



PROFILE OF
CANADIAN ENVIRONMENTAL
EMPLOYMENT

2007



ECO CANADA

Environmental Careers Organization
L'Organisation pour les carrières en environnement

ECO CANADA

ECO Canada develops programs that help individuals build meaningful environmental careers, provides employers with resources to find and keep the best environmental practitioners, and informs educators and governments of employment trends to ensure the ongoing prosperity of this growing sector.



ELM RESEARCH

ELM (Environmental Labour Market) Research investigates current environmental skill and labour trends within the environmental profession and provides up-to-date, timely and relevant insights that can be applied in policy, business, and educational contexts. The complete collection of ELM reports is available at www.eco.ca.

ELM
ENVIRONMENTAL LABOUR MARKET RESEARCH



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(ELM) RESEARCH

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Canada

This project is funded by the Government of Canada's
Sector Council Program



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The organization offers a suite of resources designed to meet the professional needs of this rapidly growing industry, including the largest environmental online job board in Canada, certification for environmental practitioners and a wage-subsidy internship program.

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EXECUTIVE SUMMARY

The Profile of Canadian Environmental Employment 2007 is a unique study, representing the most accurate estimate of total Canadian environmental employment to-date. Unlike past reports by ECO Canada and Statistics Canada, which focused on environmental establishments, these results represent environmental employment across all sectors of the economy, recognizing the cross-sectoral nature of environmental work and the breadth of occupations that fall under the environmental umbrella.

This report is based on survey data collected from 6,096 organizations across all major industry groups in Canada (from an original sample of 12,413 employers for a 49 percent response rate). The primary objectives of this report are:

- I. to provide an accurate estimate of the number of employees who are engaged in environmental employment across all industries in Canada,
- II. to develop regional profiles in order to identify the nature of concentration and/or distribution of environmental employment across Canada.

The results of the survey have been used in conjunction with the Census and Labour Force Survey (LFS) data to facilitate the estimation process.

The information in this report is relevant to a wide variety of readers as it serves as the foundation for defining the scope of Canadian environmental employment. It can be used by employers and policy makers to identify emerging areas of employment and potential human resource gaps, while educators can use the information to map their curriculum to employment trends to ensure the continued relevance of their programs and courses.

KEY FINDINGS

There are 530,414 environmental employees within major industry groups across Canada

Survey results indicate 3.2 percent of the workforce in Canada is engaged in environment related work (either in full or in part). The total number of environmental employees across all industries is estimated at 530,414. The industries that employ the highest proportion of environmental employees are (i) Administration and Support, Waste Management and Remediation, (ii) Agriculture, Forestry, Fishing and Hunting, and (iii) Professional, Scientific and Technical Services.

105,221 organizations currently have one or more environmental employees

Approximately 10.1 percent of organizations from across Canada have one or more environmental employees. It is estimated that a total of 105,221 establishments within the major industry categories have environmental employees. According to the findings of the survey, the top industries employing environmental employees are (i) Public Administration, (ii) Mining and Oil and Gas Extraction, and (iii) Administration and Support, Waste Management and Remediation.

Environmental employees in management positions are older than the national average

54 percent of the environmental employees in management positions are likely to be 45 years of age or older compared to the national average of 44 percent.

A lower proportion of women are employed in the environmental workforce compared to the national average

Survey results show that the proportion of women in the environmental workforce is 37 percent, which is lower than those employed in the Canadian labour force (47 percent).

Ontario, British Columbia and Quebec have the highest concentration of environmental employment

In Ontario, environmental employment is estimated at 225,342 representing 42.5 percent of the national population of environmental employees. British Columbia and Quebec accounted for 93,462 (17.6 percent) and 91,726 (17.3 percent) environmental employees respectively.

SECTION 1.0: INTRODUCTION

1.1 ABOUT ECO CANADA

ECO Canada (Environmental Careers Organization, Canada's national sector council) is a not-for-profit corporation that assists the Canadian environmental sector in implementing sound human resource development policies. Since its founding in 1992 (as the Canadian Council for Human Resources in the Environment Industry or CCHREI), ECO Canada has taken great strides toward developing a national human resource strategy that is focused towards the needs of environmental practitioners, employers and educators.

1.2 RESEARCH OBJECTIVES

The primary objective of the Profile of Canadian Environmental Employment 2007 was to estimate the number of environmental employees across all major industries in Canada. In addition, the study was aimed at developing an estimate of the proportion of establishments by broad industry group that employ one or more individuals who undertake environmental activities (on a full or part-time basis). The report also presents the regional distribution of current environmental employment and an analysis of the demographic profile of environmental employees.

This report will help employers in all industries across Canada by providing information about current and future trends in environmental employment. Given the emerging problem of labour shortages throughout Canada, this report, together with other forthcoming ELM reports produced by ECO Canada, will provide information on sources of additional environmental employees. The ELM reports will prepare employers to plan in advance regarding how best to fill the future vacancies.

1.3 RESEARCH COVERAGE

The Survey of Environmental Employment in All Industries 2006 (see Appendix D) was distributed among a randomly chosen sample of 14,575 employers within all major industries across all provinces and territories in Canada. The sample was purchased from InfoCanada. Excluding the contact information of 2,162 employers, which were identified as 'not in service', the valid sample consisted of 12,413 employers. The sample was randomly selected from private enterprises, government agencies, not-for-profit groups and other public or private institutions or establishments. These employers represented the following 13 industry categories from the North American Industry Classification System (NAICS) as shown in Table 1.1.

TABLE 1.1
Industry Segments

Industry Group	2-digit NAICS Code(s)
Agriculture, Forestry, Fishing and Hunting	11
Mining and Oil and Gas Extraction	21
Construction	23
Manufacturing	31-33
Wholesale/Retail Trade	41, 44-45
Utilities, Transportation and Warehousing	22, 48-49
Information, Finance and Insurance, Real Estate and Management of Companies	51, 52, 53, 55
Professional, Scientific and Technical Services	54
Administration and Support, Waste Management and Remediation	56
Education, Health and Social Assistance	61-62
Arts, Recreation, Accommodation and Food Services	71-72
Other Services (except Public Administration)	81
Public Administration	91

1.4 SUMMARY OF METHODOLOGY

Out of the total valid sample of 12,413 employers, 6,096 employers completed the survey, representing a response rate of 49 percent. Of these completions, 649 were completed by mail (10.6 percent), 118 online (1.9 percent), 14 by fax (0.2 percent), and the remainder by telephone (87.3 percent).

TABLE 1.2
Calculation of Valid Response Rate

Number of Surveys Distributed	Number identified as Not in service/Not available to complete	Valid Sample	Number of Valid Surveys Completed	Valid Response Rate
14,575	2,162	12,413	6,096	49%

The data from the current survey were used to estimate the number of environmental employees in Canada. For that purpose, the survey data was applied to the secondary data sources such as the Census and Labour Force Survey (LFS) of Statistics Canada to carry out the analysis for inclusion in this report. In order to accurately reflect the distribution of the Canadian workforce by region and industry, the survey data was weighted based on the distribution of the Canadian workforce by region and industry. Other secondary data sources, including Industry Canada, were also used to analyze the past trend and forecasts of environmental employment in Canada. A more detailed description of the methodology is included in Appendix A.

1.5 COMPARISON OF METHODOLOGY TO PREVIOUS RESEARCH

The key objective of this research was to develop a credible estimate of the number/proportion of Canada's workforce that was involved in environmental activities. Due to the limitations associated with existing data sources, such as the Census and Labour Force Survey¹, there are no reliable estimates of the overall proportion of Canada's workforce that is engaged in environmental activities. However, there have been several previous studies (including research commissioned by ECO Canada) that have attempted to estimate the size of Canada's environmental workforce. Below is a description of other similar research and how such research differs from the *Profile of Canadian Environmental Employment 2007*.

The Survey of Environmental Employment in All Industries 2006 was designed to provide a comprehensive, industry-wide estimate of the number/proportion of environmental workers who were employed on a full or part-time basis in activities related to environmental protection, environmental sustainability and/or the conservation and preservation of natural resources. Data was collected as to whether such employment represented the workers' primary or secondary job duties.

In addition to the current project, there have been several previous studies that have examined "environmental employment" in Canada. These include:

- *Environmental Industry Survey – Business Sector (2002) – Statistics Canada*
- *2004 Environmental Labour Market (ELM) Report – ECO Canada*

Environmental Industry Survey – Business Sector (2002) – Statistics Canada

In 2002, Statistics Canada undertook a survey of establishments that were primarily engaged in environmental activities defined as follows:

- *Involved in whole or in part in the production of environmental goods;*
- *Provision of environmental services;*
- *Undertaking of environmental-related construction activities.*

Using a variety of sources (e.g., Waste Management Industry Survey, Annual Survey of Engineering services, etc.) Statistics Canada developed a universe of establishments that would have some or all of their revenues derived from the provision of environmental goods and services. Using a survey approach, Statistics Canada obtained completed surveys from 1,732 firms of the 2,322 in-scope establishments deemed to be eligible to participate in the survey (75 percent response rate). The high response rate reflects the target group of the survey – namely, organizations that were involved in the provision of environmental goods and services. Among the organizations surveyed, it was estimated that environmentally related revenues represented, on average, 54 percent of the total revenue of the organizations. Similarly, environmentally related employment represented 64 percent of the total employment in the organizations surveyed. At the national level, this would equate to employment of 102,200 in 2002 (total employment in environmental organizations of 159,720 x 64 percent who were engaged in environmental activities). Similar to the current study, environmental employment was defined as workers who "...spent any time in the production/provision of environmental goods and services, or environment-related construction services."

¹ In both the Census and LFS, there is only limited information collected as to environmental occupations. Similarly, with the exception of a few select industries, environmentally related employment is not adequately addressed in existing industry-level employment data.

The key findings of the *Environmental Industry Survey – Business Sector (2002)* can be summarized as follows:

- Statistics Canada estimated that there were approximately 7,967 establishments that had significant revenues from environmental activities in Canada in 2002. This estimate excludes engineering construction firms.
- Total environmental employment (defined as an employee who has some/all of their position related to environmental activities) in this sub-group of firms (i.e., environmental organizations) was estimated to be 64 percent of the aggregate establishment employment (102,200). There is no data as to the proportion of time such employees spend on environmental activities.
- The study excludes "non-business" organizations. For example, there is no data for public sector organizations including public administration, health, education and/or social service organizations.

2004 Environmental Labour Market (ELM) Report – ECO Canada

The 2004 Environmental Labour Market (ELM) Report was a follow-up to an earlier labour market study commissioned by ECO Canada that was designed to estimate the change in the size of the environmental workforce since the time of the previous study (2000). The 2004 study adopted the same methodology to facilitate comparison to the 2000 results, namely, a survey of organizations likely to employ an environmental practitioner. In contrast to the Statistics Canada study, the valid sample included organizations in the for-profit, not-for-profit and public administration sectors.

The sample frame included organizations that were likely to employ an environmental practitioner – namely organizations in the ECO Canada contact database and the Environmental Directory. While not all organizations surveyed employed an environmental practitioner, a high proportion (56 percent) reported that they employed an environmental practitioner. The estimates of 2004 environmental employment were computed by comparing the growth rates for firms that had environmental employment in both 1999 and 2004, and applying the growth rate to the original 2000 employment estimate. Environmental employment estimates were based on the responses provided by 611 establishments that provided employment information for both 1999 and the current period (2004). An environmental employee was defined as any worker in a full or part-time capacity whose employment was related to the environment (either full or in part).

Key findings from the 2004 Environmental Labour Market Report can be summarized as follows:

- Based on the growth in the number/proportion of environmental workers in participating establishments, Canadian environmental employment was estimated at 251,000 in 2004. This figure was computed based on a 13.7 percent increase in environmental employment that was applied to the original 2000 estimate of environmental employment.
- Reflecting the sample bias of "environmental organizations" included in the study, a high proportion of organizations (56 percent) reported that they employed one or more environmental workers.

For further details on methodological comparisons, see Appendix B.

1.6 KEY DEFINITIONS

Environmental employment includes individuals who work in at least one of the sectors of the economy related to:

- Environmental Protection (i.e., air quality, water quality, land quality, waste management, restoration and reclamation, human and environmental health and safety, environmental protection management);
- Conservation and Preservation of Natural Resources (i.e., fisheries and wildlife, forestry, agriculture, mining, energy, parks and natural reserves, natural resources management); and
- Environmental Sustainability (i.e., education, research and development, policy and legislation, communications and policy awareness, management for sustainable development).

Employee level is defined using Statistics Canada's broad NOC categories:

- Management: management occupations
- Trades and Technical: trades, transport and equipment operators and related occupations; occupations unique to primary industry; occupations unique to processing, manufacturing and utilities; natural and applied sciences and related occupations; health occupations; occupations in social science, education, government service and religion; occupations in art, culture, recreation and sport
- Sales and Service: sales and service occupations
- Administrative: business, finance and administrative occupations

Full-time work is defined as 30 hours or more per week.

Province where employees are located is defined as the province in which the employee pays income tax.

SECTION 2.0: ENVIRONMENTAL EMPLOYMENT - OVERVIEW

The North American Industry Classification System (NAICS) categorizes establishments by the respective goods and services that they produce. For the purpose of this report ECO Canada has used the top-level two-digit, major industry groups (combining some industries where a lower density of environmental employment was predicted) to provide a complete picture of where environmental employees are working. By using this framework ECO Canada will be able to utilize Census and Labour Force Survey (LFS) data in the coming years to monitor changes in environmental employment across every sector of the Canadian economy.

This section provides estimates of the number of establishments that have environmental employees and total environmental employment figures across all major industries across Canada. It also sheds light on the characteristics of this employment including occupational type, age and gender profiles.

2.1 ENVIRONMENTAL EMPLOYMENT BY MAJOR INDUSTRY GROUP

The employers (6,096) who responded to the survey provided information on the total employment and the number of staff who perform environmentally related activities within their organizations². Approximately one in ten firms in Canada (10.1 percent on a weighted basis) employed one or more environmental employees in their establishments.

Table 2.1 provides a detailed break down of the establishments by major industry categories employing environmental employees. As can be observed, 31.1 percent of the public sector organizations employ environmental employees. In contrast, less than five percent of employers in the Information, Finance, Insurance, Real Estate and Management of Companies sector indicated that they employ environmental employees. Applying the data from our survey to the Labour Force Survey (LFS) data, it is estimated that 105,221 establishments in Canada employ one or more environmental employees.

TABLE 2.1

Establishments with Environmental Employees by Major Industry Group

INDUSTRY GROUP	TOTAL NUMBER OF ESTABLISHMENTS IN CANADA	PROPORTION (FROM SURVEY) OF ESTABLISHMENTS WITH ENVIRONMENTAL EMPLOYEES	ESTIMATED NUMBER OF ESTABLISHMENTS WITH ENVIRONMENTAL EMPLOYEES
Public Administration	8,107	31.1%	2,523
Mining and Oil and Gas Extraction	8,289	23.1%	1,911
Administration and Support, Waste Management and Remediation	47,994	22.3%	10,698
Agriculture, Forestry, Fishing and Hunting	58,969	20.0%	11,819
Manufacturing	62,227	12.9%	8,034
Arts, Recreation, Accommodation and Food Services	92,791	9.7%	9,019
Education, Health and Social Assistance	95,029	9.7%	9,202
Construction	111,240	9.4%	10,472
Professional, Scientific and Technical Services	115,369	9.1%	10,488
Utilities, Transportation and Warehousing	47,182	8.9%	4,211
Wholesale/Retail Trade	197,099	7.8%	15,366
Other Services (except Public Administration)	96,554	6.8%	6,520
Information, Finance, Insurance, Real Estate and Management of Companies	105,495	4.7%	4,957
Total	1,046,345	10.1% ¹	105,221

¹ Weighted on the basis of the number of establishments in each major industry group. Source: Statistics Canada and Survey of Environmental Employment in All Industries 2006

2.2 NUMBER OF ENVIRONMENTAL EMPLOYEES BY MAJOR INDUSTRY GROUP

As outlined in section 1.2, the primary objective of the current research is to estimate the total number of environmental employees across all industries in Canada. Table 2.2 summarizes the proportion and number of people in the workforce in various industries that are engaged in environmental activities.

² The survey instrument is included in Appendix D.

TABLE 2.2

Number of Environmental Employees by Major Industry Group

INDUSTRY GROUP	PROPORTION OF WORKFORCE REPRESENTING ENVIRONMENTAL EMPLOYEES	NUMBER OF EMPLOYEES – CANADA	
	SURVEY ESTIMATES	TOTAL WORKFORCE	ENVIRONMENTAL EMPLOYEES ¹
Administration and Support, Waste Management and Remediation	12.2%	657,839	80,290
Agriculture, Forestry, Fishing and Hunting	7.4%	464,982	34,438
Professional, Scientific and Technical Services	6.4%	1,091,167	69,825
Public Administration	6.2%	844,522	52,372
Mining and Oil and Gas Extraction	4.5%	213,374	9,639
Construction	3.9%	1,058,611	41,273
Other Services (except Public Administration)	3.5%	703,911	24,354
Arts, Recreation, Accommodation and Food Services	2.8%	1,326,883	36,679
Utilities, Transportation and Warehousing	2.5%	920,411	23,217
Manufacturing	2.0%	2,125,878	42,836
Education, Health and Social Assistance	1.9%	2,918,800	55,845
Wholesale/Retail Trade	1.8%	2,623,633	46,106
Information, Finance, Insurance, Real Estate and Management of Companies	0.9%	1,498,622	13,542
Total – Weighted Data	3.2%	16,448,633	530,414

¹ Weighted on the basis of the number of environmental employees in each province and major industry group. Estimate of environmental employees may not add exactly to 530,414 due to rounding. Source: Statistics Canada, Labour Force Survey (January to September 2006) and Survey of Environmental Employment in All Industries 2006

As can be observed in Table 2.2, the proportion of environmental employees is relatively high at 12.2 percent in the Administration and Support, Waste Management and Remediation sector, followed by the Agriculture, Forestry, Fishing and Hunting sector where 7.4 percent of the workforce is recognized as environmental employees, and the Professional, Scientific and Technical Services employ environmental employees who represent 6.4 percent of the sector's total workforce. In contrast, only 0.9 percent of the employees in the Information, Finance, Insurance, Real Estate and Management of Companies sector are engaged in environmentally related employment. In addition, Wholesale/Retail Trade and Education, Health and Social Assistance sectors employ environmental employees who represent less than two percent of the sectors' total employment. On average, it is estimated that 3.2 percent of Canada's total workforce represent environmental employment.

2.3 "INTENSITY" OF ENVIRONMENTAL DUTIES BY MAJOR OCCUPATIONAL GROUP

As highlighted in Figure 2.1, of the estimated 530,400 environmental workers in Canada, 50 percent work in trades/technical occupations, 31 percent are in management positions, 11 percent are in administrative positions and 8 percent work in sales/service positions.

FIGURE 2.1:

Estimated Environmental Employment by Major Occupational Group



Source: Survey of Environmental Employment in All Industries 2006, n=747

While it is estimated that more than 530,400 workers in Canada work in an occupation that has job duties specifically related to environmental protection, conservation and/or preservation of environmental sustainability, it should be noted that for half of these workers, “environmentally” related job duties do not occupy the majority of their job duties. In trade and technical positions (accounting for one-half of environmental employees), 61.3 percent of environmental employees spent 50 percent or more of their time on environmental activities. In contrast, a minority of the other occupational categories (management, sales/service and administrative staff) spent 50 percent or more of their time on environmental activities.

TABLE 2.3

Environmental Employment by Major Occupational Group by Proportion of Employment Related to Environmental Activities

OCCUPATIONAL GROUP	ESTIMATED # OF ENVIRONMENTAL STAFF	% OF TOTAL	# WHO WORK 50% OR MORE TIME ON ENVIRONMENTAL ACTIVITIES	% WITH 50% OR MORE TIME ON ENVIRONMENTAL ACTIVITIES
Management	163,000	30.7%	69,243	42.5%
Trades and Technical	266,300	50.2%	163,212	61.3%
Sales and Service	44,700	8.4%	13,420	30.0%
Administrative	56,400	10.6%	20,106	35.7%
Total	530,400	100%	265,980	50.1%

Source: Survey of Environmental Employment in All Industries 2006, n=747

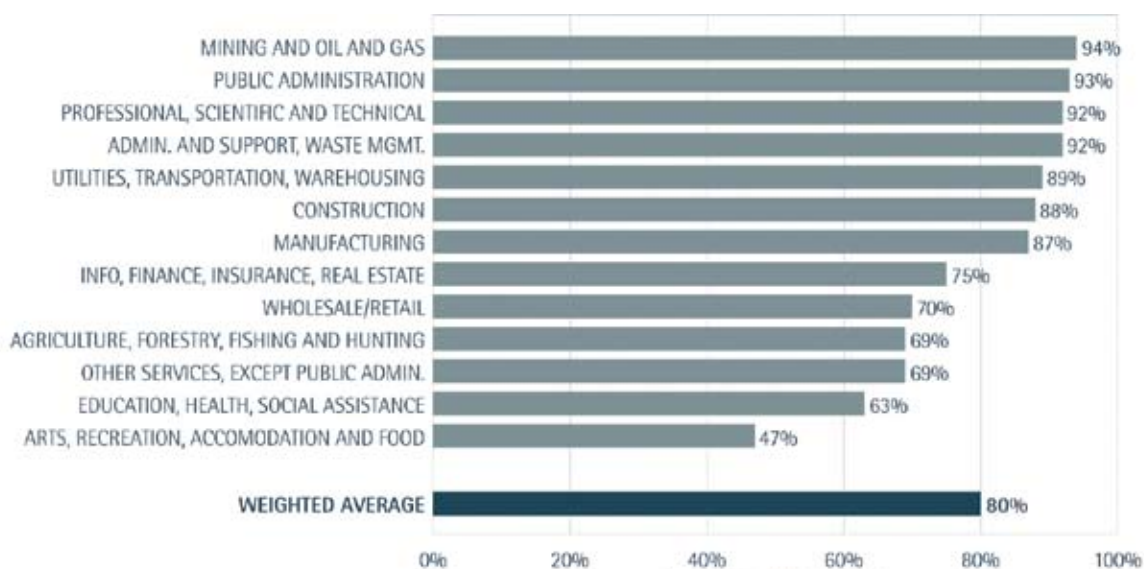
2.4 ENVIRONMENTAL EMPLOYMENT: FULL AND PART-TIME BASIS

Overall, survey results suggest that approximately 80 percent of environmental workers are employed on a full-time basis in their organization. This ratio is comparable to the Canadian average of 82 percent across all occupations for 2005.

As highlighted in Figure 2.2, sectors characterized by a high level of full-time employment include the Mining and Oil and Gas Extraction sector (94 percent of environmental employees were employed on a full-time basis), and environmental workers in the Public Administration (93 percent full-time) and Professional, Scientific and Technical Services (92 percent full-time) sectors. In contrast, less than one half (47 percent) of environmental employees who worked in the Arts, Recreation Accommodation and Food Services sector were classified as full-time employees.

FIGURE 2.2

Full-time and Part-time Environmental Employees by Major Industry Group¹



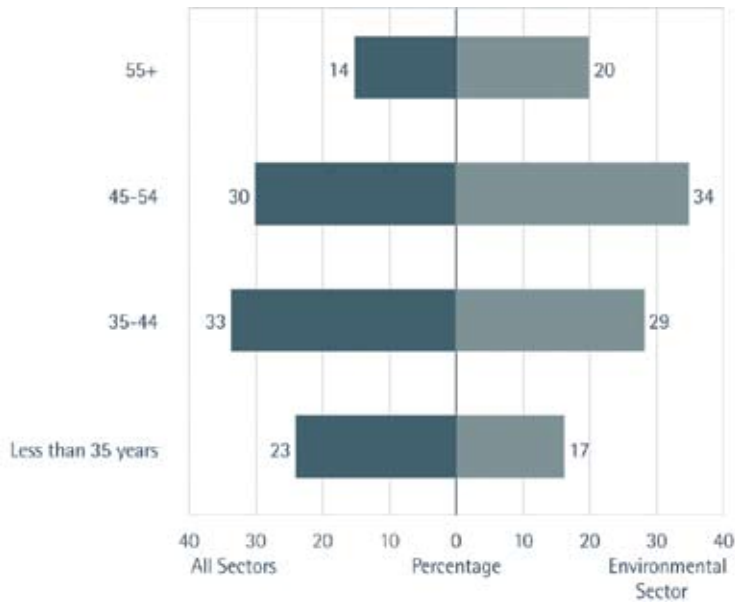
¹ Weighted on the basis of the number of full-time and part-time environmental employees in each major industry group.
Source: Survey of Environmental Employment in All Industries 2006, n=677

2.5 AGE PROFILE OF ENVIRONMENTAL EMPLOYEES

Approximately one-third (33 percent) of the workers in management occupations across all industries are 35 to 44 years of age, compared to 29 percent of environmental employees. Environmental employees in management positions are more likely to be 45 years of age or older (54 percent) as compared to the national average (44 percent).

FIGURE 2.3

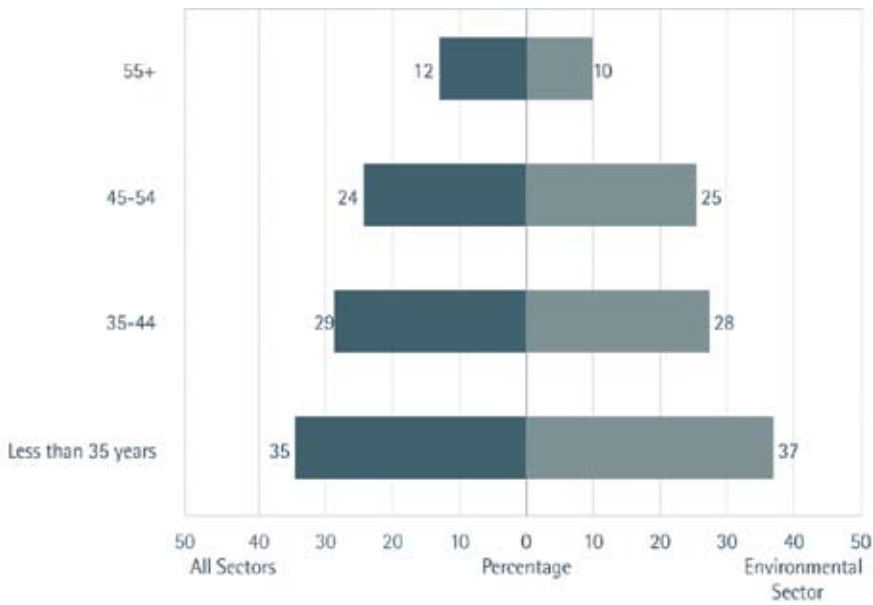
Composition of Management Occupations in All Sectors and the Environmental Sector



Source: Statistics Canada, 2001 Census and Survey of Environmental Employment in All Industries 2006

FIGURE 2.4

Age Composition of Trades and Technical Occupations in All Sectors and the Environmental Sector



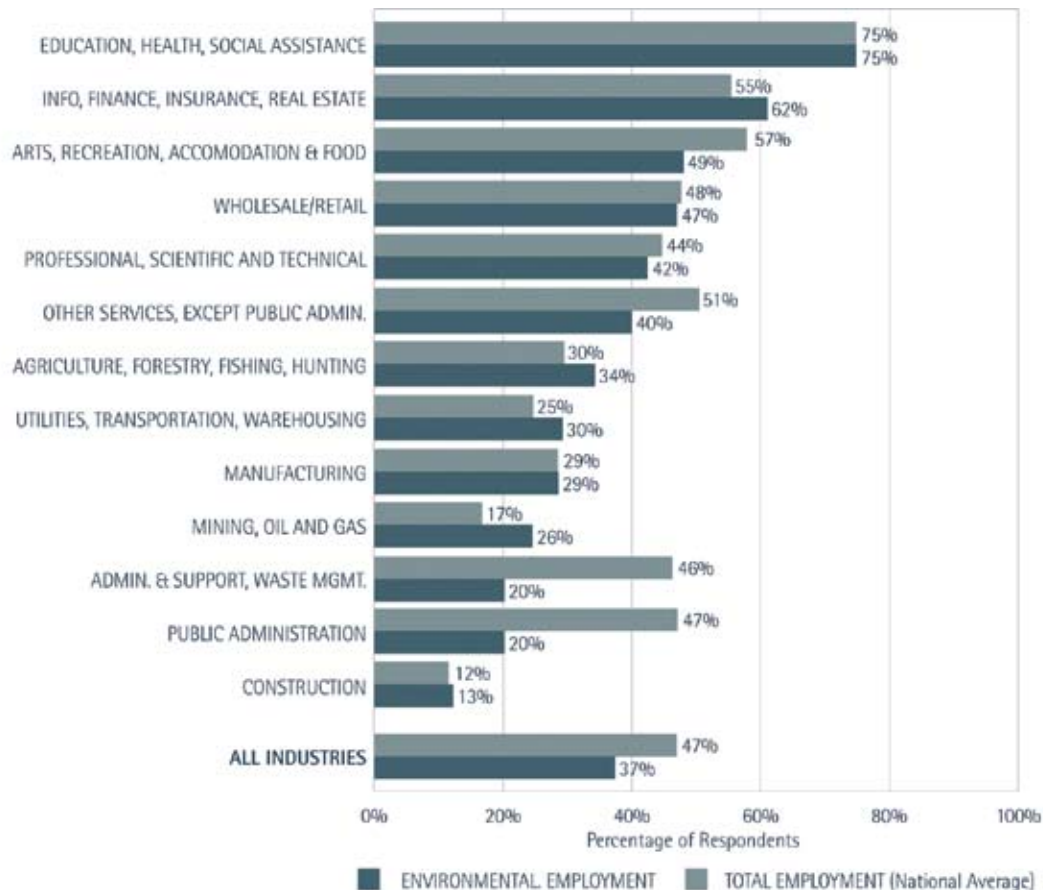
Source: Statistics Canada, 2001 Census and Survey of Environmental Employment in All Industries 2006

2.6 GENDER PROFILE OF ENVIRONMENTAL EMPLOYEES

Overall, organizations reported that female environmental employees comprised 37 percent of the environmental workforce. This varied by industry, with organizations in the Education, Health and Social Assistance (75 percent) as well as Information, Finance, Insurance, Real Estate and Management of Companies sectors (62 percent) employing a higher percentage of women. The percentage of women was lowest in Construction (13 percent).

A comparison of the survey results to census data indicates that the proportion of women in the environmental workforce (37 percent) was lower than the Canadian labour force (47 percent). The proportion of female environmental staff in the Administration and Support, Waste Management and Remediation sector (20 percent) is considerably lower than the national representation of women in the sector (46 percent). Similarly, the proportion of females employed in Public Administration across Canada is 47 percent, whereas the survey results indicate that one-fifth (20 percent) of environmental staff in this sector are women.

FIGURE 2.5
Percentage of Female Environmental Employees and Female Employees by Major Industry Group



Source: Statistics Canada, 2001 Census and Survey of Environmental Employment in All Industries 2006, n=747

SECTION 3.0: ENVIRONMENTAL EMPLOYMENT – REGIONAL ANALYSIS

This report also provides an accurate representation of the distribution of environmental employment across Canada's regions. Based on the large sample size ECO Canada is able to provide accurate employment estimates for the four largest provinces (Ontario, Quebec, British Columbia and Alberta) as well as two regions: Atlantic Canada (which includes Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick) and the region consisting of Manitoba and Saskatchewan.

This section portrays the distribution of environmental employment across regions in Canada.

3.1 Environmental Employment by Region

Environmental employment in Ontario accounts for the largest percentage of environmental employees, with 42.5 percent of environmental employees located in Ontario. Quebec accounts for 17.3 percent of environmental employees and British Columbia represents 17.6 percent of all environmental employees. In contrast, Atlantic Canada accounts for 6.1 percent of environmental employees.

TABLE 3.1
Estimated Distribution of Environmental Employment by Region

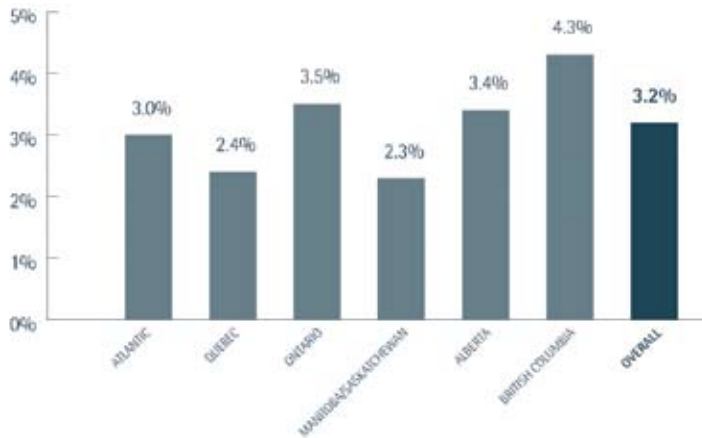
REGION	TOTAL EMPLOYMENT ¹	SHARE OF ENVIRONMENTAL EMPLOYMENT ²	ESTIMATED ENVIRONMENTAL EMPLOYMENT ³
Atlantic	1,081,933	6.1%	32,142
Quebec	3,760,711	17.3%	91,726
Ontario	6,482,767	42.5%	225,342
Manitoba / Saskatchewan	1,075,978	4.6%	24,464
Alberta	1,859,622	11.8%	62,461
British Columbia	2,187,622	17.6%	93,462
Territories	N/A	0.2%	817
Total	16,448,633	100.0%	530,414

¹ Source: Statistics Canada, Labour Force Survey (January to September 2006). Employment data for the territories is not available.

^{2,3} Source: Survey of Environmental Employment in All Industries 2006

Applying the data collected through the survey to the Labour Force Survey data, it is estimated that British Columbia has the highest concentration of environmental employees, with 4.3 percent of the workforce in this region comprised of environmental employees. The concentration of environmental employees was lowest in the Manitoba/Saskatchewan region, with 2.3 percentage of the workforce in this region made up of environmental employees. The percentage of the workforce in each region made up by environmental employees is illustrated in Figure 3.1.

FIGURE 3.1
Percentage of Workforce in Each Region Made up of Environmental Employees



Source: Survey of Environmental Employment in All Industries 2006, n=6,096

3.2 Atlantic Canada

Table 3.2 presents estimates of the number of establishments employing environmental employees and environmental employees for the three industries with the highest percentage of environmental employees in Atlantic Canada. It is estimated that there are 6,198 establishments in this region that employ environmental employees, with environmental employment estimated at 32,142.

TABLE 3.2
Estimated Number of Establishments Employing Environmental Employees
for Selected Industries in Atlantic Canada

INDUSTRY GROUP	NUMBER OF ESTABLISHMENTS WITH ENVIRONMENTAL EMPLOYEES ¹	NUMBER OF ENVIRONMENTAL EMPLOYEES
Administration and Support, Waste Management and Remediation	594	11,363
Utilities, Transportation and Warehousing	383	3,968
Wholesale/Retail Trade	1,182	6,970
Total – All Industries	6,198	32,142

¹ Estimated using the proportion of firms in each industry employing at least one environmental employee.
Source: Statistics Canada, Canadian Business Patterns, June 2004 and Survey of Environmental Employment in All Industries 2006

3.3 Quebec

Table 3.3 presents estimates of the number of establishments employing environmental employees and environmental employees for the three industries with the highest percentage of environmental employees in Quebec. It is estimated that there are 7,325 establishments in this region that employ environmental employees, with environmental employment estimated at 91,726.

TABLE 3.3

Estimated Number of Establishments Employing Environmental Employees for Selected Industries in Quebec

INDUSTRY GROUP	NUMBER OF ESTABLISHMENTS WITH ENVIRONMENTAL EMPLOYEES ¹	NUMBER OF ENVIRONMENTAL EMPLOYEES
Professional, Scientific and Technical Services	1,049	31,283
Agriculture, Forestry, Fishing and Hunting	1,525	8,059
Public Administration	198	19,262
Total – All Industries	7,325	91,726

¹ Estimated using the proportion of firms in each industry employing at least one environmental employee.
Source: Statistics Canada, Canadian Business Patterns, June 2004 and Survey of Environmental Employment in All Industries 2006

3.4 Ontario

Table 3.4 presents estimates of the number of establishments employing environmental employees and environmental employees for the three industries with the highest percentage of environmental employees in Ontario. It is estimated that there are 35,918 establishments in this region that employ environmental employees, with environmental employment estimated at 225,342.

TABLE 3.4

Estimated Number of Establishments Employing Environmental Employees for Selected Industries in Ontario

INDUSTRY GROUP	NUMBER OF ESTABLISHMENTS WITH ENVIRONMENTAL EMPLOYEES ¹	NUMBER OF ENVIRONMENTAL EMPLOYEES
Administration and Support, Waste Management and Remediation	4,903	42,208
Agriculture, Forestry, Fishing and Hunting	2,923	10,630
Public Administration	822	23,176
Total – All Industries	35,918	225,342

¹ Estimated using the proportion of firms in each industry employing at least one environmental employee.
Source: Statistics Canada, Canadian Business Patterns, June 2004 and Survey of Environmental Employment in All Industries 2006

3.5 Manitoba and Saskatchewan

Table 3.5 presents estimates of the number of establishments employing environmental employees and environmental employees for the three industries with the highest percentage of environmental employees in the region of Manitoba and Saskatchewan. It is estimated that there are 11,550 establishments in this region that employ environmental employees, with environmental employment estimated at 24,464.

TABLE 3.5

Estimated Number of Establishments Employing Environmental Employees for Selected Industries in Manitoba/Saskatchewan

INDUSTRY GROUP	NUMBER OF ESTABLISHMENTS WITH ENVIRONMENTAL EMPLOYEES ¹	NUMBER OF ENVIRONMENTAL EMPLOYEES
Construction	931	4,386
Administration and Support, Waste Management and Remediation	446	1,609
Other Services	1,242	2,275
Total – All Industries	11,550	24,464

¹ Estimated using the proportion of firms in each industry employing at least one environmental employee.

Source: Statistics Canada, Canadian Business Patterns, June 2004 and Survey of Environmental Employment in All Industries 2006

3.6 Alberta

Table 3.6 presents estimates of the number of establishments employing environmental employees and environmental employees for the three industries with the highest percentage of environmental employees in Alberta. It is estimated that there are 21,269 establishments in this region that employ environmental employees, with environmental employment estimated at 62,461.

TABLE 3.6

Estimated Number of Establishments Employing Environmental Employees for Selected Industries in Alberta

INDUSTRY GROUP	NUMBER OF ESTABLISHMENTS WITH ENVIRONMENTAL EMPLOYEES ¹	NUMBER OF ENVIRONMENTAL EMPLOYEES
Administration and Support, Waste Management and Remediation	1,634	5,775
Other Services	1,552	6,967
Mining and Oil and Gas Extraction	783	7,763
Total – All Industries	21,269	62,461

¹ Estimated using the proportion of firms in each industry employing at least one environmental employee.

Source: Statistics Canada, Canadian Business Patterns, June 2004 and Survey of Environmental Employment in All Industries 2006

3.7 British Columbia

Table 3.7 presents estimates of the number of establishments employing environmental employees and environmental employees for the three industries with the highest percentage of environmental employees in British Columbia. It is estimated that there are 22,537 establishments in this region that employ environmental employees, with environmental employment estimated at 93,462.

TABLE 3.7

Estimated Number of Establishments Employing Environmental Employees for Selected Industries in British Columbia

INDUSTRY GROUP	NUMBER OF ESTABLISHMENTS WITH ENVIRONMENTAL EMPLOYEES ¹	NUMBER OF ENVIRONMENTAL EMPLOYEES
Administration and Support, Waste Management and Remediation	2,972	18,869
Agriculture, Forestry, Fishing and Hunting	3,558	7,453
Construction	931	15,925
Total – All Industries	22,537	93,462

¹ Estimated using the proportion of firms in each industry employing at least one environmental employee.

Source: Statistics Canada, Canadian Business Patterns, June 2004 and Survey of Environmental Employment in All Industries 2006

SECTION 4.0: CONCLUSIONS

As this report demonstrates, environmental employment is a significant and growing component of the Canadian labour market. This report also underlines the importance of understanding the cross-sectoral nature of environmental employment for both environmental employees and employers.

Workers with environmental skill-sets have a broader range of career options and are increasingly in demand by sectors with growing environmental issues who have begun to address their need for environmental expertise. Similarly, traditional environmental employers have to compete with both existing industry rivals as well as other industry sectors for the pool of skilled environmental workers and are looking for alternative sources of labour via immigrants and underutilized segments of the Canadian population.

This report sets the stage for future labour market analysis by ECO Canada that will allow for an even greater level of precision in forecasting as specific drivers of growth in key sectors are analyzed and emerging occupational areas are identified. The regional analysis in this report also represents the first definitive estimate of environmental employment at the provincial and regional level and serves as a benchmark to track environmental labour force trends.

APPENDIX A: METHODOLOGY

GUIDELINES FOR INTERPRETING SURVEY RESULTS

Consistent with the 2004 ELM Report, environmental employment is defined as including environmental employees who work across all industries of the economy. For the purposes of the current study, environmental employees are defined as individuals whose work consists of environmentally related business activities and functional areas of employment (in whole or in part). Any individual whose tasks are associated with the business activities identified in the definition is considered to be an environmental employee, regardless of where he or she works and independent of whether these tasks are primary work functions. These activities may be categorized into one of the three sectors defined through ECO Canada's National Occupational Standards (NOS):

- Environmental protection;
- Conservation and preservation of natural resources; and
- Environmental sustainability.

The definition of environmental employees excludes external contractors and consultants. On the basis of this definition, organizations were asked to complete the entire survey if they were: An organization employing full- or part-time employees whose work is related to the environment, whether or not the organization employing this individual produces environmental goods or services; and organizations employing individuals where only part of their work is related to the environment.

Other organizations not employing environmental employees were asked to complete a brief section of the survey regarding the characteristics of their organization. The survey instrument is reproduced in Appendix D.

SAMPLE DEVELOPMENT

The survey sample frame was constructed using estimates of the total number of employers by two-digit NAICS code (data available from Statistics Canada). Assuming a response rate of approximately 45 percent, in order to ensure statistical reliability of the information, it was estimated that the minimum sample size required was 12,500 employers. Once the sample frame was established, a random sample of employers by major industry was selected from the InfoCanada database. In total, 14,575 employers were included in the sample.

As shown in Table A.1, 12.3 percent of the 6,096 establishments included in the sample indicated that they employed one or more environmental worker(s). However, weighting the results based on the number of establishments in each industry reduces this proportion to 10.1 percent. Overall, sectors that were most likely to report employing an environmental employee include Public Administration, Mining and Oil and Gas Extraction, and Administration and Support, Waste Management and Remediation.

TABLE A.1

Proportion of Establishments that Employ an Environmental Worker by Major Industry Group

INDUSTRY GROUP	TOTAL NUMBER OF ESTABLISHMENTS	NUMBER OF ESTABLISHMENTS WITH ONE OR MORE ENVIRONMENTAL WORKER(S)	PROPORTION OF ESTABLISHMENTS WITH ONE OR MORE ENVIRONMENTAL WORKER(S)
Public Administration	286	89	31.1%
Mining and Oil and Gas Extraction	360	83	23.1%
Administration and Support, Waste Management and Remediation	323	72	22.3%
Agriculture, Forestry, Fishing and Hunting	464	93	20.0%
Manufacturing	457	59	12.9%
Arts, Recreation, Accommodation and Food Services	607	59	9.7%
Education, Health and Social Assistance	568	55	9.7%
Construction	478	45	9.4%
Professional, Scientific and Technical Services	550	50	9.1%
Utilities, Transportation and Warehousing	493	44	8.9%
Wholesale/Retail Trade	667	52	7.8%
Other Services (except Public Administration)	311	21	6.8%
Information, Finance, Insurance, Real Estate and Management of Companies	532	25	4.7%
TOTAL – UNWEIGHTED DATA	6,096	747	12.3%
TOTAL – WEIGHTED DATA¹	N/A	N/A	10.1%

¹ Weighted on the basis of the number of establishments in each major industry group.
Source: Survey of Environmental Employment in All Industries 2006

The sampling method resulted in margins of error of a maximum of ± 6.0 percent at a 95 percent confidence level for each industry grouping³, with the majority of the industries included in Table A.2 below having a maximum sample error of ± 5.0 percent at a 95 percent confidence level. The margin of error for all establishments is ± 1.3 percent at a 95 percent confidence interval.

3 Industry is based on respondent self-classification during the survey.

TABLE A.2

Sample Frame Margin of Error by Major Industry Group – All Establishments

INDUSTRY GROUP	NUMBER OF ESTABLISHMENTS IN CANADA	NUMBER OF SURVEY COMPLETIONS	MARGIN OF ERROR
11 – Agriculture, Forestry, Fishing and Hunting	58,969	464	±4.5%
21 – Mining and Oil and Gas Extraction	8,289	360	±5.1%
23 – Construction	111,240	478	±4.5%
31-33 – Manufacturing	62,227	457	±4.6%
41, 44-45 – Wholesale/Retail Trade	197,099	667	±3.8%
22, 48-49 – Utilities, Transportation and Warehousing	47,182	493	±4.4%
51, 52, 53, 55 – Information, Finance, Insurance, Real Estate and Management of Companies	105,495	532	±4.2%
54 – Professional, Scientific and Technical Services	115,369	550	±4.2%
56 – Administration and Support, Waste Management and Remediation	47,994	323	±5.4%
61, 62 – Education, Health and Social Assistance	95,029	568	±4.1%
71, 72 – Arts, Recreation, Accommodation and Food Services	92,791	607	±4.0%
81 – Other Services (except Public Administration)	96,554	311	±5.5%
91 – Public Administration	8,107	286	±5.7%
TOTAL	1,046,345	6,096	±1.3%

Source: Statistics Canada, Canadian Business Patterns, June 2004 and Survey of Environmental Employment in All Industries 2006

The margin of error by industry for those establishments that employ at least one environmental employee is presented in Table A.3. The margin of error ranges from ±10.1 percent for Agriculture, Forestry, Fishing and Hunting to ±21.4 percent for Other Services. However, the margin of error for all establishments employing environmental employees is ±3.6 percent at a 95 percent confidence interval.

TABLE A.3

Sample Frame Margin of Error by Major Industry Group –Establishments¹
with Environmental Employees

INDUSTRY GROUP	NUMBER OF ESTABLISHMENTS IN CANADA ²	NUMBER OF SURVEY COMPLETIONS	MARGIN OF ERROR
11 – Agriculture, Forestry, Fishing and Hunting	11,819	93	±10.1%
21 – Mining and Oil and Gas Extraction	1,911	83	±10.5%
23 – Construction	10,472	45	±14.6%
31-33 – Manufacturing	8,034	59	±12.7%
41, 44-45 – Wholesale/Retail Trade	15,366	52	±13.6%
22, 48-49 – Utilities, Transportation and Warehousing	4,211	44	±14.7%
51, 52, 53, 55 – Information, Finance, Insurance, Real Estate and Management of Companies	4,957	25	±19.6%
54 – Professional, Scientific and Technical Services	10,488	50	±13.8%
56 – Administration and Support, Waste Management and Remediation	10,698	72	±11.5%
61, 62 – Education, Health and Social Assistance	9,202	55	±13.2%
71, 72 – Arts, Recreation, Accommodation and Food Services	9,019	59	±12.7%
81 – Other Services (except Public Administration)	6,520	21	±21.4%
91 – Public Administration	2,523	89	±10.2%
TOTAL	105,220	747	±3.6%

¹ Those that indicated employing at least one environmental employee.

² Estimated using the proportion of firms in each industry employing an environmental employee.

Source: Statistics Canada, *Canadian Business Patterns, June 2004 and Survey of Environmental Employment in All Industries 2006*

As shown in Table A.4, the margin of error associated with the sample data on a regional basis ranges from ±6.1 percent for Ontario to ±14.7 percent for Atlantic Canada.

TABLE A.4

Sample Frame Margin of Error by Region – Establishments with Environmental Employees

REGION	NUMBER OF ESTABLISHMENTS IN CANADA ¹	NUMBER OF SURVEY COMPLETIONS	MARGIN OF ERROR
Atlantic	6,198	44	±14.7%
Quebec	7,325	52	±13.5%
Ontario	35,918	255	±6.1%
Manitoba / Saskatchewan	11,550	82	±10.8%
Alberta	21,269	151	±7.9%
British Columbia	22,537	160	±7.7%
TOTAL	105,220	747	±3.6%

¹ Estimated using the proportion of firms in each province employing at least one environmental employee.

SURVEY DEVELOPMENT

The task of developing the survey instrument for the Profile of Canadian Environmental Employment 2007 began with a review of the survey used in the 2000 and 2004 Environmental Labour Market Surveys completed by ECO Canada. Since the Survey of Environmental Employment in All Industries 2006 required a high response rate across all industries, including organizations that employed environmental employees as well as those that did not, the survey was designed to be as succinct as possible.

The survey was pre-tested in June 2006. Pre-test activities included:

- Review and finalization of two versions of the survey instrument, frequently asked questions (FAQ) and cover letter;
- Preparation of a field test sample of 500 employers in British Columbia and Alberta; and
- Pre-testing of the survey instrument.
- On the basis of the pre-test, a number of changes were made to the survey.

SURVEY ADMINISTRATION

In total, the survey was distributed by mail to 14,575 employers. Of this number, 2,162 represented defunct businesses or organizations with telephone numbers that were not in service. The survey was administered between June 14, 2006 and October 5, 2006. Telephone follow-up with employers was conducted beginning on July 24, 2006. During survey administration, telephone follow-up activities were completed with 12,413 employers.

As shown in Table A.5, a total of 6,096 completed surveys were returned, representing an overall response rate of 49 percent. Of these completions, 649 were completed by mail (10.6 percent), 118 online (1.9 percent), 14 by fax (0.2 percent), and the remainder by telephone (87.3 percent). Of note is the relatively uniform response rate across all industries. For example, the response rates for sectors that were characterized by having relatively high proportions of environmental workers (i.e., Administration and Support, Waste Management and Remediation sector had 12.2 percent of its workforce as environmental employees, yet the valid response rate for this sector (47 percent) was the same as the Information, Finance, Insurance, Real Estate and Management of Companies sector – which had only 0.9 percent of its workforce as environmental employees). Equivalent response rates suggest that there was no systematic non-response bias at the industry level.

TABLE A.5
Sample Distribution and Response Rates by Major Industry Group¹

INDUSTRY GROUP	TOTAL ESTABLISHMENTS	VALID SAMPLE	COMPLETIONS	RESPONSE RATE
11 – Agriculture, Forestry, Fishing and Hunting	58,969	793	424	53%
21 – Mining and Oil and Gas Extraction	8,289	672	343	51%
23 – Construction	111,240	835	411	49%
31-33 – Manufacturing	62,227	1,117	562	50%
41, 44-45 – Wholesale/Retail Trade	197,099	979	504	51%
22, 48-49 – Utilities, Transportation and Warehousing	47,182	791	404	51%
51, 52, 53, 55 – Information, Finance, Insurance, Real Estate and Management of Companies	105,495	1,202	562	47%
54 – Professional, Scientific and Technical Services	115,369	852	438	51%
56 – Administration and Support, Waste Management and Remediation	47,994	1,143	536	47%
61, 62 – Education, Health and Social Assistance	95,029	884	442	50%
71, 72 – Arts, Recreation, Accommodation and Food Services	92,791	818	417	51%
81 – Other Services (except Public Administration)	96,554	834	446	53%
91 – Public Administration	8,107	1,157	443	38%
Nonclassified Establishments	-	336	164	49%
TOTAL	1,046,345	12,413	6,096	49%

¹ Industry classification based on InfoCanada data.

Of the 6,096 organizations that completed the survey, 747 (12.3 percent) reported employing one or more environmental employees. The majority of organizations (87.7 percent) indicated that they do not employ environmental staff.

APPENDIX B: COMPARISON OF EMPLOYMENT ESTIMATES TO PREVIOUS RESEARCH

As detailed in Table B.1, there are considerable differences in the methodology, sample frame and findings of the current study with those associated with the *2004 ELM Report* and the Environment Industry survey – Business Sector (2002), Statistics Canada.

TABLE B.1
Comparison of Methodology & Findings – Selected Environmental Surveys

AREA	2006 NATIONAL SURVEY	2004 ELM STUDY	2002 STATISTICS CANADA SURVEY
Who was included in the study?	Random representative sample of all establishments irrespective of likelihood of employing an environmental worker	Random sample of firms listed in environmental directories – approximately 56% employed an environmental worker	Business establishments that had revenues associated with provision of environmental goods & services
Who was "excluded"?	No exclusions	No defined exclusions, although the sample favoured organizations likely to employ environmental practitioners	Excluded public administration/ non-profit organizations – Not all industry sectors were represented
Sample size (completions) & response rate	6,096 (49%)	1,269 (53%)	1,732 (75%)
Was the definition of environmental employee similar? (F/T or P/T; some or all of their work)	Yes	Yes	Yes
Proportion of firms that were found to employ one or more environmental worker(s)	9.8%	56%	N/A
% of workforce engaged in environmental activities	3.2% of total Canadian workforce	N/A	64% of firms with significant environmentally -related incomes
Estimated environmental workforce	530,414 (2006) (All industries)	251,000 (2004) (All industries)	102,200 (2002) (Firms with a high proportion of environmental revenues)
Estimation Methodology	Based on the proportion of environmental employees/ total employees by industry applied to total national employment in the industry	2004 employment was estimated based on growth rates between 1999 & 2004. The 1999 employment estimate was the base figure used (developed by a previous consultant)	Data was extrapolated to include all private sector (business establishments) that had revenues associated with environmental activities based on Statistics Canada Tax/ Business register information
Limitations with respect to use as an estimate of environmental employment	No major limitations	Sample includes disproportionate number of "environmental firms" – not truly representative of all industries. The 1999 employment base estimate was not clearly defined	Only useful in terms of defining employment in business sector among firms with revenues associated with environmental activities

APPENDIX C: EMPLOYMENT TRENDS AND FORECAST ANALYSIS

As the first of its kind, this report constitutes the “first point on the graph” of total environmental employment estimates. Despite the limitations this places on comparative analysis, ECO Canada has endeavoured to apply the ratios of environmental employment across major industry groups to past data and estimated forecasts to provide a rudimentary trend analysis. Future iterations of this survey will include methods to identify the specific environmental employment growth estimates to further increase the precision of the forecasts and better understand the drivers of change.

Presented in Table C.1 is the estimated and projected environmental employment by major industry group. Overall, it is expected that the environmental workforce, estimated at 3.2 percent of the total Canadian workforce, will continue to increase from 2001 levels and reach approximately 554,900 by 2010⁴. Sectors that are predicted to experience the highest average annual growth in environmental employment during the 2006 to 2010 period include Mining and Oil and Gas Extraction (2.6 percent), Professional, Scientific and Technical Services (2.3 percent) and Construction (1.6 percent). In contrast, it is anticipated that the number of environmental employees in the Agriculture, Forestry, Fishing and Hunting sector will decline as a result of reduced demand for resource-based products and an increase in productivity among workers in this sector. In addition, employment growth in the majority of industries during the 2006 to 2010 period is expected to be below that of the previous five-year period as a result of declining population growth and labour force participation rates.⁵

4 The environmental employment estimates were calculated using the estimated proportion of total employment comprised of environmental employees for each industry (see Table 2.2). These proportions were applied to the total employment estimates and forecasts provided by Informetrica and adjusted to maintain consistency with the survey estimates. Therefore, the annual growth rates in environmental employment reflect the national industry employment trends.

5 Source: Informetrica, *National Macroeconomic Outlook*, June 2006

TABLE C.1

Estimated and Projected Environmental Employment
by Major Industry Group (000s): 2001 to 2010

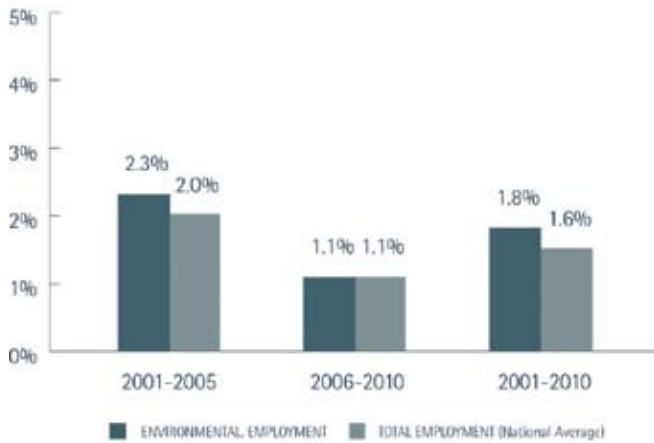
INDUSTRY GROUP	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Agriculture, Forestry, Fishing and Hunting	32.5	32.7	33.5	32.7	33.8	34.4	34.2	34.2	34.1	33.9
Mining and Oil and Gas Extraction	7.4	7.0	7.4	7.8	8.7	9.6	10.0	10.3	10.5	10.7
Construction	31.3	32.8	34.4	36.1	38.7	41.3	42.1	42.9	43.6	44.0
Manufacturing	44.9	46.1	45.9	46.2	44.5	42.8	42.8	43.8	44.7	45.3
Wholesale/Retail Trade	41.2	42.0	43.0	43.7	44.9	46.1	46.1	46.2	46.3	46.3
Utilities, Transportation and Warehousing	22.1	22.0	22.7	22.9	22.6	23.2	23.6	23.8	24.0	24.3
Information, Finance, Insurance, Real Estate and Management of Companies	12.4	12.3	12.4	12.9	13.3	13.5	13.7	13.8	13.9	14.0
Professional, Scientific and Technical Services	63.1	63.1	64.1	65.0	67.1	69.8	71.4	73.1	74.9	76.4
Administration and Support, Waste Management and Remediation	65.6	70.9	74.4	77.0	79.9	80.3	80.7	81.9	83.1	83.8
Education, Health and Social Assistance	47.6	49.5	51.1	52.3	53.6	55.8	56.6	56.7	57.5	58.2
Arts, Recreation, Accommodation and Food Services	34.0	36.0	36.7	37.4	36.8	36.7	37.4	37.9	38.5	39.0
Other Services (except Public Administration)	23.1	23.8	24.7	24.2	24.0	24.4	24.7	24.9	25.2	25.5
Public Administration	49.1	49.4	51.2	51.7	52.1	52.4	52.6	52.8	53.1	53.3
TOTAL	474.1	487.3	501.3	509.7	520.0	530.4	536.0	542.6	549.5	554.9

Consistent with the national trend, environmental employment in the Administration and Support, Waste Management and Remediation and Professional, Scientific and Technical Services sectors is expected to increase between 2006 and 2010.

Overall, it is anticipated that growth in environmental employment in Canada will be slightly above the projected increase in total employment. As shown in Figure 3.1, it is estimated that environmental employment increased by 2.3 percent every year between 2001 and 2005, above the Canadian employment average of 2.0 percent. The projected growth rate in environmental employment from 2006 to 2010 will be the same as the average for total employment, increasing at an average annual rate of 1.1 percent. During the 2001 to 2010 period, the average annual rate of growth in environmental employment is expected to be 12.5 percent higher relative to total Canadian employment across all industries.

FIGURE C.1

Average Annual Percentage Change in Environmental Employment and Total Employment: 2001 to 2010



Source: Informetrica and R.A. Malatest & Associates Ltd.

FORECAST METHODOLOGY

To provide an estimate of likely future environmental employment in Canada, employment forecasts developed by Informetrica was utilized. Essentially, the environmental employment forecast incorporates the current (2006) environmental employment share by major industry group. Based on changes in total employment in each industry group, and assuming no change in the environmental employment "share" for each industry (i.e., the weighted number of environmental employees from the survey data as a proportion of the total employment estimates from the Labour Force Survey), it is possible to estimate environmental employment in Canada by major industry group. It should be emphasized that the environmental employment projections are based on fixed or static environmental employment coefficients. Changes in the ratio of environmental employment to total employment by major industry group would result in changes in the environmental employment forecasts identified in this report.

FORECAST ASSUMPTIONS

Detailed below are the key assumptions that are associated with the Informetrica forecast.

Labour Force and Overall Employment Growth

The forecast incorporates Canada's long-term demographic trend – namely, an aging population and reduced labour force participation rates. For example, whereas Canada's total population grew by 1.0 percent during the 2001 to 2005 period, growth over the next five years (i.e., 2006 to 2010) is projected at 0.8 percent. Slower population growth will have an adverse effect on total Canadian employment growth, which is expected to decline from 2.0 percent average annual growth during the 2001 to 2005 period to 1.1 percent during the next five years. The combination of lower population and employment growth points to a very "tight" labour market, as Canada's unemployment rate is expected to decline from an average of 7.3 percent during the 2001 to 2005 period to 6.4 percent over the next five years.

Overall Economic Growth – Gross Domestic Product (GDP)

Informetrica forecasts assume that Canada will experience moderate economic growth over the next five years. GDP is expected to grow at less than three percent per year in real terms, partly the result of a slowing US economy and the lack of a major economic stimulus such as NAFTA and/or considerably higher oil and resource commodity prices.

INDUSTRY OUTLOOK

The description of the forecast scenario by major industry group is based on Informetrica's Sector & Provincial Outlook publication dated June 2006. It should be noted that while a number of major industry sectors are covered by Informetrica's analysis, detailed information was not available for each of the 13 major industry sectors covered in the survey. Therefore, the synopsis for each industry is based on observations of key macroeconomic trends that are expected to impact employment growth in each industry.

Agriculture, Forestry, Fishing and Hunting

Total employment in this sector is projected to decline by 0.4 percent per year during the 2006 to 2010 period, the only sector expected to witness negative employment growth. This can be attributed to restricted access to US markets for softwood lumber and an overall decrease in demand for resource-based products.

Mining and Oil and Gas Extraction

Total employment in the Mining and Oil and Gas Extraction sector is expected to grow at more than double that of the national average. In comparison to the national average of 1.1 percent per year, total employment in this sector is projected to grow at approximately 2.6 percent per year over the forecast period (i.e., 2006 to 2010). Much of this expansion can be attributed to the significant improvement in the oil and gas sector as well as strong markets for coal and metallic and non-metallic minerals.

Construction

Employment growth in the Canadian construction sector is forecast at 1.6 percent per year over the next five years, which is markedly higher than the all-industry growth rate of 1.1 percent per year. Although construction-related employment in the residential sector will decline due to a reduction in new home construction, a high level of non-residential and public sector infrastructure investment will support relatively high employment growth in this sector.

Manufacturing

Employment prospects in Canada's manufacturing sector are projected to improve over the forecast period. Employment growth in this sector is expected to outpace that of the all-industry average, projected at 1.4 percent per year over the next five years. Manufacturing employment will be affected by the relatively high value of the Canadian dollar, which will limit overall employment growth in this sector.

Wholesale/Retail Trade

Overall employment growth in this sector is essentially flat throughout the forecast period, which is forecast to grow by 0.1 percent per year. Employment gains are limited by competitive pressures in the sector, which will result in increased worker productivity (and fewer total employees) as "big box" retail stores account for an increasing share of total sales in the sector.

Utilities, Transportation and Warehousing

During the next five years, employment growth in the Utilities, Transportation and Warehousing sector is expected to match that of the national average (1.1 percent per year). Employment growth is projected to be relatively constant in both the utilities and transportation/warehousing sectors, with both sectors experiencing average employment growth of approximately one percent per year.

Information, Finance, Insurance, Real Estate and Management of Companies

Annual employment growth in this service sector is estimated to average 0.8 percent during the forecast period, which is below the national average of 1.1 percent for the corresponding period. A slowing real estate market, aging population and further consolidation in financial services will contribute to the below-average employment growth in this sector.

Professional, Scientific and Technical Services

Total employment related to professional, scientific and technical services is expected to grow at 2.3 percent per year during the 2006 to 2010 period, more than double that of the national average (1.1 percent). The majority of employment in this sector is related to computer systems and design activities, and continued expansion of the IT sector is expected to contribute to above-average employment growth throughout the forecast period.

Administration and Support, Waste Management and Remediation

This sector is expected to experience employment growth consistent with the national average at 1.1 percent per year during the forecast period. Employment growth is expected to be driven mainly from administration and support activities, including office administrative services and business support services.

Education, Health and Social Assistance

Total employment in this sector is expected to grow at the national average (1.1 percent) during the 2006 to 2010 period. Growth in the education sector is expected to slow as a result of changing demographics; specifically, declining population growth of school-aged cohorts throughout the forecast period. The Health and Social Assistance sector is expected to drive employment growth, as an aging population will contribute to increased demand for these services.

Arts, Recreation, Accommodation and Food Services

Employment growth in this sector is expected to average 1.6 percent per year during the forecast period, above the national average of 1.1 percent. Growth in this sector is expected to be slower than the previous five-year period (2001 to 2005) as a result of the continued appreciation of the Canadian dollar, which will reduce tourism to Canada and therefore negatively impact the Accommodation and Food Services sector.

Other Services

Total employment in the Other Services sector, which includes repair and personal care services, is expected to grow at the national average (1.1 percent) during the forecast period.

Public Administration

Overall, total employment growth in public administration activities is projected to be below the national average during the forecast period, averaging 0.4 percent per year. The public sector workforce is expected to witness high retirement rates during the forecast period; consequently, the source of employment opportunities will be retirements as opposed to new positions. While turnover will be high (with the result that the sector will actually witness a significant number of new hires), there will be a negligible net increase in overall employment in the sector.

APPENDIX D: SURVEY OF ENVIRONMENTAL EMPLOYMENT IN ALL INDUSTRIES 2006

ABOUT THIS SURVEY

This survey is being carried out by ECO Canada (Environmental Careers Organization) with the aim to study the impact of environmental employment on Canadian industries.

The survey is designed to take 5 to 10 minutes to complete. To complete the survey on-line, go to http://survey.malatest.com/eco_study/. To complete the survey by phone call: 1-877-688-5051. Fax your completed survey to: 1-866-288-1278 (toll-free) or mail it to R.A. Malatest & Associates Ltd. using the enclosed postage-paid envelope. You may contact us by e-mail at n.dobinson@malatest.com

Pour recevoir une copie en français, appelez: 1-877-688-5051.

PART A: ABOUT YOUR ORGANIZATION/COMPANY

- A1.** APPROXIMATELY HOW MANY EMPLOYEES DOES YOUR ORGANIZATION EMPLOY IN EACH PROVINCE/TERRITORY (including both full-time and part-time employees)?

PROVINCE/TERRITORY	# OF EMPLOYEES
Newfoundland	
Prince Edward Island	
Nova Scotia	
New Brunswick	
Quebec	
Ontario	
Manitoba	
Saskatchewan	
Alberta	
British Columbia	
Yukon	
Northwest Territories	
Nunavut	

Please note: Any person listed on your payroll (i.e. receiving T4 form), including permanent, seasonal, temporary, or casual employees should be included. Independent contractors should not be included.

- A2.** IN THE ESTABLISHMENT WHERE YOU WORK (I.E., THE LOCATION THAT THIS SURVEY WAS SENT TO), HOW MANY EMPLOYEES WORK AT THIS SITE?

_____ number of employees

A3. WHAT INDUSTRY GROUP DOES YOUR ORGANIZATION BELONG TO?

(Please check only one option)

<input type="radio"/> Agriculture, Forestry, Fishing and Hunting	<input type="radio"/> Real Estate and Rental and Leasing
<input type="radio"/> Mining and Oil and Gas Extraction	<input type="radio"/> Professional, Scientific and Technical Services
<input type="radio"/> Utilities	<input type="radio"/> Environmental Consulting Services
<input type="radio"/> Construction	<input type="radio"/> Management of Companies and Enterprises
<input type="radio"/> Manufacturing	<input type="radio"/> Finance and Insurance
<input type="radio"/> Wholesale Trade	<input type="radio"/> Educational Services
<input type="radio"/> Retail Trade	<input type="radio"/> Health Care and Social Assistance
<input type="radio"/> Transportation and Warehousing	<input type="radio"/> Arts, Entertainment and Recreation
<input type="radio"/> Information and Cultural Industries	<input type="radio"/> Accommodation and Food Services
<input type="radio"/> Administrative and Support	<input type="radio"/> Public Administration
<input type="radio"/> Waste Management and Remediation Services	<input type="radio"/> Other (please specify): _____

A4. DOES YOUR ORGANIZATION EMPLOY ENVIRONMENTAL STAFF?

(E.G. HEALTH & SAFETY OFFICER, ENVIRONMENTAL ENGINEER, ETC.)

- Environmental protection (air, water, land quality, health and safety)
 - Natural resources (energy, mining, agriculture, fisheries and wildlife)
 - Environmental sustainability (education, research, policy, sustainable development)
- Yes
 - No (Please go to Part C of the survey)
 - Unsure

Please note: Definitions of environment-related employment and other terms used in the survey are provided on the last page of the survey.

PART B: ENVIRONMENTAL EMPLOYMENT

B1. WHAT PERCENTAGE OF YOUR ENVIRONMENTAL EMPLOYEES FALL INTO THE FOLLOWING AGE CATEGORIES? (Please exclude those who provide clerical and administrative services.)

ENVIRONMENTAL EMPLOYEES	LESS THAN 35 YEARS OLD	35 TO 44 YEARS OF AGE	45 TO 54 YEARS OF AGE	55 YEARS OR MORE	TOTAL
Management	%	%	%	%	100%
Trades and Technical	%	%	%	%	100%

Please note: Definitions of employee levels are provided on the last page of the survey.

B2. HOW MANY ENVIRONMENTAL EMPLOYEES WITHIN YOUR ORGANIZATION ARE FEMALE?

_____ number of employees

B3. HOW MANY FULL-TIME AND PART-TIME ENVIRONMENTAL EMPLOYEES DOES YOUR ORGANIZATION EMPLOY? Please exclude external contractors and consultants and employees outside of Canada.

ENVIRONMENTAL EMPLOYEES	COUNT
Full-time	
Part-time	

B4. HOW MANY OF YOUR ENVIRONMENTAL EMPLOYEES FALL WITHIN THE FOLLOWING CATEGORIES? Please exclude external contractors and consultants and employees outside of Canada.

Please indicate "0" if you have no employees in each category.

LEVEL	NUMBER OF ENVIRONMENTAL STAFF	# OF STAFF WHERE MORE THAN 50% OF THEIR EMPLOYMENT IS RELATED TO THE ENVIRONMENT	# OF STAFF WHERE LESS THAN 50% OF THEIR EMPLOYMENT IS RELATED TO THE ENVIRONMENT
Management			
Trades and Technical			
Sales and Service			
Administrative			

B5. IF YOUR ENVIRONMENTAL EMPLOYEES ARE LOCATED IN MORE THAN ONE PROVINCE/ TERRITORY, PLEASE INDICATE HOW MANY OF THEM (FULL OR PART-TIME) ARE LOCATED IN EACH OF THE FOLLOWING REGIONS. Please include Canadian employment only.

PROVINCE/ TERRITORY	# OF EMPLOYEES	PROVINCE/ TERRITORY	# OF EMPLOYEES
Newfoundland		Saskatchewan	
Prince Edward Island		Alberta	
Nova Scotia		British Columbia	
New Brunswick		Yukon	
Quebec		Northwest Territories	
Ontario		Nunavut	
Manitoba			

B6. INDICATE THE TOTAL NUMBER OF EMPLOYEES IN EACH OF THE OCCUPATIONS AND THE NUMBER OF EMPLOYEES WHO WORK PRIMARILY IN AN ENVIRONMENTAL POSITION
(include full time and part time employees).

OCCUPATION	TOTAL # OF EMPLOYEES	# OF EMPLOYEES IN AN ENVIRONMENTAL POSITION
Natural and Applied Science Policy Researchers, Consultants and Program Officers		
Biologists and related Scientists		
Civil Engineers		
Civil Engineering Technologists and Technicians		
Inspectors in Public and Environmental Health and Occupational Health and Safety		
Architecture and Science Managers		
Biological Technologists and Technicians		
Geologists, Geochemists and Geophysicists		
Urban and Land Use Planners		
Chemists		
Other (please describe)		

PART C: CONCLUSION

ECO CANADA, FROM TIME TO TIME, PROVIDES INFORMATION FOR ORGANIZATIONS THAT EMPLOY ENVIRONMENTAL PRACTITIONERS. ARE YOU INTERESTED IN RECEIVING SUCH INFORMATION, OR BEING CONTACTED AS PART OF OTHER RESEARCH PROJECTS?

- Yes (Please provide contact information below)
- No (Please go to Part D of the survey)

PLEASE PROVIDE YOUR CONTACT INFORMATION TO BE ELIGIBLE TO WIN ONE OF THREE CASH PRIZES OF \$500 EACH. (NOTE: This information will be kept strictly confidential and will only be used to authenticate your participation in the survey)

<input type="radio"/> Mr. <input type="radio"/> Mrs. <input type="radio"/> Ms. <input type="radio"/> Dr.			
FIRST NAME:			
LAST NAME:			
CITY:		PROVINCE:	
POSTAL CODE:		PHONE:	
COMPANY:		EMAIL:	

**THANK YOU FOR COMPLETING THIS IMPORTANT SURVEY.
YOUR PARTICIPATION IS VERY MUCH APPRECIATED!**

PART D: GLOSSARY OF TERMS

A4: ENVIRONMENTAL EMPLOYMENT INCLUDES INDIVIDUALS WHO WORK IN AT LEAST ONE OF THE SECTORS OF THE ECONOMY RELATED TO:

- Environmental Protection (i.e., air quality, water quality, land quality, waste management, restoration and reclamation, human and environmental health and safety, environmental protection management);
- Conservation and Preservation of Natural Resources (i.e., fisheries and wildlife, forestry, agriculture, mining, energy, parks and natural reserves, natural resources management);
- Environmental Sustainability (i.e., education, research and development, policy and legislation, communications and policy awareness, management for sustainable development).

B3: FULL-TIME WORK IS DEFINED AS 30 HOURS OR MORE PER WEEK.

Employee Level is defined as follows:

- Management: management occupations
- Trades and Technical: trades, transport and equipment operators and related occupations; occupations unique to primary industry; occupations unique to processing, manufacturing and utilities; natural and applied sciences and related occupations; health occupations; occupations in social science, education, government service and religion; occupations in art, culture, recreation and sport
- Sales and Service: sales and service occupations
- Administrative: business, finance and administrative occupations

B4: PROVINCE WHERE EMPLOYEES ARE LOCATED IS DEFINED AS THE PROVINCE IN WHICH THE EMPLOYEE PAYS INCOME TAX.





ECO CANADA

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Your feedback is critical to expand the scope of our research. Fill out and fax in this evaluation form and your contribution will be acknowledged on our website. ECO Canada will contact those who wish to provide further comments through one-on-one interviews. Interview participants and their organizations will be profiled by ECO Canada in order to demonstrate how our labour market information is being used.

FROM

Name: _____

Position: _____

Organization: _____

Phone: _____

Email: _____

1. WOULD YOU LIKE TO BE INTERVIEWED TO PROVIDE MORE IN-DEPTH FEEDBACK ABOUT YOUR USE OF LABOUR MARKET INFORMATION?

- Yes No

2. HOW WILL YOU USE THE INFORMATION FROM THIS REPORT?

- | | |
|---|---|
| <input type="radio"/> Support human resource planning | <input type="radio"/> Learn more about the environmental labour market (personal use) |
| <input type="radio"/> Support business strategy and development | <input type="radio"/> Career decision making |
| <input type="radio"/> Develop training programs | <input type="radio"/> Incorporate into a research project |
| <input type="radio"/> Provide information to students | <input type="radio"/> Other: _____) |
| <input type="radio"/> Give labour market information to clients | |

3. WHAT SECTION(S) OF THE REPORT WAS THE MOST USEFUL?

- 2.1 Environmental Employment by Major Industry Group
- 2.2 Number of Environmental Employees by Major Industry Group
- 2.3 "Intensity" of Environmental Duties by Major Occupational Group
- 2.4 Environmental Employment: Full and Part-time Basis
- 2.5 Age Profile of Environmental Employees
- 2.6 Gender Profile of Environmental Employees
- Environmental employment - regional analysis
- Other: _____)

4. WHAT INFORMATION WOULD YOU LIKE TO SEE MORE IN FUTURE REPORTS?

- | | |
|---|--|
| <input type="radio"/> Characteristics of employees | <input type="radio"/> Human resources strategies |
| <input type="radio"/> Characteristics of employers | <input type="radio"/> Other: _____) |
| <input type="radio"/> Industry demand and supply issues | |

5. APART FROM A PRINTED REPORT, WHAT OTHER FORMAT WOULD YOU LIKE TO SEE THE INFORMATION?

- | | |
|---|-------------------------------------|
| <input type="radio"/> One-page summary with key statistics | <input type="radio"/> Web version |
| <input type="radio"/> Summary of key ELM statistics by type of user-group | <input type="radio"/> Other: _____) |
| <input type="radio"/> PowerPoint presentation with key statistics | |

6. HOW CAN WE IMPROVE FUTURE REPORTS?

7. WOULD YOU PARTICIPATE IN OUR FUTURE SURVEYS?

- Yes No

Thank you for completing this feedback form. Please do not hesitate to contact us at info@eco.ca for your general comments or questions.