop into a valuable industry standard. The success of the VQA designation as being recognizable for high quality wines in Canada can be used as a model.

Similarly, California's SWP can also be a model. An option for third-party verification of SWP participants to achieve SWP certification was integrated into the California program in 2009. Certified winery estates can now promote their sustainability and be identified on the CSWA website (CSWA, 2010).

8.1.5 Marketing

The SWO Charter is not well-recognized by consumers and therefore ultimately does not enhance the market visibility of participating winery estates. Consumers need to understand what participating in the program means. Without a mechanism to showcase participation and market the program's goals, it is of little value. Participating winery estates could benefit from the development of a symbol of certification which could be displayed on the wine label, next to their name in wine tourism guides, and on in LCBO listing signage to highlight their performance and commitment. Winery estates that do not participate in the SWO Charter would then be conspicuous by the absence of such a symbol for environmental commitment.

The motivation for improved marketing is to make the SWO Charter recognizable to consumers as a standard for high environmental commitment. This is similar to how the VQA standard is recognized for high quality. Financial benefit could be experienced through enhanced marketing and recognition improving the reputation and market visibility of participating winery estates. This potential increased profitability could then encourage others to participate. In addition, as consumers become more aware of the environmental impacts of the products they purchase, an environmental standard could become even more valuable to the industry. More winery estates might participate at the risk of being left behind.

8.1.6 Enhance Training, Education Programs and Information Sources

Winery estates at all levels of environmental commitment are keen to learn and improve. This should be encouraged. Training and education programs on environmental initiatives could to be improved, made more accessible and conducted regularly in all Ontario wine growing regions. A rotation of training and session topics led by alternating stakeholders would permit sharing of information from various sources including government regulators, industry associations and environmental performance leaders. With increased awareness, winery estate owners/managers, associations and regulators could collaborate and increase the industry's level of environmental commitment.

Regular industry meetings and training on environmental initiatives with at least one representative from each winery estate in attendance would be valuable. The WCO currently aims to organize and lead this direction, but a number of respondents (in this study) indicated that the industry associations did not supply consistent assistance and information. In addition, not all Ontario winery estates are members of the WCO.

In addition, a website for the Ontario wine growing industry that has comprehensive but concise information and resources related to environmental initiatives should be developed. Direct links to incentive programs and a knowledge sharing network dedicated to information exchange for industry and consumers would help to promote and maintain a high level of interaction and innovation. The website could be developed in collaboration with all industry stakeholders and continuously updated based on changing regulations and standards.

8.1.7 Enhance Financial Support

Financial considerations were one of the most important factors that motivate, as well as impede, a winery estate's level of environmental commitment. Several winery estates were not aware of funding opportunities available and many others described the application process as cumbersome and not worth their time and effort. This indicates a problem with the current government and industry association's ability to make the industry aware of funding opportunities. It warrants the development of an application system that does not create a barrier to implementing environmental initiatives. Providing assistance in a clear and straightforward manner would (help to) ensure that further environmental commitment initiatives are implemented.

The Environmental Farm Plan (EPF) is a successful program that many winery estates have used to receive funding support for specific programs or new equipment for the vineyard and winery estate (discussed in Section 3.7.1). It is organized into funding categories. Winery estates are able to apply for funding for different initiatives in the same year. In the past, pilot programs have also been conducted so that winery estates can obtain financial assistance to perform an environmental energy audit. It would be beneficial to have a new EFP category that provides funding to conduct an environmental performance audit that includes waste, water, vineyard management, production efficiencies and energy conservation. This would help mitigate the lack of time and knowledge that many winery estates could have a third party conduct a comprehensive production lifecycle assessment from the vineyard to the glass. The final report could include potential financial support that might be available. Resources on how to implement suggestions should also be included so that the winery estates are not left with ideas and no understanding on how to implement them.

8.1.8 Conduct a Follow-up Study

Research to follow this study should be conducted to include every winery estate in Ontario as well as the other key industry groups that have an environmental impact such as the grape growers of Ontario. This is recommended because, as discussed in the limitations (section 4.5.2), it is a challenge fully rely on the results of this study as a benchmark for the commitment level of the entire industry. This is because more than half of this study's participants were members of the SWO Charter. It could be argued that the SWO group would be more predisposed to discuss their level of environmental commitment. Conducting a benchmarking study of the entire industry would be important for the EWC to track the industry's progress, develop plans and adopt best practices to increase environmental commitment.

8.2 Roles and Responsibilities

In order for the recommended initiatives to be successful at increasing the Ontario wine growing industry's level of environmental commitment, all stakeholders (industry associations, government, winery estates) should be involved in a partnership that has clearly defined roles and responsibilities. Each stakeholder then has the opportunity to share their knowledge and experiences, and possibly receive funding in some instances as well. An industry-wide agreement should be made to identify all stakeholders and their roles and responsibilities. The partnership would be based on this agreement which will also include the unified goals and objectives discussed above.

8.2.1 Government

All levels of government would play a leadership role in the development and encouragement of implementation of the EWC and increased environmental commitment of the Ontario wine growing industry. OMAFRA and AAFC who are already very involved in funding and education would likely be the departments that could allocate financial resources to create the EWC as well as provide financial support for an industry-wide follow-up study to determine an environmental commitment level benchmark.

The government would also collaborate with the EWC to initiate and maintain enforcement of current and new environmental regulations. They would work together with industry stakeholders to set up auditing and monitoring programs so that one evaluation could encompass both the regulatory and industry standards.

8.2.2 Industry Associations

There are several wine growing industry associations in Ontario that are generally focused on representing their members in discussions with government and each other. The WCO is the only association that has made a noteworthy step towards environmental commitment by managing the development of the SWO Charter. The SWO Charter was developed in collaboration with many industry stakeholders in order to incorporate information on all phases of the winemaking process including vineyard practices, production facilities and retail management. The problem with the SWO Charter initiative is that

its ongoing development and promotion is currently the responsibility of the WCO which has many other responsibilities and are not able to give the SWO Charter the attention it needs to increase winery estate participation and promote it to the public.

The EWC could be charged with the ongoing development of the SWO Charter. At the same time, industry associations could remain a strong supporter of environmental commitment. The responsibility of industry associations would then be to provide a conduit for suggestions from their members, and to work together on marketing projects to promote the SWO Charter and consequent environmental commitment of the industry. Industry associations could, also help to communicate information from the EWC to their members.

8.2.3 The Ontario Winery Estates and Grape Growers

Owners and managers of winery estates that have successfully implemented environmental initiatives have a key role to share their successes throughout the industry (Marshall *et al.*, 2005). Most of the study participants said they regularly share information about wine making practices with other winery estates already. The owners and managers of less proactive winery estates need to become more aware of the benefits by learning from their peers and by having enhanced accessibility to comprehensive but concise informative resources from industry associations.

All winery estates would have the responsibility to provide the EWC with information on their level of environmental commitment, set goals for improving their environmental commitment, provide best practice information such as cost, technology and innovations that have been beneficial, and successful employee engagement initiatives. Industry leaders could be tasked to contribute to the training seminars managed by the EWC and provide ongoing mentoring and guidance to other winery estates.

The GGO (Grape Growers of Ontario) have a key place in the industry as they own and manage over 15,000 acres of vineyard area (GGO, 2005). A significant portion of environmental initiatives are related to vineyard practices. Consequently, the grape growers must be just as involved as winery estates.

8.2.4 Employees

The role of winery estate employees is to offer ideas regarding environmental initiatives. These people are the most closely involved a winery estate's processes and operations and therefore the most likely to acquire knowledge about initiatives that could create greater efficiencies. Employees could also encourage the integration of new initiatives into the winery estate's processes and operations. They are integral to successful integration of new processes and initiatives and therefore should be included in all training and educational activities so that they understand the goals and objectives of the changes.

8.3 Summary

The creation of a EWC through the collaboration all the industry's stakeholders is necessary to successfully increase the level environmental commitment the Ontario wine growing industry. This

cooperative could be the central resource for environmental regulation, industry standards, shared experiences and information, education and training which could increase awareness of the benefits and provide assistance to overcome the barriers that are present in the industry in terms of environmental commitment.

This chapter offered recommendations for a dedicated EWC to instigate, encourage and manage environmental commitment in the Ontario wine growing industry. A EWC would apply greater attention to environmental performance of the industry by focusing on the most significant motivating and impeding factors found in this study. They would bring together industry stakeholders to develop goals and objectives and delegate their roles and responsibilities in order to ensure success of their collaboration.

Chapter 9: Conclusion

Negative impacts to the environment have increasingly become top of mind for people, institutions and companies worldwide, particularly since the World Commission on Environment and Development (WCED) in 1987. In the past decade, it has been shown that small and medium enterprises (SMEs) create a significant amount of negative environmental impacts, greater than large corporations (Marshall, 1998; Smith & Kemp, 1998).

The Canadian wine growing industry, primarily comprised of SMEs, has expanded rapidly in the last 20 years and is increasingly recognized as a quality wine producer domestically and internationally. It continues to actively pursue further expansion (Martin, 2007). As it does so, there is a need to develop practices and policies to promote an ecological, responsible and environmentally committed industry. Otherwise, winery estates risk deterioration of the environment that they rely on to produce high quality wine, which in turn would affect their business. The Ontario wine growing industry, the largest wine growing region in Canada, has recently taken a first step in promoting environmental commitment through a 'Sustainability Winegrowing Ontario' (SWO) Charter. Therefore, it is an interesting case study to explore what drives the adoption of environmental initiatives within this industry.

This study explored the environmental initiatives already implemented Ontario winery estates and the factors that are most influential when making decisions about environmental improvement. The results of this study can be applied to the Ontario wine growing industry but also to other wine growing industries beyond Ontario, and to other SMEs in general.

It was also discovered that several Ontario Winery estates were significantly outperforming their peers in environmental practices. It became very clear that the elements that set these businesses apart were an integration of three specific and interconnected criteria expanded on later, proactive leadership, knowledge of the financial benefits that can be achieved, and an in-depth understanding of the practical methods to use. In addition to displaying all three of these criteria, one of the winery estates that environmentally outshone all the others added a further very strong element, by heavily promoting its environmental commitment as a marketing advantage.

9.1 Achievement of Thesis Objectives

Four specific objectives were satisfied as a result of this thesis and are discussed below.

9.1.1 Objective One

The first objective of the study was to review the current business and environmental management literature to determine what factors affect environmental commitment of SMEs in a variety of industries and organizations and relate them to the Ontario wine growing industry.

A great deal of research has been conducted to understand the factors that influence organizations and SMEs to become environmentally committed. Stakeholder Theory and Resource Based Theory were drawn from to provide a theoretical base to identify the factors that influence environmental commitment. A handful of studies were found that examined the drivers for environmental commitment in other wine growing industries in order to later compare with the results of this study. Environmental commitment was also explored in the tourism industry since the wine growing industry involves tourism. Additionally, the environmental commitment of six wine growing industries were reviewed to understand understanding worldwide environmental management regulation and best practice standards in relation to wine growing.

The factors that were found through review of existing environmental management research of SMEs in the literature review were used to develop a conceptual model for this study and relate these factors to the Ontario wine growing industry. The framework identifies that the factors vary in their influence based on context and how they are experienced or perceived by an organization. The factors identified through this process were included in the questionnaire.

9.1.2 Objective Two

The second objective of this study was to identify the number, ownership, size, management structure and location of winery estates in Ontario and establish what environmental initiatives are currently being put into practice. The respondents from participating winery estates were asked to identify which environmental initiatives their organization had implemented.

The data collected from the study population identifies that the majority of participating winery estates are small to medium sized producing less than 50,000 cases annually and have fewer than 100 employees. It also shows that many of the winery estates in Ontario were established within the last 10 years. The study participants reported having implemented a number of environmental initiatives providing evidence that the level of environmental commitment of the Ontario wine growing industry is growing, with the most common being general environmental practices, recycling, turning off lights when not required and sharing knowledge with the industry.

9.1.3 Objective Three

The third objective was to explore what factors influence Ontario winery estates to implement environmental initiatives. The factors established from the literature review were included in the questionnaire and respondents were asked to rate each, on a scale of one (not significant/influential) to five (very significant/influential), pertaining to each factor's significance in influencing their decision to implement environmental initiatives. They were also asked to discuss why they chose the rating.

A 'difference in proportions' test was conducted to confirm that the study population was representative of the general population. The frequency of respondent's ratings and their comments were used to determine which factors were the most influential in implementing environmental initiatives. The qualitative data from the interview notes were coded based on themes to identify in greater detail the reasons why respondents rated the factors the way they did. The results of the quantitative and qualitative results identified five key factors that are the most influential to environmental commitment in the Ontario wine growing industry: wine quality and environmental protection, financial considerations, regulatory compliance and certification, internal resources and leadership and knowledge of practical information. The most important incentives cited were subsidies and grants, greater market visibility and sharing information between winery estates. The most significant strategies to overcome barriers were discussing the benefits to cost, market differentiation to decision makers and consumer education.

In addition, three criteria were identified from the study results which differentiate between the winery estates that have a high environmental commitment and those that are less so.

9.1.4 Objective Four

The final objective of this study was to offer recommendations on how to increase the level of environmental commitment in the Ontario wine growing industry based on the results. A dedicated environmental wine cooperative (EWC) was recommended to oversee a number of initiatives to improve the industry's level of environmental commitment. These initiatives include: developing unified goals and objectives among stakeholders, institute legislation for minimum standards, certification and third party verification, promote the industry's efforts in environmental commitment to consumers, increase availability of concise but comprehensive information, enhance financial support and conduct a follow-up study to benchmark the current level of environmental for the entire industry. These strategies could be developed through a collaboration of all stakeholders similar to the creation of the SWO Charter. All stakeholders could continue their involvement with the EWC and the industry's progress on environmental commitment with regular meetings to share knowledge and experiences.

9.2 Contribution to Knowledge

This study contributes to existing knowledge because it endorses the findings in existing literature of the drivers of environmental commitment in organizations and SMEs in other industries and contexts. A number of studies have looked at the influence that various stakeholders can have on organizations and/or SMEs (Álvarez Gil et al., 2001; Bansal & Roth, 2000; Cambra-Fierro *et al.*, 2008; Cordano *et al.*, 2010; Delmas & Toffel, 2008; Freeman, 1984; Graci, 2009; Henriques and Sharma, 2005; Gadenne *et al.*, 2009; Lefebvre *et al.*, 2003), or how internal resources of organizations and/or SMEs can create competitive advantages (Aragón-Correa *et al.*, 2008; López-Gamero *et al.*, 2009; Rangone, 1999; Rivera, 2002, Russo & Fouts, 1997). Some studies looked many different factors and how they influence an organization (Graci, 2009). The factors that were found to motivate or impede environmental commitment in the above studies were also found to influence winery estates in Ontario, solidifying the findings of the above studies.

This research also contributes to knowledge by adding to the modest amount of research done on environmental commitment, decision making and behaviour in the wine growing industry in general. First, a research study of this nature had not previously been done in the Canadian, and more specifically, Ontario wine growing industry. Second, this study supports the conclusions made in relation to the driving factors of environmental commitment in the United States and New Zealand wine growing industries which include personal values, government agencies, customer pressure, competitive advantage, industry associations, reputation and strong land ethic (Gabzdylova *et al.*, 2009; Marshall *et al.*, 2005, 2009; Silverman *et al.*, 2005; Sinha & Akoorie, 2010). This is a significant contribution because greater inferences can be made to say that the influences to environmental commitment are similar in wine growing industries, regardless of where they are located.

An additional finding, unique to the wine growing industry, is that winery estate owners/managers often naturally lean toward environmental stewardship because they are so closely involved with their environment. They consider it their home and livelihood. The wine growing industry has a unique structure involving both agriculture and production operations and there is a strong connection to the region in which winery estates are located. A key goal is to attain high quality and capture a 'sense of place' in their wines. This unique finding is not found in similar research of other industries, but provides evidence to support the findings of similar research conducted in the New Zealand wine growing industry (Gabzdylova *et al.*, 2009; Marshall *et al.*, 2005; Sinha & Akoorie, 2010).

This research also illuminates a number of strengths and weaknesses of the SWO Charter on which the questionnaire was partly based. As established by the findings of this study, amendments and simplifications of the SWO Charter for more practical application to self-evaluate could be made.

9.3 Further Research

This thesis builds on the existing literature to explore the factors that influence environmental commitment in the Ontario wine growing industry using Stakeholder Theory and Resource Based Theory as well as studies conducted on what drives proactive environmental behaviour in the United States and New Zealand wine growing industries. There are many research initiatives that could follow upon completion of this investigation.

Further research could be conducted to understand the factors that influence environmental commitment in other wine growing industries. The framework offered in this thesis identifies factors that influence environmental commitment that could be applied to other regions and countries to further test the model. It would also be worthwhile to explore whether the barriers found to impede implementation of environmental initiatives in this study are similar in other wine growing industries and regions. Future work could continue to explore the theme of the influence owner/manager perceptions have by looking at other countries and regions, to explore whether they find are similar results. Examination of winery estate owners and managers' perceptions and influences of environmental commitment could support the development of robust policies that increase environmental commitment in wine growing regions worldwide.

Further extension of the research could also involve a comparison of the environmental initiatives implemented in other wine growing industries beyond Ontario. Since climates vary amongst wine growing

regions, the processes used may also differ. For example, vineyards in New World wine growing regions are generally larger and located in hotter climates than Old World vineyards. They can require a greater amount of water for irrigation and fuel for equipment use. Similarities (and differences) of the factors that influence environmental commitment of different wine growing regions may be related to the wine making processes employed.

9.4 Summary

Although the wine growing industry does not gather the same attention as 'dirty' industries, it faces a number of environmental issues (Marshall *et al.*, 2005). Additionally, pressure for improved environmental performance and standards from regulatory and industry stakeholders, consumers and international competition are increasing making environmental commitment an important issue facing this industry (Marshall *et al.*, 2005, 2009; Poitras & Getz, 2006; Silverman *et al.*, 2005).

The SWO Charter is a first step towards greater environmental commitment in the industry but it needs to be improved in order to facilitate greater success. Understanding the factors that influence environmental commitment from this study can assist improving the SWO Charter and incorporating strategies to overcome barriers faced by winery estates. Stakeholder Theory and Resource Based Theory identified various influencing factors and described how they can influence SMEs in positive and/or negative ways. Research from United States and New Zealand wine growing industries as well as examination of environmental commitment in other wine growing industries worldwide provided industry-specific knowledge of the factors that effect environmental commitment. Information on the number of environmental initiatives that are currently implemented and the factors that influence environmental commitment was collected and examination of the qualitative data provided an understanding of the main influencing factors of environmental commitment in the Ontario wine growing industry. These are:

- 1. Wine quality: Winery estates in Ontario need to be sure that environmental initiatives will have a positive or neutral affect on the quality of their wines. The wine growing industry is quality driven and success is almost entirely based on whether the wine produced is excellent, resulting in a positive reputation. Environmentally proactive winery estates understand that their wine quality can be improved from environmental commitments along with other benefits.
- 2. Financial considerations: Financial considerations play both a motivating and impeding role in terms of implementing environmental initiatives. There needs to be a financial advantage for the majority of winery estates to increase their environmental commitment. Financial benefits can be direct cost savings from enhanced operational efficiencies or indirect such as increased reputation and competitive advantage. High capital costs related to an environmental initiative and an uncertain or lengthy time period for a return on investment are barriers. Wineries that have implemented many environmental

initiatives are either less concerned about the cost because they see the long-term financial and other benefits.

- 3. Compliance with regulations and certifications: Winery estates will implement environmental practices that are required of them by law. All winery estates wish to avoid fines for non-compliance and prevent a damaged reputation due to non-compliance which can affect their bottom line. Certifications and standards can enhance the perceived value of the wine if they are properly applied and regulated. Environmentally proactive wineries do not find regulations incredibly motivating as they have likely gone beyond what is regulated by government.
- 4. Internal resources and leadership: Inadequate internal resources including time and knowledge can be significant barriers to implementing environmental initiatives. Information needs to be easily available, comprehensive and concise in order for winery estates to make educated decisions. If employees in leadership roles do not have sufficient knowledge on the benefits of greater environmental commitment or do not support it for any reason, then they are not likely to be implemented. Winery estates that have owners/managers that value environmental commitment are more likely to have implemented many environmental initiatives than those that do not have leadership support.
- 5. Knowledge of Practice Information: It is essential to educate all winery estate owners/managers about the various benefits of environmental initiatives *and* provide clear, practical steps on how to implement them. This is a significant barrier indicated by respondents from less environmentally engaged winery estates.

In addition to the main influencing factors, this study found that the following three criteria significantly increase the likelihood that a winery estate will enhance their environmental commitment:

- 1. Proactive leadership who value and support environmental commitment;
- 2. Knowledge of the benefits, particularly financial, by implementing environmental initiatives; and,
- 3. Clear understanding and practical knowledge about how to implement environmental initiatives.

If all three of these criteria are present, it is much more likely that a winery estate will adopt environmental initiatives. When any of the criteria are absent, a winery estate is less likely to decide to implement environmental initiatives.

The results of this study can be applied and compared to all wine growing industries, (and) general business and environmental management literature. The specific factors that influence winery estates to become environmentally committed must be understood in order to achieve greater performance environmentally, socially and economically. With the knowledge found in this study, strategies and incentives can be created to support environmental commitment programs, management systems and set standards all of which will and increase the potential for greater environmental commitment in the Ontario wine growing industry.

Appendix A: Table A.1 List of the General Population of Winery Estates in Ontario

Wineries	Location	Region	
Alvento Winery	Vineland	Vineland	
Angels Gate Winery	Beamsville	Niagara Peninsula	
Bergeron Estate Winery Inc	Bath	Prince Edward County	
Black Prince Winery	Picton	Prince Edward County	
By Chadsey's Cairns	Wellington	Prince Edward County	
Calamus Estate Winery	Vineland/Jordan	Vineland	
Caroline Cellars	Niagara-on-the-Lake	Niagara Peninsula	
Casa-Dea Estates Winery	Wellington	Prince Edward County	
Cattail Creek Estate Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Cave Spring Cellars	Jordan	Vineland	
Chateau des Charmes Wines	Niagara-on-the-Lake	Niagara-on-the-Lake	
Closson Chase Vineyards	Hillier	Niagara-on-the-Lake	
Colchester Ridge Estate Winery	Harrow	Lake Erie North Shore	
Colio Estate Wines	Harrow	Lake Erie North Shore	
Cornerstone Estate Winery	Beamsville	Niagara Peninsula	
Coyote's Run Estate Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Creekside Estate Winery	Vineland	Vineland	
Crown Bench Estates	Beamsville	Niagara Peninsula	
Daniel Lenko Estate Winery	Beamsville	Niagara Peninsula	
Diamond Estates Wine & Spirits	Beamsville	Niagara Peninsula	
Erie Shore Vineyard	Harrow	Lake Erie North Shore	
Featherstone Winery & Vineyard	Vineland	Vineland	
Fielding Estate Winery	Beamsville	Niagara Peninsula	
Flat Rock Cellars	Jordan	Vineland	
The Foreign Affair Wine Company	Vineland	Vineland	
Frogpond Farm Organic Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
The Grange of Prince Edward Estate Winery	Hillier	Prince Edward County	
Harbour Estates Winery	Jordan	Vineland	
Harvest Estate Wines	St. Catharines	St. Catharines	
Harwood Estates	Hillier	Prince Edward County	
Henry of Pelham Family Estate Winery	St. Catharines	St. Catharines	
Hernder Estate Wines	St. Catharines	St. Catharines	
Hidden Bench Winery	Beamsville	Niagara Peninsula	
Huff Estates Winery	Bloomfield	Prince Edward County	
The Ice House	Niagara-on-the-Lake	Niagara-on-the-Lake	
Inniskillin Wines	Niagara-on-the-Lake	Niagara-on-the-Lake	
Jackson-Triggs Niagara Estate Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
John Howard Cellars of Distinction	Vineland	Vineland	
Joseph's Estate Wines	Niagara-on-the-Lake	Niagara-on-the-Lake	
Kacaba Vineyards	Vineland	Vineland	
Karlo Estates	Wellington	Prince Edward County	
Keint-He Winery and Vineyards Ltd	Wellington	Prince Edward County	
Kings Court Estate Winery	St. Catharines	Vineland	
Kittling Ridge Estate Wines & Spirits	Grimsby	Niagara Peninsula	

Table A.1: List of the General Population of Winery Estates in Ontario

Hillier

Niagara-on-the-Lake

Konzelmann Estate Winery

Lacey Estates

Niagara-on-the-Lake

Prince Edward County

Lailey Vineyard	Niagara-on-the-Lake	Niagara-on-the-Lake	
Le Clos Jordanne	Jordan Station	Vineland	
Legends Estates Winery	Beamsville	Niagara Peninsula	
Long Dog Vineyard and Winery Inc	Milford	Prince Edward County	
Lowrey Estate Vineyards and Winery	St. Davids	Niagara-on-the-Lake	
Magnotta Winery	Beamsville	Toronto and York Region	
Maleta Estate Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Malivoire Wine Company	Beamsville	Niagara Peninsula	
Marynissen Estates Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Mastronardi Estate Winery	Harrow	Lake Erie North Shore	
Milan Wineries Inc.	Toronto	Toronto and York Region	
Mountain Road Wine Company	Beamsville	Niagara Peninsula	
Muscedere Vineyards	Harrow	Lake Erie North Shore	
Niagara College Teaching Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Norman Hardie	Hillier	Prince Edward County	
Oak Heights Estate Winery	Warkworth	Northumberland County	
Organized Crime Winery, The	Beamsville	Niagara Peninsula	
Palatine Hills Estate Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Pelee Island Winery	Kingsville & Pelee Island	Pelee Island	
Peller Estates Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Peninsula Ridge Estates Winery	Beamsville	Niagara Peninsula	
Pillitteri Estates Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Puddicombe Estate Farms and Winery	Winona	Niagara Peninsula	
Ravine Vineyard Estate Winery	Niagara-on-the-lake	Niagara-on-the-Lake	
Reif Estate Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Red Tail Vineyard	Consecon	Prince Edward County	
Ridgepoint Wines	Vineland	Vineland	
Riverview Cellars Estate Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Rockway Glen Golf Course & Estate Winery	St. Catharines	St. Catharines	
Rosehall Run	Wellington	Prince Edward County	
Rosewood Estates Winery & Meadery	Beamsville	Vineland	
Royal DeMaria Wines	Vineland	Vineland	
Sandbanks Vineyards	Wellington	Prince Edward County	
Southbrook Vineyards	Niagara-on-the-Lake	Niagara-on-the-Lake	
Sprucewood Shores Estate Winery	Harrow	Lake Erie North Shore	
Stonechurch Vineyards	Niagara-on-the-Lake	Niagara-on-the-Lake	
Stoney Ridge Estate Winery	Vineland	Vineland	
Stratus Vineyards	Niagara-on-the-Lake	Niagara-on-the-Lake	
Strewn Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Sugarbush Vineyards	Hillier	Prince Edward County	
Sunnybrook Farm Estate Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Tawse Winery	Vineland	Vineland	
The Thirteenth Street Winery Corp.	St. Catharines	Vineland	
Thirty Bench Wine Makers	Beamsville	Niagara Peninsula	
Thirty Three (33) Vines	Conway	Prince Edward County	
Viewpointe Winery	Harrow	Lake Erie North Shore	
Vignoble Rancourt Winery	Niagara-on-the-Lake	Niagara-on-the-Lake	
Vineland Estates Winery	Vineland	Vineland	

Vinoteca Inc. Premium	Woodbridge	Toronto and York Region
Walker Hall Winery	Beamsville	Niagara Peninsula
Waupoos Estates Winery	Picton	Prince Edward County
Wayne Gretzky Estate Winery	Vineland	Vineland
Willow Springs Winery	Stouffville	Toronto and York Region

Appendix B: Table B.1 List of Key Informants

Table B.1: List of Key Informants

		Date
	Position	Interviewed
Key Informant #1	Owner of a Marketing Consulting Business for Winery Estates	May 6, 2009
Key Informant #2	WCO Council Member	May 20, 2009
Key Informant #3	Winemaker from a Niagara Region Winery Estate	May 12, 2009

Appendix C: Study Questionnaire Part 1 and 2

Part 1 – Environmental Commitment of Ontario Winery Estates

Research conducted by Lindsay Walker, Masters Student, Department of Environmental Applied Science and Management, Ryerson University

Winery Name:	
Contact person:	
Title:	

All information from this survey will be kept confidential and will not be used for any purpose other than academic. By completing this survey, you indicate that the information gathered may be part of this research. The data will be aggregated but individual answers will not be shared with anyone.

1.	Name of Winery
2.	Time:
3.	Date:
4.	Year of first wine vintage:
5.	Number of employees at the winery:
6.	Cases produced annually:
7.	Percentage of wine production from own vineyard grapes:
8.	Owner of the winery:
9.	Type of ownership (check all that apply)
	\square Private \square Partnership \square Public \square Other (please specify):
10.	Is there a person or persons assigned responsibility for directing and coordinating environmental initiatives (check
all a	applicable boxes):
	Environmental coordinator
	□ Multi-departmental committee / team
	Owner
	□ Winemaker
	Head office
	General Manager
	Other:
11.	(11.1) Has there been a previous environmental audit or assessment done at the winery?
	\Box ves \Box no
11.	2 If ves: a) when
11.	3 b) by whom:
. 11.	4 c) reason for conducting the audit

 ^{12.} Does there need to be senior management / executive level support and endorsement of policy(ies):
 □ yes □ no

Please check all that apply:

- 13. General Environmental Practices
- 13.1
 Broad environmental management strategies
- 13.2
 Ongoing, continuous improvement of environmental commitment
- 13.3
 Energy conservation and efficient use
- 13.4 \square Water conservation and efficient use
- 13.5 🗆 Waste reduction, reuse and recycling
- 13.6 🗆 "Eco-purchasing" i.e. factoring environmental considerations in purchasing decisions / strategies
- 13.7 🗖 Reduction in, and proper use and handling of hazardous and toxic substances
- 13.8
 Relevant environmental training and education for employees
- 13.9 \square Customer education on environmental management
- 13.10
 Promotion of eco-wine or environmentally sensitive wine making
- 13.11
 Share knowledge of environmental practices with the entire industry, among wineries
- 14. Water
- 14.1 \square Monitor water that is consumed in the winery
- 14.2 🗆 Established a team or person to identify ways to reduce water use and improve efficiencies
- 14.3
 Established targets for reduction of water use
- 14.4 \square Reuse rinse water
- 14.5 🗆 Maintain and repair leaks to keep the water system in good repair
- 14.6 \Box Control and monitor the temperature of the water used
- 15. Wastewater: (Answer a OR b)
- 15.1.1 a) Treated by municipality (SKIP if water is treated onsite)
- 15.1.2 🗆 Investigated pollution prevention/cleaner production programs to reduce wastewater
- 15.2.1 b)Treat water onsite (SKIP if water is treated by municipality)
- 15.2.2 Investigated a system that allows reuse of treated wastewater (wetland, ponds, septic tank)

16. Solid Waste

- 16.1
 Monitor how much waste is produced
- 16.2 🗖 Recycle common materials (glass, cardboard, metal cans, plastic, etc.)
- 16.3
 Recycle corks
- 16.4 🗆 Evaluate containers for wines to identify lighter and more energy efficient packaging (e.g. lighter bottle materials)
- 16.5
 Recycle/biodegrade pumice and by-products (not trucked to landfill)

17. Energy Efficiency

- 17.1 \square Monitor how much energy is consumed
- 17.2
 Keep track of all energy savings
- 17.3 🗖 Taken advantage of government grants for audits and for increasing energy efficiency
- 17.4 \Box Incorporate energy efficiency designs into the building design or renovations whenever possible
- 17.5 \square Investigated a gravity run production system
- 17.6 \Box Turn lights off when not in use
- 17.7
 Investigated LEED Certified buildings and/or renovations

18. Material Handling

- 18.1 \Box Know the potential source of any hazardous wastes
- 18.2 🗆 Know the locations of all bulk fuel storage tanks both underground and aboveground
- 18.3
 Ensure tanks have protection to catch all spills including a lip or containment wall where required
- 18.4 🗆 Have clean-up materials at hand in case of spills, including materials (e.g. kitty litter)

19. Industry Standards and Awareness

19.1 🗆 Aware of the development of the Hazardous Analysis and Critical Control Points (HACCP) program with the Wine Council of Ontario

19.2 Initiated a HACCP program at your winery/processing facility

19.3
Participated in a HACCP course

19.4
Have an environmental management system in place

20. Vineyard Management

- 20.1 Organic certification
- 20.2 \Box Investigated alternative pesticide application methods
- 20.3
 Integrated pest management

21. Employee Training and Involvement with Environmental Commitment at the Winery

- 21.1
 Training and/or instruction provided to staff in the area of environmental considerations and awareness
- 21.2 \square Communicate the benefits of environmental management to employees
- 21.3
 Encourage employees to contribute innovative suggestions and solutions to environmental management
- 21.4
 Employees are able to instigate initiatives

22. Community Relationship

22.1 Donate to charity and contribute to community environmental and social issues

22.3
Participate in the development of watershed management plans in your area

22.4 🗆 Communicate to the community the environmental impacts and management initiatives implemented at the winery

23. Suppliers

23.1
Created any partnerships in relation to environmental initiatives

- 23.2 Have suppliers take back excess packaging
- 23.3
 Requested suppliers to provide (environmental) product information
- 24. Does the winery participate in industry association(s), network(s) or other type of affiliation(s) that provide information/services regarding best available environmental practices, products, and/or services relating to the wine industry? (check all applicable boxes)
- 24.1 Wine Council of Ontario
- 24.2 Grape Growers of Ontario

24.3 🗆 VQA

- 24.4
 Canadian Vintners Association
- 24.5 🗆 Ontario Vintners Association

25. Are you a member of the Sustainable Winegrowing Ontario (SWO) Charter?

- □ yes
- 🗆 no
INFLUENCING FACTORS

26. How have each of the following factors motivated the winery to implement environmental initiatives? Please indicate the level of influence each of the following factors has on motivating and sustaining environmental initiatives in the winery.

1 = not at all influential, 2 = not very influential	uential, 3 = slightly influential	l, 4 = influential, 5 = significant	ly influential]
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		1	2	3	4	5
26.1	Increase wine quality					
26.2	Cost savings					
26.3	Protection of land					
26.4	Social responsibility					
26.5	Public image					
26.6	Community pressure/relationship					
26.7	Compliance with existing regulations					
26.8	Pre-emption of future regulations					
26.9	Consumer pressure					
26.10	Employee satisfaction					
26.11	Market differentiation (competition)					
26.12	Internal leadership					
26.13	Industry associations					
26.14	Certification bodies					
26.15	Other:					

BENEFITS

27. The following are benefits obtained from implementing environmental initiatives. Please indicate the level of importance each of the following benefits has on motivating and sustaining environmental initiatives in the winery. [1 = not at all important, 2 = not very important, 3 = somewhat important, 4 = important, 5 = very important]

	Benefit	1	2	3	4	5
27.1	Cost Benefits					
27.2	Protecting the natural environment					
27.3	Competitive market advantage					
27.4	Pre-emption of future regulations					
27.5	Trade association certification					
27.6	Employee Satisfaction					
27.7	Improved wine quality					
27.8	Other:					

BARRIERS

28. How do the following barriers discourage implementation of environmental initiatives? Please rate each based on the level of significance the barrier has on implementing environmental initiatives. [1 = Not at all significant, 2 = not very significant, 3 = somewhat significant, 4 = significant, 5 = very significant]

	Barrier	1	2	3	4	5
28.1	Inadequate resources (financial)					
28.2	Threat to Wine Quality					
28.3	Inadequate time to implement					
28.4	Inadequate knowledge					
28.5	Lack of leadership from top management					
28.6	Lack of knowledge of local behaviour					
28.7	Inadequate skills					
28.8	Multiple stakeholders with conflicting interests					
28.9	Organizational structure not amenable to change					
28.10	Environmental initiatives incompatible with					
	corporate structure					
28.11	Other:					

29. Have you used any of the following strategies to overcome barriers?

29.1 \square Discussing the benefits to cost, market differentiation to decision makers

29.2
Employee education and training

29.3
Introducing 'low hanging fruit' initiatives first

29.4
Consumer education

29.5
Include environmental responsibility in employee job descriptions

29.6 \Box Sharing resources/information with other wineries

29.7 🗆 Other: _____

INCENTIVES

30. Please rate the following incentives based on the level of importance they have on encouraging the implementation of environmental initiatives. (1 = not at all important, 2 = not very important, 3 = somewhat important, 4 = important, 5 = very important)

	Incentives	1	2	3	4	5
30.1	Government Grants					
30.2	Sharing information between wineries					
30.3	Greater market visibility					
30.4	Guidance from government					
30.5	Guidance from industry associations					
30.6	Other subsidies/incentives					
30.7	Certification(s)					
30.8	Other:					

31. Have you used any incentives to implement environmental initiatives?

- 31.1 □ yes □ no
- 31.2 If yes, which one(s): ____

32. Where would you go to get information on environmental initiatives, best practices in wine production/industry?

- 32.1
 Industry associations
- 32.2 🛛 Government
- 32.3 D Publications
- 32.4

 International industry
- 32.5 🗆 Websites
- 32.6 🗆 Local centers
- 32.7
 □ Regional centers
- 32.8
 National centers
- 32.9 \Box International centers

Thank you very much for taking the time to complete this questionnaire.

Part 2 - Environmental Commitment of Ontario Winery Estates

Research conducted by Lindsay Walker, Masters Student, Department of Environmental Applied Science and Management, Ryerson University

Winery:	
Contact Person:	
Title:	
Address:	
Telephone number:	
Email:	

Before we begin, let me give you some background about the project. I am examining what factors affect environmental commitment in Ontario wineries as a university thesis project. All information from this meeting will be kept confidential and it will not be used for any purpose other than academic. If the information you provide is used in the study, all quotes or specific cases will first have your expressed consent. This interview is voluntary and please let me know if you need further clarification on any points as I am happy to provide it. By completing this interview, you indicate that the information gathered may be part of this research. The data will not be shared with anyone except for myself and my research supervisor.

The interview will take about 30 minutes to complete, let's get started.

- 1. What does the environment mean to the winery estate?
- 2. How would you define sustainability?

INFLUENCING FACTORS

- 3. Why did you rate X as very important factor? And Y as not very important factor that influences or motivates you to implement environmental initiative? Please explain.
- 4. How do the [most influential stakeholders] affect the winery estate's decision making process in relation to implementing environmental initiatives?

5. Is there a Return on Investment (ROI) on an environmental initiative?

6. Could you give some examples?

7. What time period is acceptable for the return?

8. If information and education on environmental initiatives were easily accessible would you be more likely to implement such practices?

 \Box yes \Box no

9. Do you feel that competitiveness of the industry depends on the widespread acceptance and implementation of environmental practices?

yes no

10. In your opinion are there any (additional) attitudes that can significantly support proactive environmentalism in the wine growing industry?

BENEFITS

11. Why did you rate X as being a significant benefit to implementing environmental initiatives at the winery? And Y as not a very significant benefit that influences or motivates you to implement environmental initiatives? Please explain.

BARRIERS

12. Why did you say X was a significant barrier for the winery estate to implement environmental initiatives? Please explain.

[prompts: Access to resources/funding; time; standards legislation not forcing; lack of support/information; uncertain ROI]

INCENTIVES

13. Why did you say X was the most encouraging incentive to implement environmental initiatives?

FUTURE

14. Are there any environmental (sustainable) initiatives that you are planning on integrating in the future? [Prompt: energy conservations, water conservation, water pollution, air pollution, waste reduction, community relations, alternative pesticide use]

QUESTIONS ABOUT THE WINERY ORGANIZATION

15. How does the ownership of the winery estate affect decisions about environmental commitment?

16. Is there anything you would like to add or that we haven't discussed so far?

Those are all the questions I had. Thank you very much for participating in this study. Would it be OK if I contact you again if I have any follow-up questions? [YES/NO] ______

Have a great day.

Appendix D: Example Qualitative Interview Data Coding Sheet

Interview	Influencing Factor
	Improve Wine Quality
	The number one importance is wine quality.
2	The environment is closely related to the product. We spray to keep the fruit healthy, but use it efficiently.
4	Increase in wine quality (is influential). It's more about the product than the business.
	Wine quality is the top influence.
	The wine is the ultimate proof of how environmental good the winery is.
	To obtain great wine, you obtain it in the vinevard.
6	End up using environmentally safe practices to make great wine.
	Rated increase wine quality as an important factor because that is what tells us what we need to do. The grapes
7	tell us. We take our cue from them. Living and learning on the land.
	By reducing pesticides there is a direct correlation to the wine quality, residual pesticide can be detected in the
9	wine.
	In the vinevard yes, It's better for the grapes to be organic, that improves [their quality]. But it is also good to do
14	traditional/conventional wine production. The winery doesn't affect the wine that much, not like the vinevard.
15	Protecting the land means better wine. That's the most important
10	There are three hig motivators: 1) a quality end product 2) preservation of land and 3) economic sustainability
	"But without any of these, it won't work. I'm not sustainable if I'm damaging the land. If I can't make it cost
20	effective then I can't do it. The margins are so tough
20	Can always makes a cheaper product, but it's about producing the best quality wine we can make. Have to
	change more (not cheap to do it) to have the best quality grapes. Affordability it part of it Growing the grapes is
21	example in the first energy to do to be the second quality grapes. This is a sine of the energy in grapes is key = vinevard
	We never really considered doing anything but organic. It didn't come to mind. We read about vinewards in
	Burgundy, noticed less quality and less yields with soils more dead than Sahara desert. Systemic chemicals were
	used in the early 60s, the representatives sold it to everyone and they destroyed the soils. It has been different
25	ever since.
32	An increase wine quality is directly correlated with cost savings, they have to balance. We have to do both
	If the final product was equal (in quality) but there was a significant price difference (to spend) then we won't
35	do it.
27	The quality of wine, final product, has an indirect impact on environment.
	Protection of the Land
	The number one importance is wine quality. The environment is close to the product. We spray to keep the fruit
1	healthy, but use it efficiently.
	Wine quality is the top influence: "The wine is the ultimate proof of how environmental good the winery is.
	To obtain great wine, you obtain it in the vinevard". They end up using environmentally safe practices to make
6	great wine. (not necessarily thinking environment as number one reason, but it ends up being the same)
	I rated increase wine quality as important factor because that's what tells us what we need to do. The grapes tell
7	us. We take our cue from them. We live and learn on the land.
9	By reducing pesticides there is a direct correlation to the wine quality (residual pesticide in the wine).
	We work with the environment, in a conscientious way. Not inputting un-natural substances or forcing it in
	ways that it's not meant to be forced.
11	Cost can limit what would like to do. But if it has a massive environmental benefit, then the cost is not a issue.
	Winery doesn't affect the wine that much, not like the vineyard.
	Protection of the land – very high!
14	Social responsibility goes with 'protection of the land', it is all our responsibilities to manage this
15	Protection of land: (rated a 5). Protecting the land means better wine. That's the most important.
	By and large farmers want to keep well their land and water
16	Protecting the environment – traditional farmers believe in this.
	I'm not sustainable if I'm damaging the land
	There are three big motivators: 1) a quality end product, 2) preservation of land and 3) economic sustainability
	But without any of these, it won't work. I'm not sustainable if I'm damaging the land. If I can't make it cost
20	effective, then I can't do it. The margins are so tough.
	Do what's best for the field.
21	Can always makes a cheaper product, but it's about producing the best quality wine we can make. Have to

Table D.1: Example Qualitative Interview Data Coding Sheet

Interview	Influencing Factor
	change more (not cheap to do it) to have the best quality grapes. Affordability it part of it. Growing the grapes is
	key = vineyard.
	Looking at overall operation - it's interesting. We weren't consciously deciding to get that goal. Created a niche
	anyways. Organic and off the grid.
	We never really considered doing anything but organic. It didn't come to mind. We read about vineyards in
	Burgundy, noticed less quality and less yields with soils more dead than Sahara desert. Systemic chemicals were
	used in the early 60s, the representatives sold it to everyone and they destroyed the soils. It has been different
25	ever since.
26	Protection of land needs to be balanced against business plan.
	Protection of land: are our own stewards.
32	It's the triple equation: economic vs. environmental vs. social.
35	Protection of land: Being practical.
	Need to link economics to environment in order to do it.
2.6	It's hard to justify only on each alone (economics, environment, leadership). All three benefiting together is key.
36	Eco-purchasing? Environment is not in the top five things they think of when making purchasing decisions.
	We have gone to lighter bottles even though a heavier product would be more in the style of premium wines.
25	The reasons we did it were 1) environmental 2) public conscious of products, from a business standpoint.
37	The quality of wine, final product, has an indirect impact on environment.
	Cost savings/Cost efficient/Economically Feasible
I	The savings are good for business, but it's better to be responsible regardless of the business benefits.
4	It's more about the product then the business.
	Environment links back to economic reality, always. Economic incentive.
	People say one thing and do another. On surveys and when asked people will pay more and care about the
5	products, etc. But that is not what they actually practice. They buy the cheapest products of the ones with the
10	Nothing happons without monoy
10	Cost can limit what would like to do. But if it has a massive environmental benefit, then the cost is not a issue
11	Cost cavings: Capital investment of things is a must, if the business side would go down due to environmental
12	stuff then can't do it
12	Cost is influential for sure. Would love on-site treatment. Now we hav people to give us water. Save \$ is what
14	the company is always saving now.
	Cost benefits: often they end up costing more. Initiatives are rarely cheap. It's a balance of CSR and cost. Dollars
16	and cents always a top influencer.
18	Don't know of any other subsidies out there.
	Cost savings, small winery. We're always trying, it's important to be environmentally responsible. But we also
19	need grapes at the end of the year.
	If can't make it cost effective, then can't do it. The margins are so tough.
	There are three big motivators: 1) a quality end product, 2) preservation of land and 3) economic sustainability.
	But without any of these, it won't work. I'm not sustainable if I'm damaging the land. If I can't make it cost
20	effective, then I can't do it. The margins are so tough.
	Can always makes a cheaper product, but it's about producing the best quality wine we can make. Have to
	change more (not cheap to do it) to have the best quality grapes. Affordability it part of it. Growing the grapes is
21	key = vineyard.
	Cost to implement: If there is a high capital investment, it will preclude [the decision].
22	[The decision is based on] what can we practically do/implement in a cost efficient way.
22	RE: Owner as main stakenolder: Money all that's involved.
24	we have to ask is it reasible? Les, with the right people and if the economics makes sense.
	Cost would not be a main factor for a decision [to implement an environmental initiative]. Even if it might cost
25	sugnity more, we have no problem with that. People have discovered an interest in organic products in the last
25	icw years. Protection of land needs to be balanced against business plan
20	Cost cavings has to be a part of it. We cap't just grand willy pilly
۷ ــــــــــــــــــــــــــــــــــــ	Need a return for it [environmental initiative], balance of what will it cost and will it new for itself over time.
28	Makes good business sense to be environmentally friendly (both on a cost and marketing front).

Interview	Influencing Factor
	An increase wine quality is directly correlated with cost savings, they have to balance. We have to do both.
	Has to be a value to everything (Non-value = GGO).
32	It's the triple equation: economic vs. environmental vs. social.
34	Cost savings: Not as influential as wine quality, but important for sure.
	If the final product was equal (in quality), but there was a significant price difference (to spend) then we won't
	do it.
	Financial considerations e.g.: We have a new two row sprayer which takes less time, less equipment hours, less
	fuel and creates less compaction (which is better for soils).
	We also got a leaf puller. At first we got it because it was cost effective, but also we can get better spray
	penetration. So we use less spray (which is costly, bad for the environment and worse for the taste/wine
	quality).
35	Finances. If we don't have the money to do it, we can't do it. Must do a cost-benefit ratio.
	Need to link economics to environment in order to do it.
36	It's hard to justify only on each alone (economics, environment, leadership). All three benefiting together is key.
-	We have gone to lighter bottles even though a heavier product would be more in the style of premium wines.
37	The reasons we did it were 1) environmental 2) public conscious of products, from a business standpoint.
	Moral obligation/Being responsible
	The influencing factors relate to being responsible.
1	The savings are good for business, but it's better to be responsible regardless of the business benefits.
4	Start doing, not talking. Moral obligation
5	It is because of our own sense to do the right thing, it is not all about money. If we can do it we will.
	Public image: marketing is important, have to make money. But that is not the reason that they do it. Also
11	influencing factor is personal – "my family lives here, health.
	Doing the right thing is more important than the certification. More due to moral conscience.
	Leave a positive [place/environment] when you leave, people will respect you. The wine guys are the celebrities
16	[in Niagara], it's wonderful feedback. It feels good to do good.
	It's the right thing, personally.
17	I did it because I think it's the right thing to do, it is not because of pressure from social forces.
	Influencing factors – why? Never really considered doing anything but organic. Didn't come to mind. Read about
	vineyards in burgundy – notices less quality and less yields with soils more dead than Sahara desert. Systemic
	chemicals in early 60s, the reps sold to everyone. They destroyed the soils. Changed ever since.
25	An indication that it's a natural tendency for us to think that way.
28	No burning of brush. Environmental fact on something we do for logistical reason.
24	Public image versus the right thing to do. Public influence is not going to influence [our decision]. We're not
31	necessarily doing for the marketing benefit, but it's a bonus.
22	A personal mentality. Take on things. What I can do, I do (within the company limits).
33	We are our own stewards.

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List of Acronyms

AAFC	Agriculture and Agri-Food Canada
ABARE	Australian Bureau of Agricultural and Resource Economics
AWIS	Australian Wine Industry Stewardship project
BWI	Biodiversity and Wine Initiative
CAWG	California Association of Winegrape Growers
Cal/EPA	California Environmental Protection Agency
CSWA	California Sustainable Winegrowing Alliance
CFIA	Canada Food Inspection Agency
CaGBC	Canada Green Building Council
COFSP	Canada-Ontario Farm Stewardship Program
CFIA	Canadian Food Inspection Agency
COS	Canadian Organic Standards
CVA	Canadian Vintners Alliance
CIC	Cellared in Canada
CSI	Centre for Systems Integration
CIVC	Comité Inter-professionel du Vin de Champagne
CSR	Corporate Social Responsibility
EFP	Environmental Farm Plan
EMS	Environmental Management System
EWC	Environmental Wine Cooperative
EU	European Union
FSTI	Food Safety and Traceability Initiative
FTA	Free Trade Agreement
GWSESP	Global Wine Sector Environmental Sustainability Principles
GWP	Good Winery Practices
GGO	Grape Growers of Ontario
GDP	Gross Domestic Product
HACCP	Hazard Analysis Critical Control Points
HVAC	Heating, Ventilation and Air Conditioning
IPM	Integrated Pest Management
IP	Integrated Production
FIVS	International Federation of Wines and Spirits
OIV	International Organisation of Vine and Wine
IOBC	International Organization for Biological Control
LEED	Leadership in Energy and Environmental Design
LCBO	Liquor Board of Ontario
LFP	Local Food Plus
LIVE	Low Input Viticulture and Enology
NEC	Niagara Escarpment Commission
NER	Niagara Escarpment Region
OMAFRA	Ontario Ministry of Agriculture, Food and Rural Affairs
MoE	Ontario Ministry of Environment
OSCIA	Ontario Soil and Crop Improvement Association
OVA	Ontario Vintners Association
OCIA	Organic Crop Improvement Association Canada
OPR	Organic Products Regulations
PECWA	Prince Edward County Wine Association
QAI	Quality Assurance International
RBT	Resource Based Theory

Return on Investment
Small and Medium Enterprise
Southwestern Ontario Vintners Association
Stakeholder Theory
Statistical Package for Social Sciences
Sustainable Wine South Africa
Sustainable Winegrowing New Zealand
Sustainable Winegrowing Ontario Charter
Sustainable Winegrowing Program
United Kingdom
United Nations
Vintners Quality Alliance
Wine Council of Ontario
Winemakers Federation of Australia
World Commission on Environment and Development
World Travel & Tourism Council