



ECO CANADA  
Environmental Careers Organization



# Profile of Canadian Environmental Employment

LABOUR MARKET RESEARCH STUDY

2010

## 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.



## LABOUR MARKET RESEARCH

ECO Canada 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 reports is available at [eco.ca](http://eco.ca).

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Special thanks are extended to the consultants RDA Global for conducting the research and analyzing the data collected through the survey.

Finally, this report would not have been possible without the participation of countless individuals who offered their time to talk to researchers and fill out the surveys. These individuals were HR managers from companies with environmental employment in Canada. It is for these individuals that ECO Canada reserves its final and most heartfelt thanks.



## 2. EXECUTIVE SUMMARY

The `2010 Profile of Canadian Environmental Employment` is a unique study representing the most comprehensive estimate of environmental employment and use of environmental skills in Canada. It is the first study performed by ECO Canada that measures the number of workers employed in specific environmental occupations. This survey's focus on environmental occupations and skills extends research previously performed that identified environmental employment in each industry, across sectors of the economy.

The report is based on survey data collected from 2,204 organizations across all major industry groups in Canada. The stratified sample was drawn from an original sample of over 23,000 employers in Canada. Of the 2,204 employers responding to the survey, 507 had environmental employees and completed a longer comprehensive questionnaire on human resource matters for their environmental employee workforce. The results of the survey have been weighted by statistics reported from the Labour Force Survey, the Census, and the Canadian Business Patterns Database in order to facilitate the estimation of total national and provincial environmental employment and the characteristics of these workers.

### DEFINITION OF ENVIRONMENTAL EMPLOYMENT

For the purpose of the study, Environmental Employment is defined as employed individuals who spend 50% or more of their work time on activities associated with environmental protection, resource management, or environmental sustainability. Specifically, this includes the following activities as defined by ECO Canada's National Occupational Standards (NOS):

#### Environmental Protection

- Air Quality
- Water Quality
- Site Assessment and Reclamation
- Waste Management
- Health and Safety

#### Resource Management

- Energy
- Fisheries and Wildlife
- Natural Resource Management

#### Environmental Sustainability

- Education and Training
- Research and Development
- Policy and Legislation
- Communications and Public Awareness

In addition to the above categories, we have added 'alternative / renewable energy or eco-efficiency' to the energy NOS, and also a separate occupational area, 'carbon and climate change mitigation', since these were identified as emerging areas in the *ECO Canada Environmental Trends Study*.

Each occupation in the NOS is spread across various industry groups. These industries are classified according to the North American Industrial Classification System (NAICS). 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.

NAICS	Industry Aggregations
11	Agriculture, Forestry, Fishing & Hunting
21	Mining and Oil and Gas Extraction
23	Construction
31-33	Manufacturing
22	Utilities
48-49	Transportation & Warehousing
54,55	Professional, Scientific & Technical Services, Finance & Management of Companies
56	Administration & Support, Waste Management & Remediation Services
61,62	Educational Services & Health Care & Social Assistance
91	Public Administration
41,44-45,51	Wholesale Trade / Retail Trade, Cultural Industries & Information & Other Services
71,72	Arts, Entertainment & Recreation & Accommodation & Food Services

## KEY FINDINGS

### 1. PROFILE OF ENVIRONMENTAL EMPLOYMENT IN CANADA

#### Total Environmental Employment

There are over 682,000 environmental employees in Canada who spend 50% or more of their time on environmental activities. Over 2,000,000 workers spend some of their time on environmental activities. Survey results indicated that 4% of the total employed Canadian labour force is engaged in environmental-related activities for at least 50% of their work time. Environmental skills are used by 12% of all employed workers.

In 2007, environmental employees represented 3.2% of total Canadian employment. While the methods used in the 2007 and 2010 surveys are not perfectly comparable, comparisons between the findings suggest that there is a growth in demand for environmental skills in all sectors.

#### Environmental Employment by Industry

Industries with the highest concentrations of environmental employees include:

- Agriculture, forestry, fishing, and hunting (11%);
- Construction (8%);
- Administration and support, waste management, and remediation (6%); and
- Professional, scientific, and technical services (5%).

#### Employer Demand by NOS Category

The vast majority of environmental employers (91%) have workers in more than one occupational skill category, highlighting the interdisciplinary nature of work in the environmental sector. As defined by ECO Canada National Occupational Standards, the most common occupational skill categories of workers in the environmental sector are:

- Environmental health and safety (40% of environmental employees);
- Waste management (28%);
- Site assessment, remediation, and reclamation (20%);
- Environmental communication and public awareness (19%);
- Environmental education and training (18%);
- Water quality (17%);
- Environmental policy and legislation (15%); and
- Energy (including alternative / renewable energy or eco-efficiency) (10%).

**Organizations Employing Environmental Employees**  
Over 318,000 organizations in Canada employ at least one environmental employee (approximately 17% of Canadian organizations have one or more environmental employees).

## 2. PROFILE OF ENVIRONMENTAL EMPLOYEES IN CANADA

Demographic groups within the environmental workforce include:

- 40% of all environmental employees are women (representing 45% of the total Canadian employed labour force);
- 2.5% of all environmental employees are Aboriginal persons;
- 5.5% of environmental employees are recent immigrants (within the past 5 years); and
- About a quarter (24%) is below 30 years of age. Fourteen percent of the environmental workforce is age 55 or older.

The survey confirmed that the levels of education, experience, and skills for environmental workers are high. Thirty-six percent of environmental workers have a bachelor's degree or higher (compared to 22% of the employed Canadian labour force).

The study established that the Canadian environmental workforce is highly educated with a relatively high number of senior level employees and managers. Forty percent of all environmental employees are managers of people, budgets, or projects, and 53% of all environmental workers are senior level employees with at least 8 years of experience.

Ongoing training of these skilled workers is a priority for many employers, with 36% of environmental employers budgeting \$2,000 or more annually to train each environmental employee.

## 3. RECRUITING ENVIRONMENTAL EMPLOYEES

Environmental employers reported that successful recruiting in the sector depended on relational methods that make use of social networks. The top-rated methods for recruiting (internal recruitment, referrals, and co-op programs) all build upon existing relationships with workers. The reputation of an environmental employer as an 'Employer of Choice' was seen as the most important factor affecting the ability to successfully recruit highly qualified workers. Use of existing employee networks were viewed by almost half of environmental employers as critical to the success of their recruiting programs. Other commonly used methods for recruiting included the use of corporate websites and other job-post websites. These methods were seen as relatively less effective when compared with methods that depend on social networks.

## 4. HIRING DURING ECONOMIC DOWNTURN

Over the past year (March 2009-March 2010), 39% of environmental employers hired or attempted to hire environmental employees. Firms' open positions were roughly evenly split between positions left vacant by a worker who left the firm and newly created positions. About one third (31%) of employers who were hiring experienced difficulties finding the workers they need. A lack of workers with appropriate skills was the most commonly cited reason for their difficulties. The most common reason for inability to fill vacant positions was lack of qualified candidates—in particular, a lack of candidates with the appropriate education or experience, which was cited by about a quarter of firms.

Higher number of employers were hiring in the following industries:

- Administration and support, waste management and remediation (56%);
- Arts, recreation, accommodation and food services (52%);
- Mining, quarrying, and oil and gas extraction (42%); and
- Professional, scientific, and technical services (41%).

Employers in administration and support, waste management and remediation and professional, scientific, and technical services experienced the greatest hiring difficulties, while those in mining, quarrying, and oil and gas extraction and wholesale / retail trade were less likely to experience hiring difficulties.

Employers in the following industries were most likely to have had no open positions for environmental employees in the past 12 months:

- Manufacturing (80%);
- Construction (76%);
- Agriculture, forestry, fishing, and hunting (71%);
- Education, health, and social assistance (68%); and
- Wholesale trade/retail trade (68%).

## 5. EMPLOYEE ENGAGEMENT AND TURNOVER

Forty two percent (42%) of employers lost workers because they were offered better benefits, higher income, better work-life balance, or better career opportunities at another organization. Only 19% of environmental employers lost workers due to reduction in workforce (layoffs) during the March 2009 - March 2010 period.

Environmental employers who placed a greater importance on the professional development of workers, and those who challenged workers with greater levels of responsibility and variety in their tasks have higher levels of employee engagement and fewer retention problems. Other effective strategies for employee retention included better defined corporate goals, use of team-building activities, and rewards for performance.

## 6. FUTURE DEMAND

Retirements of environmental workers will create vacancies over the next decade as over 100,000 environmental employees (14% of the environmental workforce) reach retirement age. Over the next two years, 44% of environmental employers plan to hire environmental workers, up from 39% in the March 2008-March 2009 (recessionary) period. A large number of hiring managers were uncertain about their future growth prospects, but about a fifth (20%) of environmental employers were optimistic that they will increase the number of environmental workers on their payrolls over the next two years. Smaller and mid-sized firms were currently more optimistic than large employers, but this could change over the next year if the economy continues to improve.

Regardless of whether worker headcounts increase, trends since the 2007 *ECO Canada Survey of Environmental Employment* demonstrate that environmental skills are quickly becoming more important across the workforce and within every industry. Particularly strong growth in demand for environmental skills was apparent in the construction, manufacturing, and agricultural sectors. All skilled environmental occupational categories were in demand with some percentage of employers planning to hire in each category. More employers have plans to hire workers in site assessment and reclamation, waste management, environmental safety and health, and water quality than in other categories. Employers hope to hire within several environmental-related subspecialties of engineering, including the top mentioned "hot job" from the survey—environmental engineers—but short supply of workers is a persistent problem.

## RECOMMENDATIONS FOCUSING ON GROWTH AREAS IN THE ENVIRONMENTAL SECTOR

- **Conduct additional research to define the skills required for new emerging sectors, such as green construction:** Since the 2007 survey of environmental employers, there has been strong growth in environmental skills required in the construction sector. Growth is most likely in occupations such as trades workers and site managers/supervisors, and also involves the emergence of a few specialist occupations (energy auditors, blower door testers, etc.). The skill sets required in the emerging green construction sector are not well defined and a relatively high percentage (18%) of the construction workforce uses at least some environmental skills in their work.
- **Prepare employers to transition to a highly skilled workforce to increase productivity in some industries, such as the agricultural/forestry/fishing/hunting sector, and the manufacturing industry:** Strong growth in demand for environmental skills was observed in these two sectors. However, at the same time the total number of workers employed in the manufacturing and agricultural sectors have declined since 2007. These opposing trends suggest that employers are transitioning to a more highly skilled workforce that plays a value-added role in increasing the productivity of these two sectors.
- **More can be done to understand the importance of certain occupations, such as environmental safety and health:** In terms of environmental occupations, this study found that environmental safety and health is the largest occupational skill—four out of ten environmental employees have this skill set. *ECO Canada's 'Environmental Trends' report* also identified the occupation as one of the fastest growing occupations. Given that these workers are employed in all industries, more research is required to understand the importance and specific need for this occupation within the environmental sector.



Sixty-four percent of environmental employers indicated that their firm's reputation as an employer of choice strongly contributed to their ability to recruit qualified workers, and 52% felt that their corporate brand played a key role.



## RECOMMENDATIONS FOR EMPLOYERS

- **Focus on relationship-based recruiting:** The four most effective recruitment methods identified by employers in the survey place a greater emphasis on relationship-based recruitment. The results suggest that a company's current workforce is one of the most important assets in recruiting future employees (through referrals, internal promotion, etc). The effectiveness of relationship-based recruiting is leading many employers to rely on formal and informal social networks for their recruiting. Social networking sites such as Linked-In are also becoming an important (and free) source for finding recommendations for new hires. Development of these and other relational channels for recruiting will give environmental employers an advantage in finding qualified workers.
- **Focus on developing a strong, positive reputation and corporate identity along with proven effective employee engagement strategies to retain employees:** More than 40% of employers lost environmental workers for reasons that can be addressed through HR policies—workers found better benefits, higher income, better work-life balance or better career opportunities in another organization. However, the survey also identified that reputation as an employer of choice and compensation are the top factors attracting environmental employees to an organization. Some of the strategies employers can use to promote employee engagement are:
  - Team building activities;
  - Professional development opportunities;
  - Corporate goals;
  - Rewards for performance; and
  - Challenging employees with a greater responsibility and variety of tasks.
- **Succession planning should be a greater focus for environmental employees in those industries and occupations that have higher retirement rates:** Environmental employers will lose workers to retirement in the next ten years as 14% of the environmental workforce reaches retirement age. Retirements are going to affect some industries more than others, and additional consultation may be needed for some industries to better understand potential gaps that may occur. For example:
  - Manufacturing (23% of environmental workers will reach retirement age by 2020);
  - Education, health and social assistance, and other services (except public administration) (21%); and
  - Wholesale trade/retail trade, utilities, transportation and warehousing (19%).Retirements will affect demand for workers in all occupations. Since most environmental employees perform interdisciplinary work (and are typically employed in multiple occupational categories), there are only slight differences in replacement demand by occupation. Retirements will be a more significant factor for employers who have workers in:
  - Research and development (14%);
  - Environmental health and safety (14%);
  - Water quality (14%);
  - Waste management (14%);
  - Environmental education (14%); and
  - Site assessment & reclamation (14%).



## 3. INTRODUCTION

### 3.1 ABOUT ECO CANADA

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

### 3.2 RESEARCH OBJECTIVES

The primary objective of the Profile of Canadian Environmental Employment 2010 was to estimate the number of environmental employees across all major industries in Canada. The study was also ECO Canada's first study that seeks to estimate the number of environmental employees within environmental occupations, as defined by the ECO Canada National Occupational Standards (NOS). The study measures recent hiring activity, retention rates, recruiting practices, and expectations on future worker demand among environmental employers.

### 3.3 SUMMARY OF METHODOLOGY

Out of the valid sample of 23,127 employers, 2,204 employers completed the survey, representing a response rate of 10 percent. Of these completions 2,132 were completed by the telephone survey and 72 were completed via an online questionnaire.

The survey included a short questionnaire for all organizations and a long questionnaire for organizations that identified themselves as having environmental employees. While 1,697

organizations responded to the short questionnaire only (they did not have environmental employees), 507 organizations responded to both the short and long questionnaires. On the basis of the definition above, organizations were asked to complete the long questionnaire if they employed one or more full-time or part-time employees whose work is related to the environment. Organizations not employing environmental employees were asked to answer a few questions about the organization's workforce, which was used to estimate the total environmental workforce.

The data from the survey was used to estimate the number of environmental employees in Canada. The responses have been weighted by the total number of employees and establishments in each industry, as reported by the Labour Force Survey (LFS), the Census and the Canadian Business Patterns Database.

### 3.4 COMPARABILITY WITH THE 2007 EMPLOYER DEMAND SURVEY

The results of this survey are not perfectly comparable with the *ECO Canada 2007 Profile of Canadian Environmental Employment*. The 2007 survey asked employers to estimate the number of environmental workers employed at their organization. In the 2010 survey, we asked employers to consider their workforce and determine the percentage of workers who spend any time performing environmental activities related to their work tasks and then estimate what percentage of those workers spend more than 50% of their time on environmental activities. The second measure is the figure that is most closely aligned with figures from the 2007 survey and is used throughout this report to represent environmental employment.

Number of Surveys Distributed	Number identified as not in service	Valid Sample	Number of Valid Surveys Completed	Valid Response Rate
26,039	2,912	23,127	2,204	10%



## 4. PROFILE OF ENVIRONMENTAL EMPLOYMENT IN CANADA

### 4.1 SUMMARY

There are over 682,000 environmental employees in Canada who spend more than 50% of their time on environmental work activities. These workers were most concentrated in the following industries:

- Agriculture, forestry, fishing and hunting;
- Construction;
- Administration and support, waste management and remediation; and
- Professional, scientific and technical services.

The majority of environmental employers (91%) have workers in more than one occupational skill category, highlighting the interdisciplinary nature of work in the environmental sector. The most common occupational areas in the sector included:

- Environmental safety and health;
- Waste management;
- Site assessment and reclamation; and
- Environmental communication and public awareness.

Levels of environmental employment were similar among provinces, with slightly higher concentrations of environmental workers in the Atlantic Provinces and in the Prairies (Manitoba and Saskatchewan). Three quarters of environmental workers (75%) work in the private sector, 20% work in the public sector and 5% are employed in the non-profit sector. Environmental employees are about equally represented in the public and private sectors. Nearly half of environmental employees are employed at small establishments with 20 employees or less, or are self-employed.

Over 318,000 organizations in Canada employ at least one environmental employee (approximately 17% of organizations from across Canada have one or more environmental employees). According to the findings of the survey, the top industries employing environmental employees are:

- Public administration (38%);
- Administration & support, waste management and remediation (35%);
- Mining & oil and gas extraction (26%); and
- Agriculture, forestry, fishing and hunting (25%).

## 4.2 ENVIRONMENTAL EMPLOYMENT BY INDUSTRY

Over 682,000 workers out of Canada's 16.9 million employed labour force spend 50% or more of their time on environmental activities (referred to throughout this report as environmental employees). Over 2 million Canadian workers spend at least some portion of their time on environmental activities. Environmental workers were present in every industry and several industries had high concentrations of environmental workers that spend at least 50% of their time on environmental work. Nearly eleven percent (11%) of workers in agriculture, forestry, fishing, and hunting spend most of their time on

environmental activities. The same is true of 7.4% of workers in the construction industry, 5.8% of workers in the administration and support, waste management and remediation industry, and 5.1% of workers in the professional, scientific, and technical services—all of whom spend the majority of their time on environmental work.

**Table 1**  
Total Canadian environmental employees by industry

Industry	Environmental Employees				Total Canadian Employment (March 2009)*
	Spending more than 50% of their time on environmental activities		Spending any time on environmental activities		
	Workers	% of workforce	Workers	% of workforce	
Agriculture, Forestry, Fishing and Hunting	41,878	10.8%	64,019	16.4%	389,528
Mining, Quarrying, and Oil and Gas Extraction	11,405	4.5%	22,868	9.1%	251,972
Construction	89,020	7.4%	213,783	17.9%	1,195,900
Manufacturing	71,934	4.1%	252,565	14.3%	1,767,700
Wholesale Trade/Retail Trade	93,265	3.5%	441,853	16.6%	2,657,600
Utilities, Transportation and Warehousing	18,544	2.0%	69,486	7.5%	928,400
Information, Finance and Insurance, Real Estate and Mgt. of Companies	7,340	0.5%	34,773	2.3%	1,516,442
Professional, Scientific and Technical Services	65,285	5.1%	127,377	10.0%	1,276,450
Administration and Support, Waste Management and Remediation	36,124	5.8%	96,105	15.4%	624,854
Education, Health and Social Assistance	121,751	3.7%	268,755	8.3%	3,246,900
Arts, Recreation, Accommodation and Food Services	59,252	4.1%	280,714	19.5%	1,436,593
Other Services (except Public Administration)	20,913	2.9%	99,079	13.6%	731,000
Public Administration	45,578	4.8%	100,609	10.7%	939,865
<b>Total</b>	<b>682,289</b>	<b>4.0%</b>	<b>2,071,985</b>	<b>12.2%</b>	<b>16,963,204</b>

\*Source: Statistics Canada Labour Force Survey, n=2,204

### 4.3 EMPLOYMENT BY NATIONAL OCCUPATIONAL STANDARD (NOS) CATEGORY

As identified in the *ECO Canada Environmental Trends Report*, a characteristic that sets apart the environmental sector is the diversity of activities that range from traditional waste management activities, to emerging new sectors such as carbon and climate change mitigation. Skills of workers in the sector are also diverse and a variety of environmental occupations exist but they are not well captured by Statistics Canada's surveys or the Census. In this survey, employers were asked to identify the number of environmental workers employed at their establishment who performed work activities in each of thirteen categories of environmental activities. These activities correspond to twelve categories defined by ECO Canada as National Occupational Standards (NOS) and also additional categories such as 'alternative / renewable energy or eco-efficiency' and 'carbon and climate change mitigation' since these were identified as emerging areas in the *ECO Canada Environmental Trends Study*.

Environmental work is highly interdisciplinary in nature as most environmental employers (91%) indicated that their employees were involved in activities in more than one NOS category. Half of employers (51%) had workers who performed activities in more than 5 NOS categories and 11% had workers performing activities in more than 10 NOS categories. Only 9% of the environmental employers had employees that were limited to working in just one NOS category. The high degree of overlap in environmental activities was evident in practically all industries.

Based on weighted results of the survey, we estimate that 40% of all environmental employees perform activities related to environmental safety and health, which is the most common environmental activity. About a third (28%) of environmental employees carry out activities in waste management. One in five environmental workers (20%) perform site assessment and reclamation activities. Nineteen percent complete work activities that require environmental communication and public awareness, and 18% perform work activities in environmental education and training. Fifteen percent of environmental employees carry out activities related to environmental policy and legislation. Figure 1 contains a ranking of the number of environmental workers engaged in each of ECO Canada's NOS occupational categories.

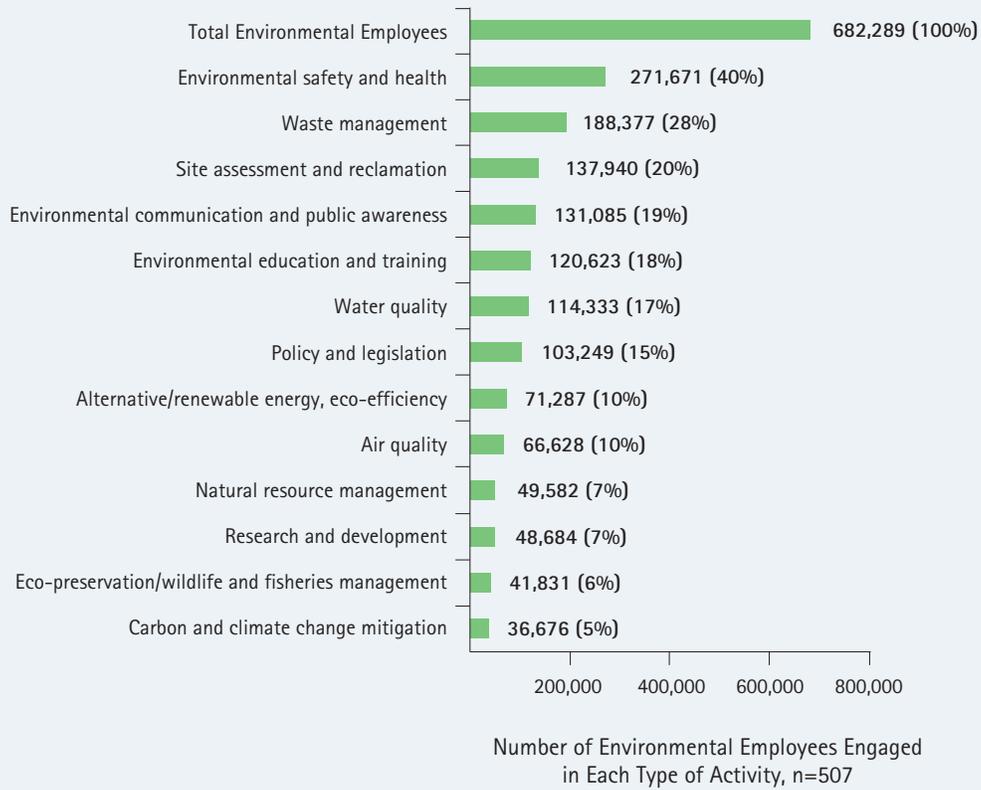
**Table 2**  
Occupational areas in the environmental sector

National Occupational Standard (NOS) Category
<b>Sector A: Environmental Protection</b>
Air quality
Water quality
Site assessment and reclamation
Waste management
Environmental safety and health
<b>Sector B: Resource Management</b>
Energy
Eco-preservation / wildlife and fisheries management
Natural resource management
<b>Sector C: Environmental Sustainability</b>
Environmental education & training
Research & development
Policy and legislation
Environmental communication and public awareness

“  
Environmental work is highly interdisciplinary in nature as most environmental employers (91%) indicated that their employees were involved in activities in more than one NOS category.  
”

**Figure 1**  
**Environmental employees by occupational areas**

Work Activities of Environmental Employees \* ^^  
 (Number of Environmental Employees Performing Each Type of Activity)



\* In addition to the ECO Canada NOS categories, the other categories included are 'carbon and climate change mitigation' and 'alternative / renewable energy and eco-efficiency'.

^^ Since most environmental employers indicated that their employees performed activities in more than one NOS category, the total >100%.

#### 4.4 ORGANIZATIONS EMPLOYING ENVIRONMENTAL EMPLOYEES

Over 318,000 organizations (17% of all Canadian organizations) employ at least one environmental employee. According to the findings of the survey, the top industries employing environmental employees are:

- Public Administration (38%);
- Administration & Support, Waste Management and Remediation (35%);
- Mining and Oil and Gas Extraction (26%); and
- Agriculture, Forestry, Fishing, and Hunting (25%).

“  
Over 318,000  
organizations employ at  
least one environmental  
employee.



**Table 3**  
Establishments with environmental employees by major industry group

Industry	Total Number of establishments in Canada	Proportion from survey of establishments with environmental employees	Estimated number of establishments with environmental employees (spending any time on environmental activities)
Public Administration	3,820	38%	1,462
Administration and Support, Waste Management and Remediation	88,693	35%	31,083
Mining, Quarrying, and Oil and Gas Extraction	11,475	26%	2,964
Agriculture, Forestry, Fishing and Hunting	51,234	25%	12,623
Construction	211,159	22%	47,174
Manufacturing	69,455	21%	14,606
Wholesale Trade/Retail Trade and Utilities, Transportation and Warehousing	351,585	19%	66,784
Arts, Recreation, Accommodation and Food Services	106,827	18%	18,808
Education, Health, Social Assistance and Other Services	270,221	13%	35,830
Information, Finance and Insurance, Real Estate, Management of Companies, Professional, Scientific and Technical Service	666,670	13%	87,360
<b>Total</b>	<b>1,831,139</b>	<b>17%</b>	<b>318,694</b>

## 4.5 ENVIRONMENTAL EMPLOYMENT BY PROVINCE

The concentration of environmental workers as a percentage of the workforce is similar across provinces, with slightly higher concentrations of workers in the Atlantic Provinces and Manitoba, and lower concentrations in Ontario. Ontario (37%) has the highest share of environmental employees, followed by Quebec (23%). Alberta and British Columbia have similar numbers of environmental employees, representing 12% and 14% of environmental employment respectively.



**Table 4**  
Environmental employees by province

Province	Environmental Employees	Total Employment March 2010	Share of Environmental Employment	Environmental Employees as a Percentage of Workers in the Province
Atlantic Provinces	46,847	1,099,199	6.9%	4.3%
Quebec	155,504	3,877,644	22.8%	4.0%
Ontario	253,552	6,595,121	37.2%	3.8%
Manitoba/ Saskatchewan	48,771	1,140,680	7.1%	4.3%
Alberta	83,956	1,982,121	12.3%	4.2%
British Columbia	92,739	2,268,499	13.6%	4.1%
<b>Canada Total</b>	<b>682,289</b>	<b>16,963,204</b>	<b>100%</b>	<b>4.0%</b>

\* Source: Statistics Canada and Labour Force Survey, n=2,204

## 4.6 ENVIRONMENTAL EMPLOYMENT BY SECTOR AND BY ESTABLISHMENT SIZE

The majority (74%) of environmental employees are employed in the private sector, and 20% of environmental employees are employed in the public sector. The non-profit sector represents about 5% of environmental employment. The concentration of environmental employees is essentially the same in the public and private sectors, with slightly higher concentrations of environmental employees in the private sector.



**Table 5**

Sector Environmental employees by public, private and non-profit sector

	Environmental Employees	Percentage of Environmental Employees	Total Employees	Percentage of Workers Who Are Environmental Employees
<b>Private sector*</b>	<b>545,985</b>	<b>80.0%</b>	<b>13,487,700</b>	<b>4 %</b>
Private sector	504,578	74%	N/A	N/A
Not-for-profit / charitable organization	36,951	5%	N/A	N/A
Don't know	4,456	1%	N/A	N/A
<b>Public sector</b>	<b>136,304</b>	<b>20.0%</b>	<b>3,475,500</b>	<b>4%</b>
Public sector –municipal	51,715	8%	N/A	N/A
Public sector – provincial	68,231	10%	N/A	N/A
Public sector – federal	16,358	2%	N/A	N/A
<b>Total</b>	<b>682,289</b>	<b>100.0%</b>	<b>16,963,200</b>	<b>4.0%</b>

\* Non-Profit environmental employers and employees who are uncertain of their sector are included in figures for private sector environmental employment.

Nearly half of all environmental employees work at establishment with less than 20 employees or are self-employed. Employers at larger establishments have a smaller concentration of environmental employees (2.5% of all workers at these firms are environmental workers versus 4.0% of employees overall). Only 10% of environmental employees are employed at larger establishments with over 500 workers.

“  
 Nearly half of all environmental employees work at establishment with less than 20 employees or are self-employed.  
 ”

**Table 6**  
 Environmental employees by establishment size

Establishment Size	Number of Environmental Employees	Total Canadian Employment (March 2010)	Distribution of Environmental Employees by Establishment Size	Environmental Employees as a Percentage of Total Canadian Employment
Less than 20 employees or self-employed	337,823	7,419,500	47%	4.6%
20 to 99 employees	176,498	4,731,800	21%	3.7%
100 to 500 employees	123,877	2,898,700	21%	4.3%
More than 500 employees	44,092	1,792,300	10%	2.5%
<b>Total employees</b>	<b>682,289</b>	<b>16,963,200</b>	<b>100%</b>	<b>4.0%</b>

\* Source: Statistics Canada and Labour Force Survey, n=2,204



## 5. PROFILE OF ENVIRONMENTAL EMPLOYEES IN CANADA

### 5.1 SUMMARY

Demographic groups within the environmental workforce include:

- 40% of all environmental employees are women (women represent 45% of the total Canadian employed labour force);
- 2.5% of all environmental employees are Aboriginal persons;
- 5.5% of environmental employees are recent immigrants (within the past 5 years); and
- About a quarter (24%) is below 30 years of age. Fourteen percent of the environmental workforce is age 55 or older.

Compared to the total labour force, environmental employees had higher levels of education and were commonly managers with high levels of training and experience. About one third (36%) of the environmental workforce was comprised of highly educated workers with at a bachelors degree or higher, about one third (30%) were workers with a 2-year college education,

and about a third (33%) did not have post secondary education. Almost 40% of environmental workers are managers and about half of environmental workers are senior-level workers with at least eight years of experience. Virtually all environmental employers (96%) set aside a budget for training of environmental workers. One third of environmental employers spend over \$2,000 or more per employee per year on training to maintain employee skills.

**Table 7**  
Environmental employees by age category

Age Group	Number of Environmental Workers	Percentage of Environmental Workers	Percentage of all employed workers (2006 Census)
29 or under	163,243	24%	25%
30-44	244,832	36%	35%
45-54	173,371	25%	25%
55-64	84,396	12%	13%
65 or older	16,447	2%	3%
<b>Total</b>	<b>682,289</b>	<b>100%</b>	<b>100%</b>

n=507

## 5.2 DEMOGRAPHIC PROFILE

The age distribution of environmental employment was very similar to the age distribution of employed workers in the 2006 Census of Canada. While the two measures are not perfectly comparable because four years have elapsed between the 2006 Census and the 2010 Survey of Environmental Employers, the comparison suggests that the environmental workforce will face similar pressures as the general labour force due to retirements.

The environmental workforce was comprised of a larger percentage of men than the total Canadian labour force. Forty-five percent of workers in the employed Canadian labour force were women, while only 39.8% of environmental employees were women. Aboriginal persons represent 2.5% of all environmental employees, which is slightly lower than the percentage of Aboriginal persons in the total employed workforce (Aboriginal workers represented 2.75% of the employed workforce in 2006<sup>1</sup>). Recent immigrants (arriving in the last 5 years) represented 5.5% of environmental employees. Statistics from the 2006 Census Survey are the most recent data available, but are not comparable with the findings of this survey because they do not represent recent immigrants from the past five years (2005-2010).

**Table 8**  
Environmental employees for selected demographic groups

Demographic Group	Number of Environmental Employees	Percentage of Environmental Employees	Percentage of Total Workforce
Female	271,603	39.8%	45.1%
Aboriginal	16,925	2.5%	2.75%
Recent immigrant (in the past 5 years)	37,867	5.5%	N/A*
<b>All Environmental Employees</b>	<b>682,289</b>	<b>100%</b>	<b>100%</b>

\* Statistics from the 2006 Survey are the most recent data available, but are not comparable with the findings of this survey because they do not represent recent immigrants from the past five years (2005-2010).

**Table 9**  
Environmental employment by level of educational attainment

Education Attainment	Number of environmental workers	Percentage of environmental workforce	Percentage in the total Canadian labour force
Masters, doctorate, or higher	77,908	11%	8%
Bachelor degree or equivalent	171,184	25%	14%
College or equivalent	207,865	30%	20%
Less than post-secondary	225,332	33%	58%
<b>Total</b>	<b>682,289</b>	<b>100%</b>	<b>100%</b>

n=507

<sup>1</sup> 2006 Census of Canada

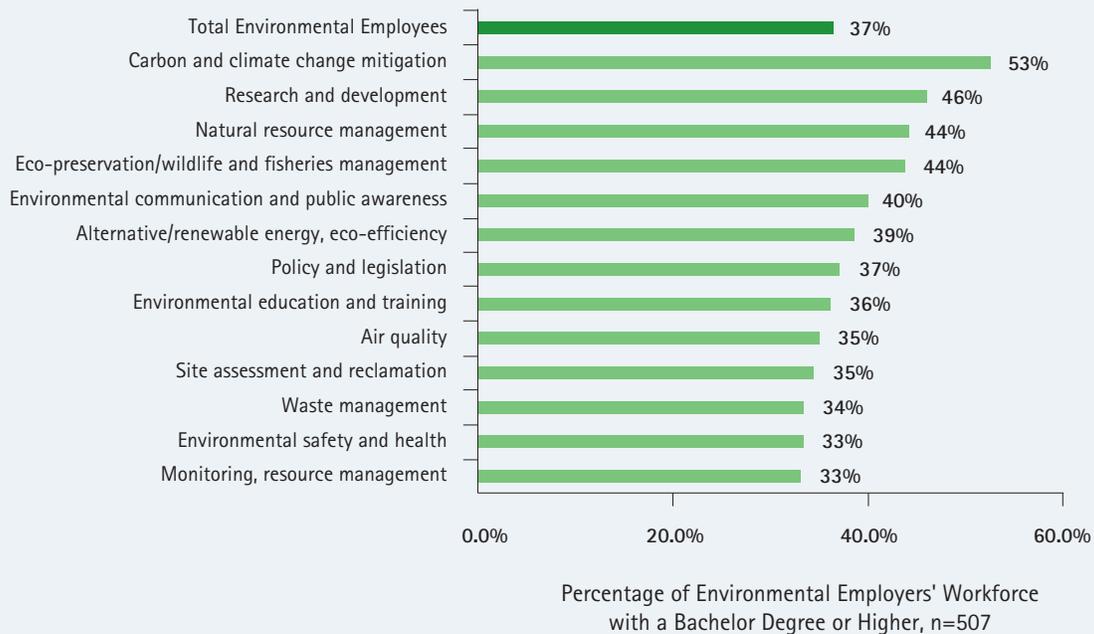
### 5.3 TRAINING, EDUCATION & EXPERIENCE

Environmental employees, on average, had a higher level of educational attainment than workers in the total Canadian labour force – 66% of environmental employees have post-secondary education compared to 42% of the Canadian workforce.

About one third (36%) of environmental employees had a bachelor's degree or higher and 11% of workers have a masters degree or higher. Thirty percent (30%) of environmental employees had a 2-year college level of education. The remaining third (33%) of workers did not have post-secondary education.

The level of educational attainment of environmental workers differed by industry and by national occupational standard (NOS) category. A majority (52%) of environmental workers at firms engaged in carbon and climate change mitigation activities had at least a bachelor degree and (19%) had a masters degree or higher. Employers who have workers in research and development, natural resource management, eco-preservation, environmental communication, alternative/renewable energy and eco-efficiency, and environmental policy and legislation all had a higher-than-average percentage of workers with at least a bachelor degree.

**Figure 2**  
Environmental employees with a bachelor degree or higher



\* In addition to the ECO Canada NOS categories, the other categories included are 'carbon and climate change mitigation' and 'alternative / renewable energy andEco-efficiency'.

**Table 10**  
Educational Attainment for the Environmental Workforce  
by Occupational Area\*<sup>2</sup>

National Occupational Standard (NOS) Category	Masters, doctorate or higher	Bachelor degree or equivalent	College or equivalent	Less than post-secondary	Total
Air quality	9%	26%	25%	40%	100%
Water quality	8%	25%	29%	37%	100%
Site assessment and reclamation	10%	25%	26%	39%	100%
Waste management	11%	23%	31%	36%	100%
Environmental safety and health	8%	26%	31%	36%	100%
Alternative/renewable energy, eco-efficiency	10%	29%	33%	29%	100%
Eco-preservation/wildlife and fisheries management	14%	30%	37%	19%	100%
Natural resource management	14%	30%	30%	26%	100%
Environmental education & training	8%	28%	32%	32%	100%
Research & development	15%	31%	21%	33%	100%
Policy and legislation	11%	26%	30%	32%	100%
Environmental communication and public awareness	11%	29%	31%	29%	100%
Carbon and climate change mitigation	19%	33%	15%	33%	100%
<b>All Environmental Employment</b>	<b>11%</b>	<b>25%</b>	<b>30%</b>	<b>33%</b>	<b>100%</b>

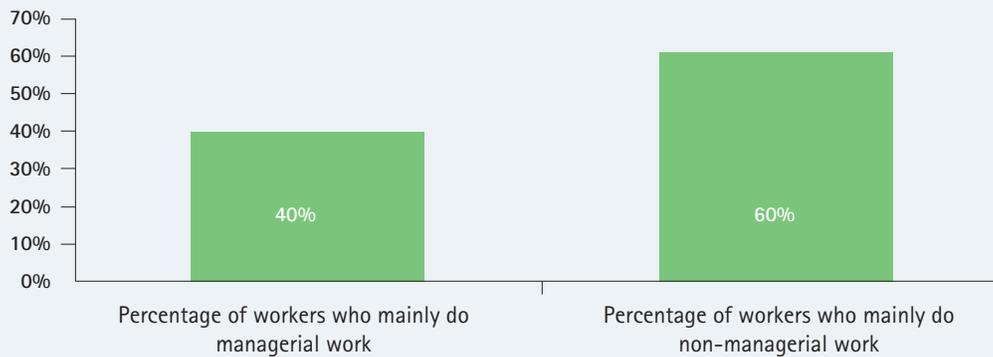
\* In addition to the ECO Canada NOS categories, the other categories included are 'carbon and climate change mitigation' and 'alternative / renewable energy and eco-efficiency'.

Forty percent of environmental workers are managers of people, budgets, or projects. In the survey, managers were defined as workers who provide leadership and accountability and played a role in the hierarchy of the organization, in addition to possessing baseline technical expertise.

“  
Forty percent of  
environmental workers  
are managers of people,  
budgets, or projects.  
”

<sup>2</sup> Responses represent the weighted distribution of environmental workers by education level. The summary for each NOS category represents all employers who have at least one employee in the specified NOS category.

**Figure 3**  
Environmental workers who are managers



Source: Survey of Environmental Employment 2010, n=507

Among the occupational areas, employers in carbon and climate change mitigation have a larger percentage of environmental workers who are entry-level workers (22% of their environmental employees). *ECO Canada's Environmental Trends Report* identified carbon and climate change mitigation as an emerging environmental field, which may explain why there is a higher percentage of workers in the field that are considered entry-level. The employers who have workers in the category of eco-preservation/wildlife and fisheries management have the largest proportion of their workers who are senior level (63% of workers employed have eight years of experience or more). Table 11 contains a segmentation of experience level for employers who have workers in each of the occupational areas.<sup>3</sup>



<sup>3</sup> Responses represent the weighted distribution of environmental workers by experience level. The summary for each NOS category represents all employers who have at least one employee in the specified NOS category.

**Table 11**  
Environmental employees by level of experience

Occupational Areas*	Entry Level- Usually a recent graduate with no work experience	Junior Level- Usually from 1 to 3 years of experience	Intermediate Level-Usually from 4 to 7 years of experience	Senior Level- Usually 8 years and more
Air quality	9%	14%	21%	56%
Water quality	8%	16%	23%	52%
Site assessment and reclamation	8%	16%	22%	55%
Waste management	6%	17%	22%	55%
Environmental safety and health	6%	16%	24%	54%
Alternative/renewable energy, eco-efficiency	8%	20%	24%	48%
Eco-preservation/wildlife and fisheries management	6%	13%	19%	63%
Natural resource management	6%	21%	23%	50%
Environmental education & training	9%	19%	24%	47%
Research & development	9%	20%	23%	48%
Policy and legislation	7%	18%	24%	50%
Environmental communication and public awareness	8%	16%	25%	51%
Carbon and climate change mitigation	22%	15%	16%	47%
<b>All Environmental Employment</b>	<b>7%</b>	<b>17%</b>	<b>23%</b>	<b>53%</b>

n=507

\* In addition to the ECO Canada NOS categories, the other categories included are 'carbon and climate change mitigation' and 'alternative / renewable energy and eco-efficiency;.

The majority (54%) of environmental employers budget over \$1,000 per employee per year for training of environmental employees. Just over one-third (36%) of employers spent a budget \$2,000 or more per employee for training. Environmental employers in mining (including oil and gas) and government are most likely to have larger budgets for training while those in agriculture, manufacturing, arts and recreation, and accommodation and food services have the smallest per-employee budgets for training.

“  
The majority (54%) of environmental employers budget over \$1,000 per employee per year for training of environmental employees.  
”

**Table 12**  
Average annual spending per employee for training

Industry	Average Per-Employee Expenditure for Training (Percent of Respondents in Each Category)						Total
	\$0	\$0 to \$100	\$100 to \$499	\$500 to \$999	\$1000 to \$1999	\$2000 or more	
Agriculture, Forestry, Fishing and Hunting	24%	7%	17%	17%	12%	24%	100%
Mining, Quarrying, and Oil and Gas Extraction	6%	6%	6%	16%	19%	45%	100%
Construction	16%	3%	18%	32%	16%	16%	100%
Manufacturing	22%	5%	17%	17%	22%	17%	100%
Wholesale Trade/Retail Trade, Utilities, Transportation and Warehousing	10%	2%	29%	18%	12%	29%	100%
Professional, Scientific and Technical Services, Information, Finance and Insurance, Real Estate and Management of Companies	8%	10%	11%	26%	26%	19%	100%
Administration and Support, Waste Management and Remediation	11%	4%	16%	27%	21%	20%	100%
Education, Health and Social Assistance, and Other Services (except Public Administration)	4%	14%	29%	18%	14%	21%	100%
Arts, Recreation, Accommodation and Food Services	21%	8%	42%	17%	4%	8%	100%
Public Administration	0%	0%	0%	20%	40%	40%	100%
<b>Total</b>	<b>4%</b>	<b>7%</b>	<b>11%</b>	<b>25%</b>	<b>18%</b>	<b>36%</b>	<b>100%</b>

n=507



## 6. RECRUITING ENVIRONMENTAL EMPLOYEES

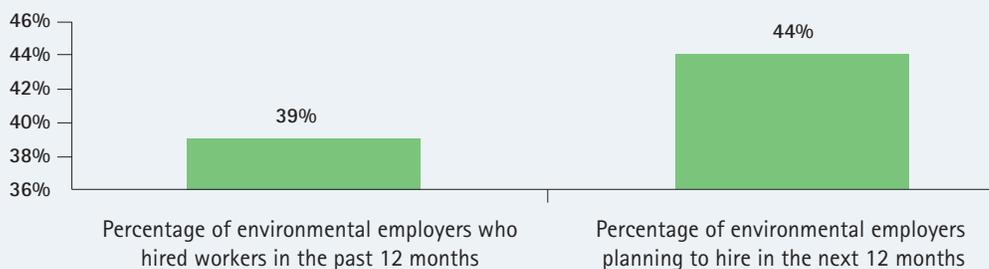
### 6.1 SUMMARY

Over the next two years, 44% of environmental employers plan to hire environmental workers, up from 39% in the March 2008-March 2009 period. Environmental employers reported that successful recruiting in the sector depends on relational methods that make use of social networks. The top-rated methods for recruiting (internal recruitment, referrals, and co-op programs) all build upon existing relationships with workers. The reputation of an environmental employer as an employer of choice was seen as the most important factor affecting the ability to successfully recruit highly qualified workers. Use of existing employee networks were viewed by almost half of environmental employers as critical to the success of their recruiting programs. A greater emphasis on relational recruiting channels and employer branding as an employer of choice will give environmental employers a competitive advantage in recruiting from a limited pool of skilled environmental workers. Also, firms placing a greater emphasis on on-campus recruiting and co-op programs can benefit from these highly effective but little-used recruiting methods.

### 6.2 RECENT AND FUTURE LEVELS OF RECRUITING ACTIVITY

Recruiting practices during the economic downturn have been limited as employers across Canada have looked for ways to cut costs during the downturn. In the past year (March 2009-March 2010), thirty-nine percent (39%) of environmental employers hired or tried to fill at least one vacant position. At the time of the survey was performed in March 2010, a slightly higher percentage of environmental employers 44% expected to hire or attempt to hire for at least one position in the next two years. While business confidence has been down during the economic downturn, it is likely to improve in the near term, and most certainly in the long term, which could drive up the number of employers that begin to actively recruit workers.

**Figure 4**  
Hiring trends of environmental employers



### 6.3 EFFECTIVE RECRUITMENT METHODS

Recruitment of qualified workers is a critical task for any environmental employer. Use of effective methods for recruiting can greatly cut costs and time spent by environmental employers to recruit qualified workers. In the survey, we presented respondents with a set of recruitment methods and asked whether they have used the method and how effective the method was for recruiting the right person for the job. Environmental employers identified referrals and internal recruitment (promotion from within) as the most effective methods of recruiting. Online job banks (such as monster.com), on-campus recruiting, and co-op programs were also ranked as effective methods for finding qualified candidates.

Interestingly, the most effective methods place a greater emphasis on relationship-based recruitment. The results suggest that a company's current workforce is one of the most important assets in recruiting future employees (through referrals, internal promotion, co-op programs and on-campus recruitment). Only 25% of employers use on-campus recruitment and only 23% have a co-op program for students or recent graduates. A greater emphasis on these recruiting methods may be a solution for environmental employers who face difficulties attracting the skilled workers they need. Table 13 below outlines the frequency of use and effectiveness of the main recruiting method used by environmental employers.

**Table 13**  
Use and effectiveness of recruiting methods

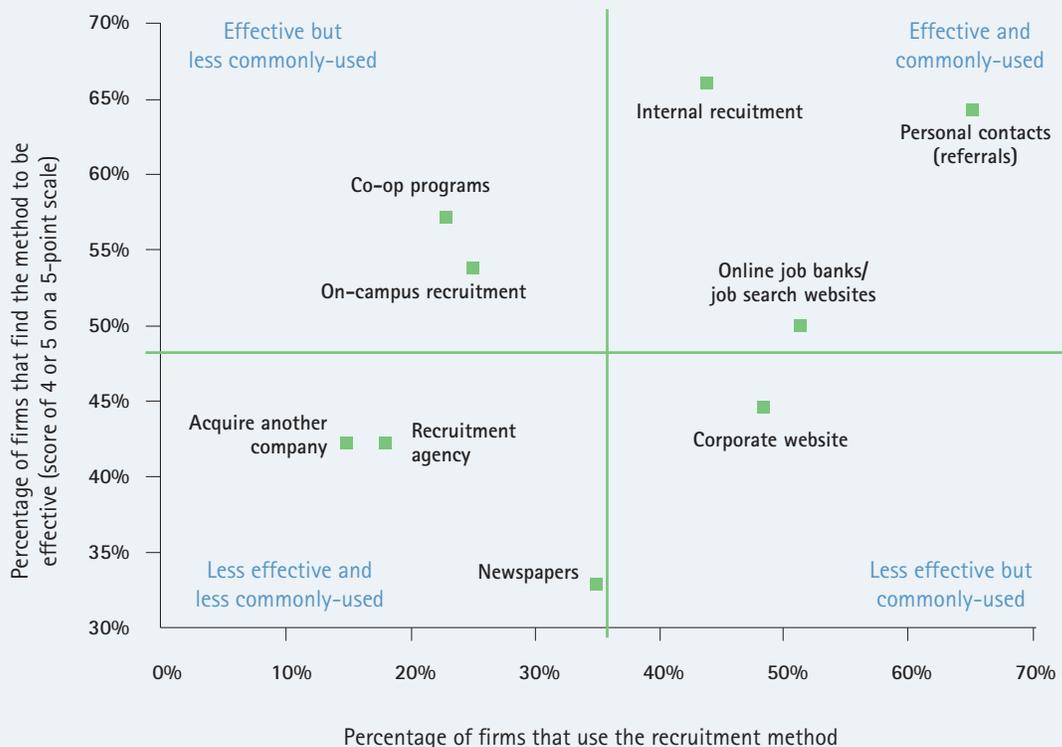
Recruiting Methods	Percent of Employers Using the Recruitment Method	Percentage of Employers Who Find the Method to be Effective*
Internal Recruitment	44%	66%
Personal contacts (referrals)	65%	64%
Co-op programs	23%	57%
On-campus recruitment	25%	54%
Online job banks / Job search Websites	51%	50%
Corporate website	48%	45%
Recruitment agency	17%	42%
Acquire another company	15%	42%
Newspapers	35%	33%

\* Reflects the percentage of employers who used the method and rated it a 4 or 5 on a 5-point scale of effectiveness. n=507

Figure 5 contains an analysis of the findings. Internal recruitment, referrals, and job-search websites fell into the upper right quadrant (indicating commonly-used methods that employers viewed as effective for recruiting environmental employees). In the upper left quadrant, co-op programs and on-campus recruitment were identified as effective methods that are less commonly used. Both of these methods are seen as more effective than online job banks, but twice as many employer use job banks as use co-op programs or on-campus recruiting. Newspapers and recruitment agencies were not as widely used and are generally viewed as less effective methods for recruiting environmental workers. A firm's corporate website (falling in the bottom right quadrant) is commonly used (perhaps for compliance reasons), but relatively few environmental employers view it as effective.

The effectiveness of relationship-based recruiting is leading many employers to rely on formal and informal social networks for their recruiting. Recent research by Taleo, a leading talent management solutions organization, found that 77% of job seekers and recruiters are turning to social networking technology for recruiting.<sup>4</sup> The research also found that school and corporate alumni networks can offer some of the most effective connections for recruiting candidates. Social networking sites such as Linked-In are also becoming an important (and free) source for finding recommendations for new hires. Development of these and other relational channels for recruiting will give environmental employers an advantage in finding qualified workers.

**Figure 5**  
Most effective recruitment methods



Source: Survey of Environmental Employment 2010, n=507

<sup>4</sup> See Taleo Business Edition Summary Report (2009)

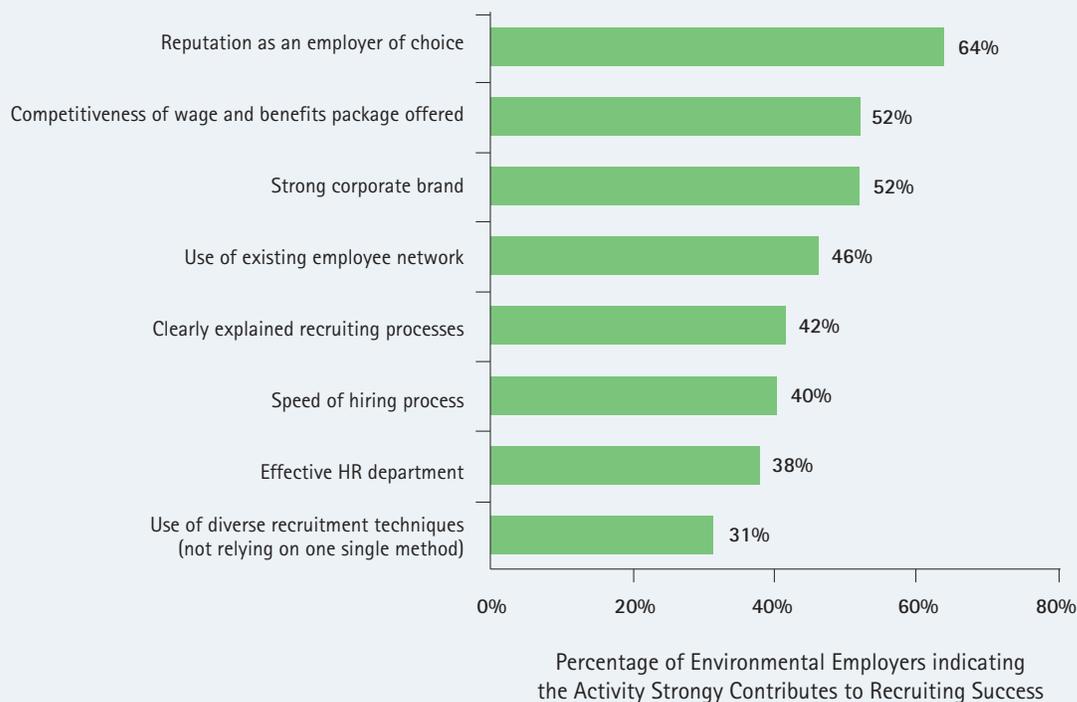
## 6.4 REASONS FOR EFFECTIVE RECRUITING

While competitive wages and benefits are a necessary prerequisite to effective recruiting, employer branding that establishes a firm's reputation as an employer of choice may be a critical strategy for employers competing for talented environmental workers. Survey results indicated that reputation and compensation are the top factors influencing recruiting success. Sixty-four percent of environmental employers indicated that their firm's reputation as an employer of choice strongly contributed to their ability to recruit qualified workers, and 52% felt that their corporate brand played a key role. About half (46%) of environmental employers viewed the use of existing employee networks as a key to successful recruiting. Interestingly, less than a third (31%) of environmental employers felt that use of multiple recruiting methods strongly influenced their recruiting success.

As the economy regains strength and an increasing number of environmental firms resume higher recruiting levels,

environmental employers that have effectively branded their organization will have an advantage in attracting the best workers. A recent study by Bentley College Professor, Pierre Berthon, on employer branding for recruiting showed that workers prefer to work for firms that offer recognition and/or appreciation from management and also offer a springboard for future employment. In addition, Berthon's research identified that workers preferred employers with a fun working environment where they enjoyed a good relationship with superiors and colleagues.<sup>5</sup> Workers preferred to work for employers that helped them to feel good about themselves and gain more self-confidence. Environmental employers who are able to identify the key strengths of their organization which would appeal to workers and then translate those strengths into a well-articulated employer brand can position their firm as an employer of choice in the minds of prospective employees. These environmental employers will be able to recruit from a larger pool of qualified candidates who show strong interest in working for the firm.

**Figure 6**  
Successful recruitment strategies



<sup>5</sup> Captivating Company: Dimension of Attractiveness in Employer Branding (Berthon, Ewing and Han, 2005).



## 7. HIRING DURING THE ECONOMIC DOWNTURN

### 7.1 SUMMARY

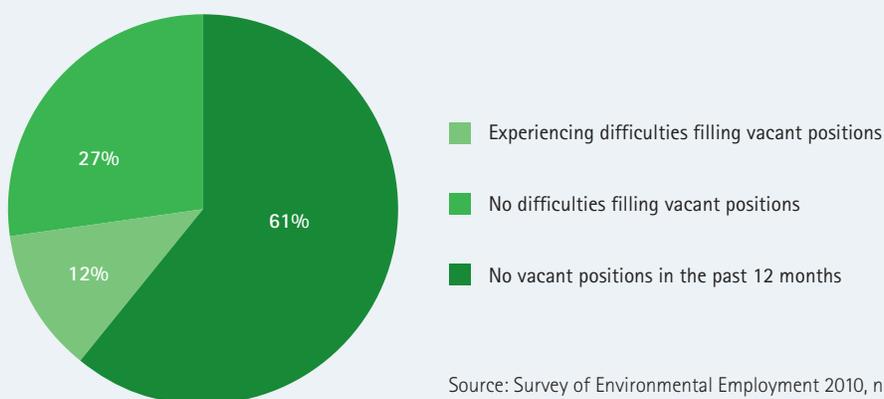
Even during the economic downturn a large number (nearly 40%) of environmental employers have hired or attempted to hire environmental employees. The open positions at firms were roughly evenly split between positions left vacant by a worker who left the firm and newly created positions. There was a portion of employers in every industry that hired or tried to hire environmental workers. About one third of employers who were hiring experienced difficulties finding the workers they need. Lack of workers with appropriate skills was the most commonly-cited reason for their difficulties. Employers in professional services and waste management/ remediation were more likely to experience difficulties finding the environmental workers they need. Hiring patterns were similar across provinces, with employers in Alberta being most active in recruiting workers.

### 7.2 HIRING AND HIRING DIFFICULTIES

The economic downturn in 2007-2009 affected employer hiring practices across North America as employers cut costs and personnel. In the past 12 months, (March 2009 to March 2010) Canadian employers added 147,500 new jobs.<sup>6</sup> This reflects all employers, including environmental employers. The new jobs added equate to a slight 0.9% increase in employment over the last year. During the same time period, 61% of environmental employers did not have any vacant positions, 27% had vacant positions with no trouble filling the position and 12% had vacant positions and had difficulties filling the positions. Combined, 39% of environmental employers attempted to fill at least one vacant position for an environmental employee.

The most commonly-cited hiring difficulty across all demographics is difficulties in finding workers with the appropriate skills. Finding workers with specialized experience is also a limiting factor, especially for employers hiring workers who are transitioning out of different industry and into the environmental sector. Firms hiring international workers and recent immigrants also experienced difficulties related to evaluating the competency of these workers in the skills that are required.

**Figure 7**  
Vacant positions at environmental employers in past year



Source: Survey of Environmental Employment 2010, n=507

<sup>6</sup> See Appendix A for a summary of employment changes from March 2009 to March 2010.

### 7.3 TYPES OF VACANCIES

Slightly more than half (54%) of vacant positions were created to replace someone who left his or her position and forty-five percent (45%) of vacant positions were for a newly created position. A small percentage of other vacant positions were open due to various other reasons, mainly to allow for student training. Eighty three percent (83%) of environmental employers were able to fill all of their vacant positions. The most commonly stated reason for inability to fill vacant positions was lack of qualified candidates--in particular a lack of candidates with the appropriate education and experience was cited by about a quarter of firms experiencing hiring difficulties.

### 7.4 HIRING BY INDUSTRY

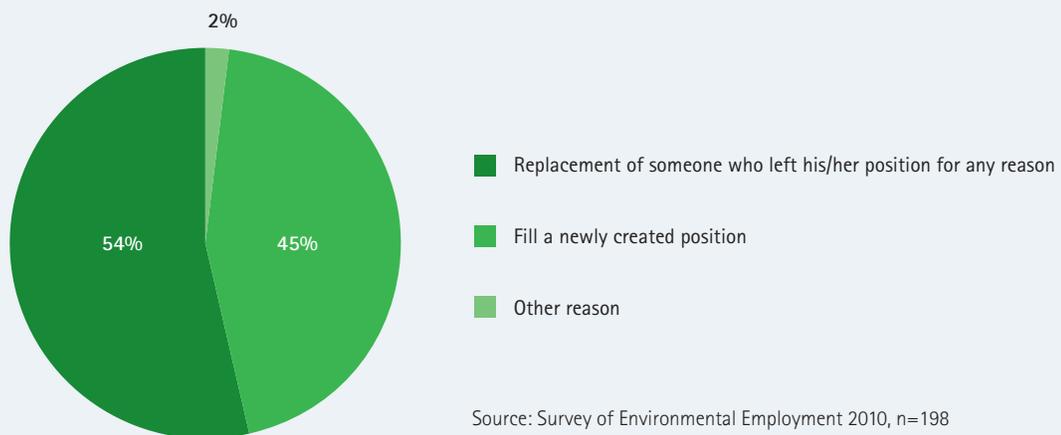
Hiring of environmental employees has been relatively strong within all industries – approximately one in four (39%) of environmental employers were hiring.

Table 14 shows that employers in administration, waste management and remediation reported the greatest difficulties in recruiting workers, with about one in five firms (22%) indicating that they experienced difficulties. A similar portion (20%) of environmental employers in professional services, finance, and information industries also experienced hiring difficulties. Thirteen percent of government employers experienced recruiting difficulties.

Employers in manufacturing, construction, health, education, and other services were less likely to have vacant positions for environmental employees.

Figure 9 show that the percentage of employers who were hiring is similar in each province, with the greatest percentage in Alberta (43% of employers attempted to fill at least one vacant position), and lowest in British Columbia (30% of employers attempted to fill at least one vacant position).

**Figure 8**  
Reasons for employee vacancies

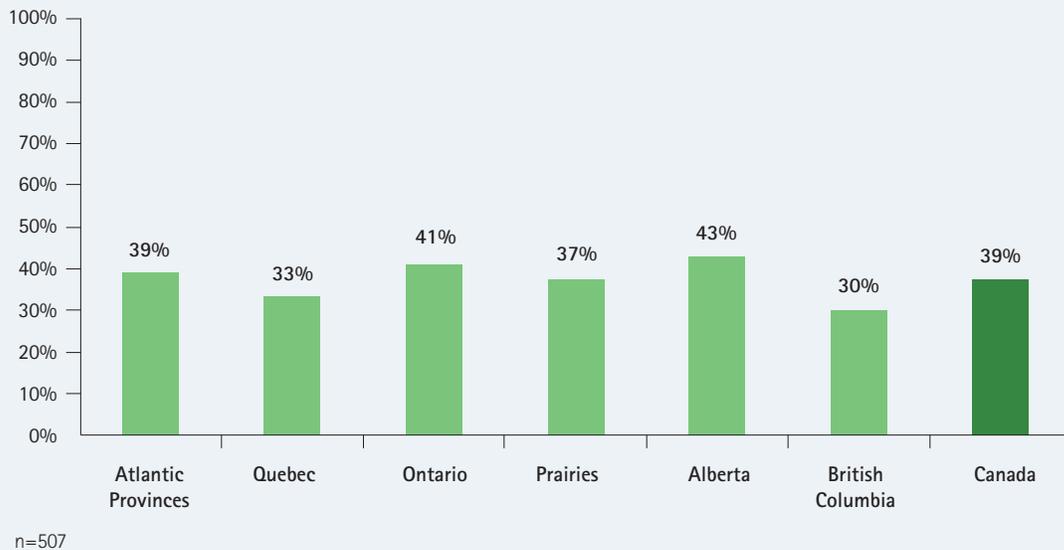


Source: Survey of Environmental Employment 2010, n=198

**Table 14**  
Percentage of firms who are hiring environmental workers

Industry	Firms That Are Hiring			Firms with No Vacant Positions in the Past 12 Months	n
	Percent Environmental Employers that are Hiring	Percent of Environmental Employers Experiencing Hiring Difficulties	Percent of Environmental Employers Hiring with No Difficulties Filling Vacant Positions		
Agriculture, Forestry, Fishing and Hunting	30%	6%	24%	71%	51
Mining, Quarrying, and Oil and Gas Extraction	42%	10%	32%	58%	31
Construction	24%	12%	12%	76%	42
Manufacturing	20%	4%	16%	80%	49
Wholesale Trade/Retail Trade, Utilities, Transportation and Warehousing	32%	2%	30%	68%	57
Professional, Scientific and Technical Services, Information, Finance and Insurance, Real Estate and Management of Companies	41%	20%	21%	59%	71
Administration and Support, Waste Management and Remediation	56%	22%	34%	44%	116
Education, Health and Social Assistance, and Other Services (except Public Administration)	33%	9%	24%	68%	34
Arts, Recreation, Accommodation and Food Services	52%	8%	44%	48%	25
Public Administration	45%	13%	32%	55%	31
<b>Total</b>	<b>39%</b>	<b>12%</b>	<b>27%</b>	<b>61%</b>	<b>507</b>

**Figure 9**  
Organizations hiring environmental employees in past year







## 8. ENVIRONMENTAL EMPLOYEE ENGAGEMENT & TURNOVER

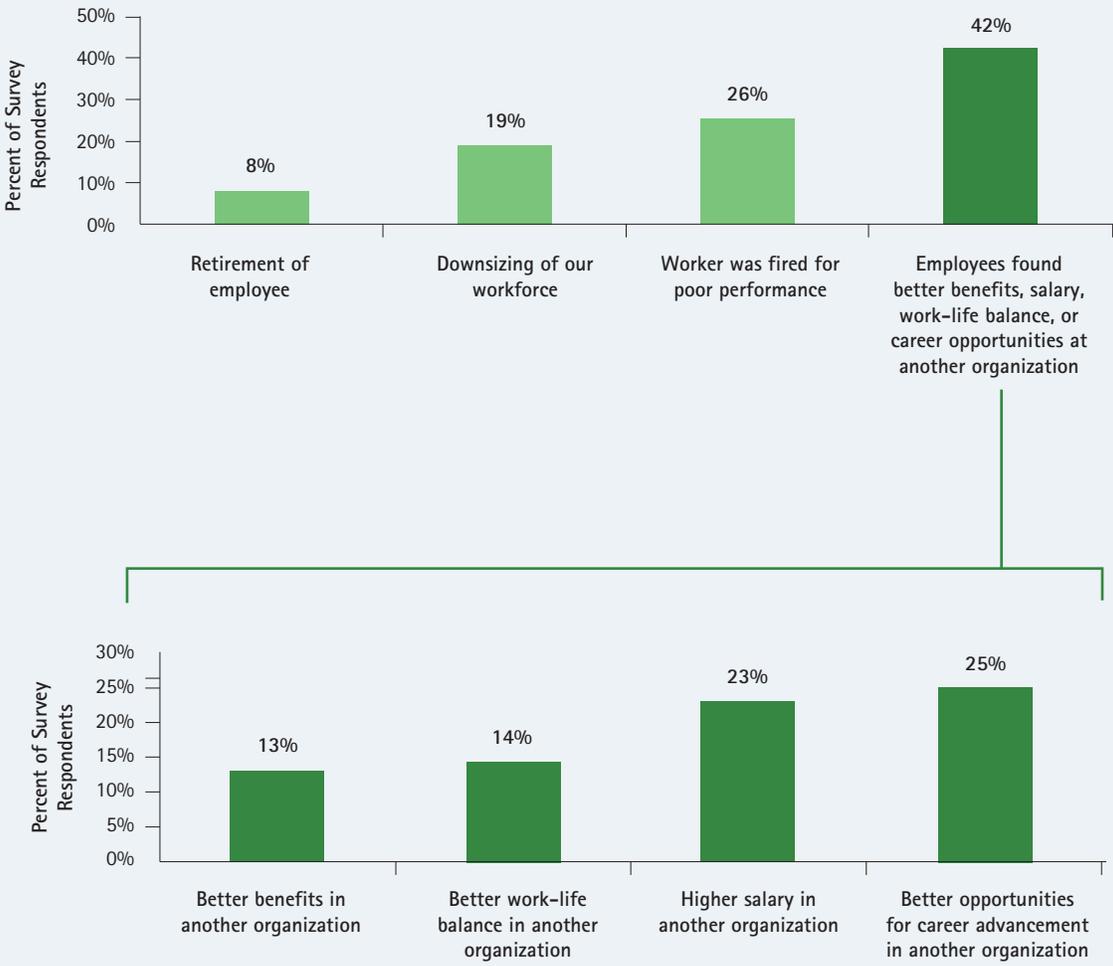
### 8.1 SUMMARY

In the environmental sector, twice as many employers have lost workers due to problems with employee retention than have lost workers due to downsizing during the economic downturn. During the economic downturn, environmental employers experienced difficulties retaining their best employees, who were offered better benefits, higher income, better work-life balance, or better career opportunities at another organization. With retention concerns persisting, analysis of the survey results show that there are some actions that employers can take to improve the level of engagement of workers and keep their most talented and qualified employees. These include placing a greater importance on the professional development of workers, which is perhaps the most effective high-leverage strategy to improve retention of qualified workers. Other successful strategies include challenging workers with greater levels of responsibility and variety in their tasks, developing better defined corporate goals and promoting stronger team connections through team-building activities. Employers who engage in these strategies benefit from employees who are more committed and enthusiastic about their work and act in a way that furthers their organization's interests.

### 8.2 EMPLOYEE TURNOVER

Many of the driving forces behind turnover are unavoidable, such as a need to relocate for family or ending of a temporary position, but many employers also face retention problems that can be addressed through HR policies. During the past 12 months (March 2009-March 2010), while most Canadian employers struggled through the 2007-2009 economic downturn, 19% of environmental employers lost workers due to reduction in workforce (layoffs). More than twice as many employers (42%) lost environmental workers for reasons that can be addressed through HR policies, such as workers being offered better benefits, higher income, better work-life balance, or better career opportunities at another organization. The largest problem for employers was losing workers due to the offer of better career advancement opportunities at other organizations; which made up 25% of addressable employee turnovers.

**Figure 10**  
Main reasons for employee turnover



Note: Regarding the bottom charts, respondents sometimes indicated that employee attrition was due to more than one benefit offered by another organization (for instance, some respondents indicated that they lost employees due to both a higher salary and better benefits at another organization). As a result, totals do not add to the figure stated in the upper chart (42%).

## 8.3 EMPLOYEE ENGAGEMENT

Engagement is defined as an employee's willingness and ability to contribute to the company's success. An employee who is highly engaged is one who is fully involved in, and enthusiastic about, his or her work and will act in a way that furthers their organization's interest.

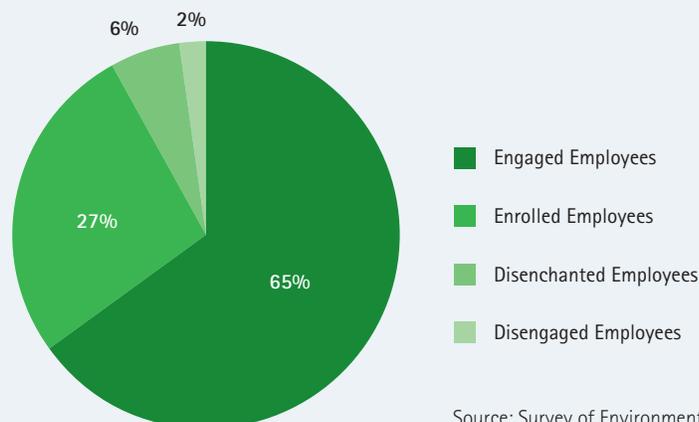
Firms with employees that are highly engaged in their work face fewer difficulties related to retention of workers. Recent research by Human Resource Research firm, Blessing White, found that there is a high correlation between employee engagement and retention, with 85% of engaged employees indicating that they plan to stay with their employer through 2008.<sup>7</sup> In addition, the research found that engaged workers were more likely to remain with their employers because of what they are able to contribute to the firm, whereas disengaged workers continue in their current positions primarily for what they are able to get (e.g., favorable job conditions, growth opportunities, job security, etc).

In the survey, environmental employers were asked to divide their environmental employee workforce into the following four categories of employee engagement<sup>8</sup>:

- (1) **Engaged Employees:** Those who fully understand their roles and responsibilities, and give full effort to their work. They are highly motivated, bringing a high level of passion or energy to their work.
- (2) **Enrolled Employees:** These workers fully understand their roles and responsibilities and give some effort to their work. However, they are somewhat less motivated and have lower levels of energy or passion about their work.
- (3) **Disenchanted Employees:** These workers have a lower level of understanding of their responsibilities and roles and have a low level of emotional connection with their work and low level of motivation.
- (4) **Disengaged Employees:** These workers are rationally and emotionally disconnected from their work. They are not motivated and are generally poorly performing workers.

The survey responses indicated that while two-thirds of environmental employees are engaged workers, about a third of all environmental workers operate at a lower level of employee engagement.

**Figure 11**  
Environmental workforce by level of employee engagement



Source: Survey of Environmental Employment 2010, n=507

<sup>7</sup> See Employee Engagement Report 2008; Blessing White (2008)

<sup>8</sup> Employee Engagement definitions by Towers Watson, New York

Several factors were viewed as contributing to the promotion of a high level of employee engagement. Strong leadership from senior management, challenging employees with greater responsibility and variety of tasks, professional development opportunities and rewards for performance were the top ranked factors contributing to an engaged workforce. Table 15 contains a ranked list of strategies that employers viewed as effective for maintaining an engaged workforce. Notably, most employers did not view ownership options or retention training for managers as factors contributing to employee engagement.



Firms with employees that are highly engaged in their work face fewer difficulties related to retention of workers.



**Table 15A**  
Organization strengths in promoting employee engagement

Engagement Strategy	Percent of Employers Who Think The Strategy Contributes to High Employee Engagement
Strong leadership from senior management	92%
Challenge employees with greater responsibility or increasing variety of their tasks	83%
Professional development opportunities	80%
Corporate goals	80%
Rewards for performance	78%
Management feedback tools (such as manager report cards from those they manage)	74%
Other opportunity for career advancement	71%
Strong HR department policies	71%
Better benefits (e.g. retirement benefits, vacation or paid leave benefits, educational reimbursement, flexible work schedules, or other fringe benefits (e.g., relocation assistance, bonuses, day care for children, gyms)	63%
Team-building activities and exercises or team cohesion activities outside the work environment	61%
Unexpected rewards	59%
Retention training for managers	43%
Ownership options such as stock options	27%

\* Percent of employers who think the strategy contributes to high employee engagement, n=507



Professional development opportunities, well-defined corporate goals, rewards for performance, team-building and challenging workers with greater responsibility are all recommended strategies for employers seeking to increase engagement and reduce their cost of recruitment.



A comparison of firms with a high percentage of engaged employees versus those with low levels of engagement sheds light on key differences that affect employee engagement and retention. Both groups hold similar views on some strategies. For instance, both groups believe that strong leadership from senior management and competitive benefits contribute to employee engagement. Firms with more engaged employees were more likely to place a high importance on the professional development of their workers. They were also more likely to place importance on giving workers higher levels of responsibility and variety in their tasks. They were more likely to view well-defined corporate goals, rewards for performance,

and team-building activities as key strategies that lead to better retention. By comparison, employers with lower levels of employee engagement were more likely to view unexpected rewards, management feedback tools, and opportunities for career advancement as more effective methods for employee retention.

Table 15b compares engagement strategies between two key groups of employers: (1) employers with a high level of engagement (75% of workers are engaged), referred to as "High-Engagement Employers" and (2) employers with a low level of engagement (less than 25% of workers are engaged), referred to as "Low-Engagement Employers".

**Table 15B**  
Organization strengths in promoting employee engagement

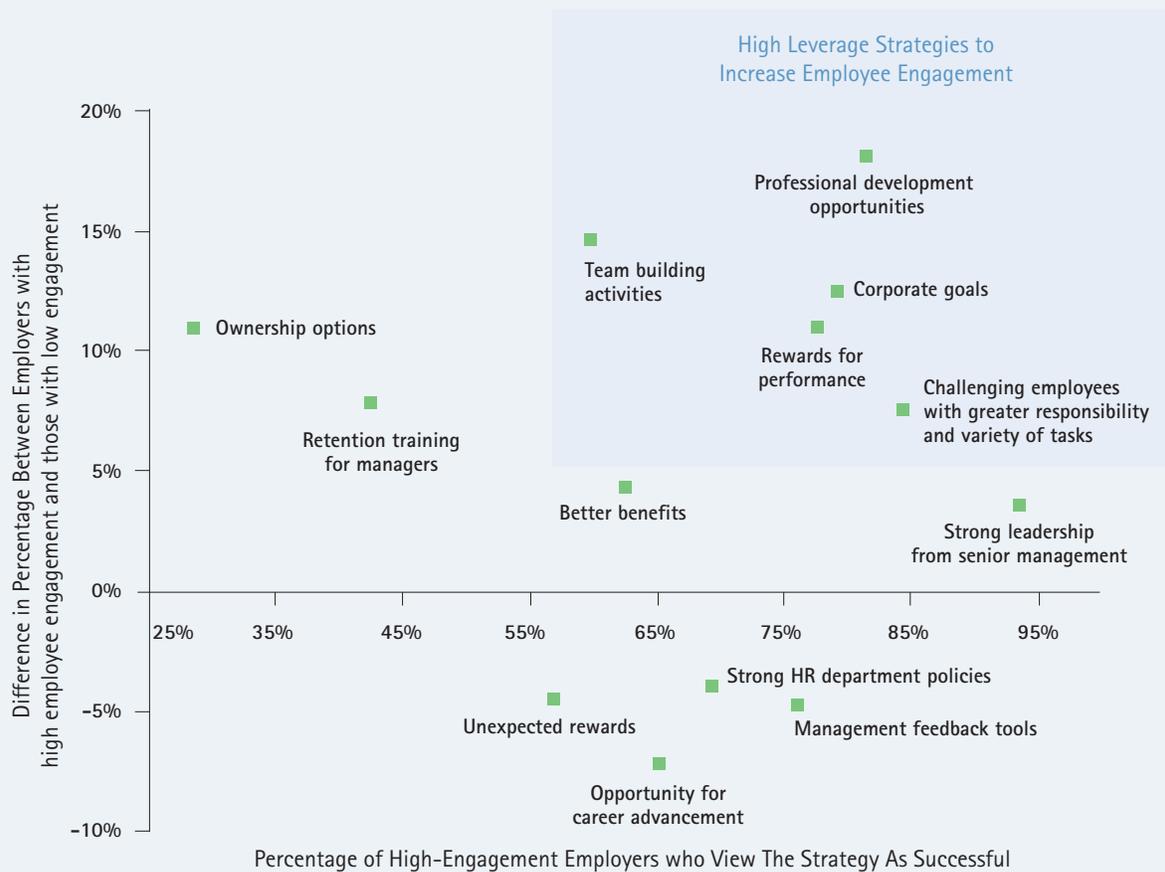
Engagement Strategy	High-Engagement Employers*	Low-Engagement Employers*	Difference between High-Engagement and Low-Engagement Employers
Professional development opportunities	81%	63%	18%
Team-building activities	60%	45%	15%
Corporate goals	79%	67%	13%
Rewards for performance	78%	67%	11%
Ownership options	29%	19%	9%
Retention training for managers	42%	34%	8%
Challenging employees with greater responsibility/variety of tasks	84%	77%	8%
Better benefits	62%	58%	4%
Strong leadership from senior management	94%	90%	4%
Strong HR department policies	69%	73%	-4%
Unexpected rewards	57%	61%	-5%
Management feedback tools	76%	81%	-5%
Opportunity for career advancement	65%	72%	-7%

n=507

Figure 12 further analyzes the differences between the two types of employers. The x-axis has employers with highly engaged employees (column 1 of Table 15B). The measurement reflects the views of high-engagement employers (who have at least 75% of their workforce fully engaged). Along the y-axis, we have plotted the value of the difference between high-engagement and low-engagement employers (column 4 in table above). This measurement places strategies that are more common to high-engagement employers in the upper quadrants of the graph. Strategies that fall in the upper right quadrant of the graph are those that are viewed as important for employee engagement, but more-so for employers who have a highly engaged workforce.

The differences shown in Figure 12 shed light on the strategies that environmental employers can use to increase employee engagement and reduce retention problems. Strategies circled in the upper right are high-leverage ways to increase commitment and enthusiasm among workers. Professional development opportunities, well-defined corporate goals, rewards for performance, team-building and challenging workers with greater responsibility are all recommended strategies for employers seeking to increase engagement and reduce their costs of recruitment. Placing a greater importance in these strategies can help environmental employers increase their ability to retain their best workers.

**Figure 12**  
Strategies to increase employee engagement



Source: Survey of Environmental Employment 2010, n=507



## 9. FUTURE DEMAND FOR ENVIRONMENTAL WORKERS AND SKILLS

### 9.1 SUMMARY

A large number of hiring managers are uncertain about their future growth prospects, with about a fifth of environmental employers optimistic that they will increase the number of environmental workers on their payrolls over the next two years. Smaller and mid-sized firms were more optimistic than large employers, but this could change over the next year if the economy continues to improve. Regardless of whether worker headcounts increase, trends since the 2007 ECO Canada Survey of Environmental Employment demonstrate that environmental skills are quickly becoming more important across the workforce and within every industry. Particularly strong growth in demand for environmental skills was apparent in the green construction, manufacturing and agricultural sectors. All skilled environmental occupational categories are in demand with some percentage of employers planning to hire in each category. More employers have plans to hire workers in site assessment and reclamation, waste management, environmental safety and health, and water quality than in other categories. Employers hoped to hire within several environmental-related subspecialties of engineering, including the top mentioned "hot job" from the survey environmental engineers, but short supply of workers is a common problem.

Retirement of environmental workers will create over 100,000 vacancies over the next decade as 14% of the environmental workforce reaches retirement age. Future retirements will create demand for environmental employees in all occupations and in all industries, in particular for manufacturing, healthcare, education, utilities, and other industries.

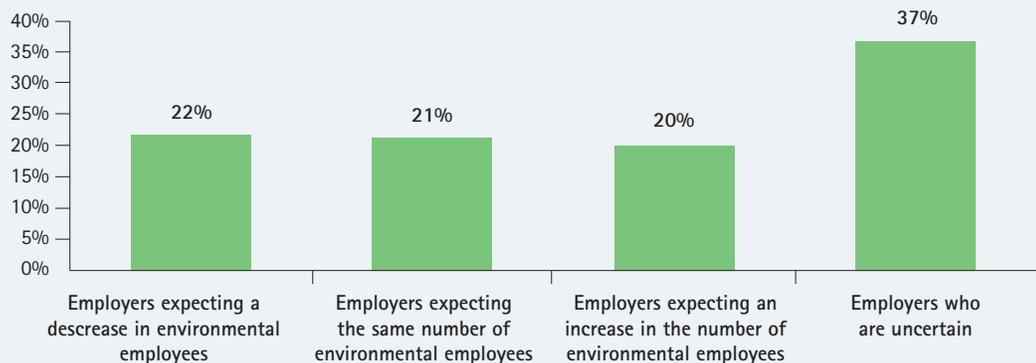
### 9.2 GROWTH IN TOTAL WORKFORCE

Environmental employers had mixed views of their future growth expectations. The largest percentage of environmental employers (37%) were uncertain about how many environmental employees they expect to employ two years in the future. The rest were evenly split between:

- 21% expect the number of environmental workers they employ to be the same in two years.
- 22% expected the number of environmental workers they employ to decrease in the future and
- 20% expect the number of environmental employees to increase.

The lower percentage of employers that expect to increase their workforce likely reflects low business confidence levels as employers emerge from the economic downturn.

**Figure 13**  
Forecast of environmental employees in 2010



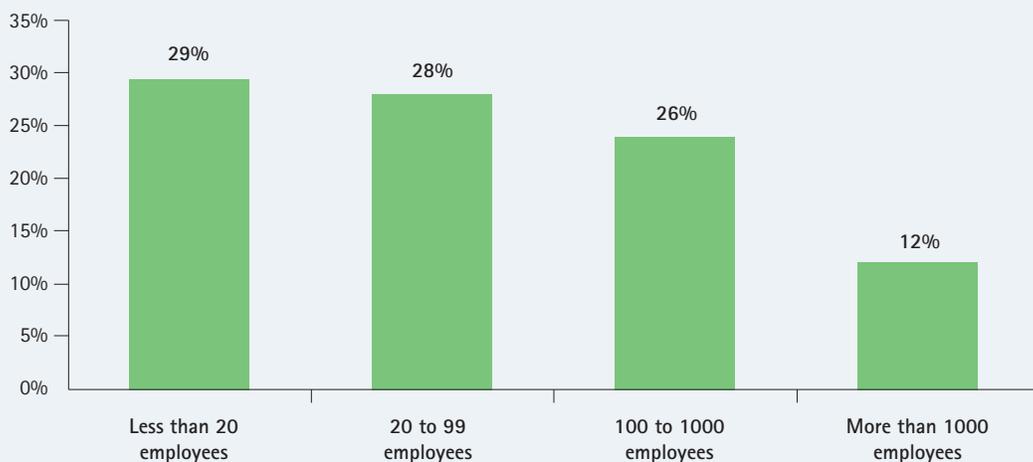
Source: Survey of Environmental Employment 2010, n=507

Analysis of employers by firm size suggests that smaller organizations had more positive views of their future growth potential. Environmental employers with fewer than 20 employees were more than twice as likely to expect to increase the size of their environmental workforce as environmental employers with over 1,000 employees. Figure 14 highlights that about one third (29%) of environmental employers with less than 20 employees expect to increase their number of environmental employees in the next 2 years. The view of many small business economists is that small businesses are a shock absorber for the economy—these smaller firms are better able to react quickly to changing economic situations without overcompensation (they don't over-hire or lay off workers too aggressively). This causes small employers to fluctuate less in their workforce size as compared to large employers.<sup>9</sup> At the time of the survey, only 12% of large environmental employers expect their workforce to grow in the next two years, and nearly half (42%) expressed uncertainty about their future. When business confidence returns, these larger employers may aggressively begin hiring again, placing pressure on smaller employers to retain their workers.

### 9.3 GROWTH IN DEMAND FOR ENVIRONMENTAL SKILLS

While demand for more environmental workers is somewhat uncertain at this point, comparisons with *ECO Canada's 2007 Survey of Environmental Employment* highlight a strong growth trend in the demand for environmental skills across the workforce. In the 2007 survey, ECO Canada asked employers how many of their workers they consider to be environmental employees. A different method was used in the 2010 survey to capture the demand for environmental skills, which are becoming increasingly common. In 2007, environmental employees represented 3.2% of total Canadian Employment. In 2010, 4% of employees in Canada spend 50% or more of their time on environmental activities and 12.2% of workers spend at least some time on environmental activities. While the methods used in the 2007 and 2010 surveys are not perfectly comparable, comparisons between the findings suggest that there is growth in demand for environmental skills in all sectors.

**Figure 14**  
Increase in workforce expectations by organization size



<sup>9</sup> Small Business Growth (Brian Headd, Bruce Kirchoff, 2007)

Strong growth in demand for environmental skills can be observed in the construction sector, the agricultural/forestry/fishing/hunting sector, and the manufacturing sector. These findings were particularly interesting as the total number of environmental workers employed in the manufacturing and agricultural sectors have declined since 2007, while the demand for environmental skills has increased. These opposing trends suggest that employers are transitioning to a highly-skilled workforce that plays a value-added role in increasing the productivity of these two industry groups. Environmental skills are a critical component to the growing skill-set requirements

in these industry groups. The growth in environmental skills within the construction sector in part reflects the growing demand for green building practices across Canada. The Canadian Green Building Council reports that the number of CaGBC LEED® Accredited Professionals has grown from 33 professionals in 2001 to 9,553 professionals in 2009, effectively doubling every year during the period. As the construction sector evolves, construction employers are rapidly integrating environmental skills with the workforce. Nearly 18% of the construction workforce uses environmental skills in their work.

**Table 16**  
Environmental employment as a percentage of the workforce

Industry	Environmental Employees as a Percentage of the Workforce 2007*	Environmental Employment as a Percentage of the Workforce 2010	
		Spending At Least 50% of Their Time on Environmental Activities	Spending Any Amount of Time on Environmental Activities
Agriculture, Forestry, Fishing and Hunting	7%	11%	16%
Mining, Quarrying, and Oil and Gas Extraction	5%	5%	9%
Construction	4%	7%	18%
Manufacturing	2%	4%	14%
Wholesale Trade/Retail Trade	2%	4%	17%
Utilities, Transportation and Warehousing	3%	2%	8%
Information, Finance and Insurance, Real Estate and Management of Companies	1%	1%	2%
Professional, Scientific and Technical Services	6%	5%	10%
Administration and Support, Waste Management and Remediation	12%	6%	15%
Education, Health and Social Assistance	2%	4%	8%
Arts, Recreation, Accommodation and Food Services	3%	4%	20%
Other Services (except Public Administration)	4%	3%	14%
Public Administration	6%	5%	11%
<b>Total</b>	<b>3%</b>	<b>4%</b>	<b>12%</b>

Source: 2007 ECO Canada Profile of Canadian Environmental employment and 2010 Profile of Canadian Environmental Employment n =2204

## 9.4 GROWTH OCCUPATIONAL AREAS IN THE ENVIRONMENTAL SECTOR

A minority (20%) of employers planned to increase the size of their environmental workforce, but nearly half (44%) of environmental employers planned to hire workers in the next two years, either to augment their workforce or to replace workers who leave. The most common NOS occupation category employers plan to hire for was site assessment and reclamation. Employers also had strong hiring expectations for workers in waste management, environmental health and safety, and water quality.

A relatively low percentage of employers planned to hire workers in carbon and climate change mitigation and in alternative/renewable energy and eco-efficiency categories. Both of these areas are new emerging growth areas identified in the *ECO Canada Environmental Trends Study*, and we expected to see stronger hiring demand in these categories. Relatively low hiring plans in the carbon and climate change mitigation category may reflect employer uncertainty of future regulatory schemes used to reduce

carbon emissions. While some provinces have implemented carbon emission reduction schemes, a national model is still under development. Until a national regulatory scheme is clarified and legislation is put in place, employers may be hesitant to hire workers or develop skill-sets within the category.

The survey may underestimate future growth potential for these two categories because these sectors may not developed within established firms, but rather through new business startups. For instance, many firms selling carbon offset credits are new businesses that have been formed within the past few years as legislation has been implemented, creating a need for the service. It is possible that established environmental employers that participated in our survey will not be the firms that hire the majority of these workers.

**Table 17**  
Hiring plans by occupational areas\*

National Occupational Standard (NOS) Category	Percentage of employers planning to hire in next year
<b>Planning to hire in at least one NOS Category</b>	<b>44%</b>
Site assessment and reclamation	24%
Waste management	22%
Environmental safety and health	22%
Water quality	19%
Research & development	13%
Eco-preservation/ wildlife and fisheries management	11%
Policy and legislation	11%
Air quality	11%
Alternative/renewable energy, eco-efficiency	10%
Environmental education & training	10%
Natural resource management	10%
Carbon and climate change mitigation	9%
Environmental communication and public awareness	9%

n=507

\* In addition to the ECO Canada NOS categories, the other categories included are 'Carbon and Climate Change mitigation' and Alternative / renewable energy and Eco-efficiency

## 9.5 HOT JOBS

Environmental engineers, technicians, and project managers are the environmental occupations that are in highest demand across all industry sectors. Employers in each industry identified a variety of occupations that are in high demand—either because they are in short supply (difficult to recruit) or because employers plan to hire a large number of workers in the occupation.

Environmental engineers and specific engineering specialties (such as civil engineers and mechanical engineers) were the most commonly mentioned occupations that employers are planning to hire. The gap between employer demand and the supply of environmental engineers may be particularly large—employers participating in the survey identified indicated they plan to hire a lot of engineers, but also experience difficulty finding these workers because they are in short supply.

Environmental employers were also having difficulty finding engineering technologists/technicians, operations managers, project managers, machine operators, hydrologists, and workers in other specialized occupations that are in demand. Operations managers, project managers, water and wastewater technicians, waste management workers, engineering technologists/technicians, and health and safety technicians were the most commonly mentioned occupations where employers plan to hire a large number of workers in the future.

**Table 18**  
Hiring difficulties in high demand occupations

Occupation	Number of Mentions by Employers
Environmental engineer or engineering specialty (civil, mechanical, etc.)	41
Engineering technologist or technician	16
Operations manager/ project manager	15
Machine operator	11
Waste water technician	10
Sales representative	9
Researcher/ research & development	8
Hydrologist	8
Health and safety technician	8
Drivers	8
Waste management workers	6
Mechanic or electric technician	6
Agronomist	6
Abatement/remediation/site assessment/hazardous waste handler	6
Scientist	5
Geologist	5
Laboratory technicians	4
Environmental consultant	4
Policy & legislation analysts	3
Driller	3
Renewable energy technicians	2
Water quality	2
Land use planner/ civil designers	2
Finance & accounting	2

## 9.6 FUTURE REPLACEMENT DEMAND

Retirements of environmental workers will also drive growth in recruitment. Currently, 14% of the environmental workforce is age 55 or older and will reach the retirement age in the next 10 years. This is similar to trends in the total employed workforce, for which 16% of workers were age 55 or older at the time of the 2006 Census. Over the next decade, this will result in demand for 100,843 environmental workers who will need to be replaced by new and experienced workers entering environmental employment fields.

Over the next decade, more men will reach retirement age than will women. Sixteen percent of female environmental employees are age 55 or older and 14% of men are age 55 or older.



Currently, 14% of the environmental workforce is age 55 or older and will reach the retirement age in the next 10 years.



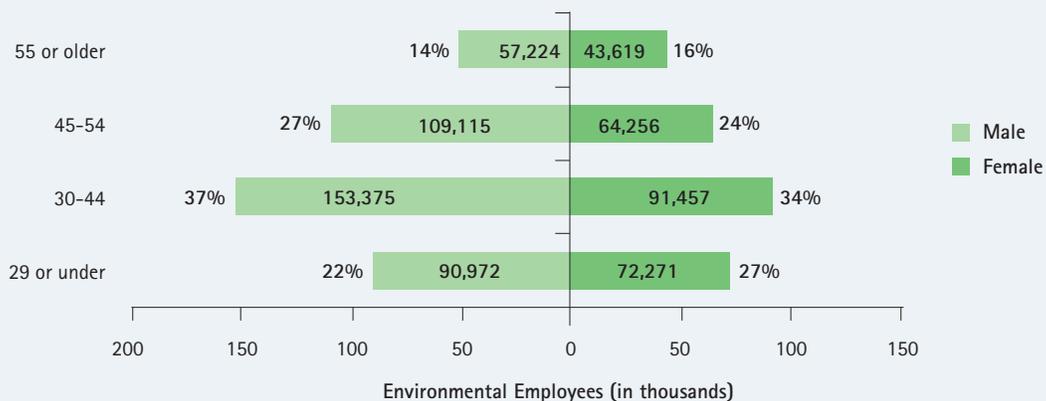
Retirements will affect demand for workers in all occupations. Since most environmental employees perform interdisciplinary work (and are typically employed in multiple occupational categories), there are only slight differences in replacement demand by occupation. Retirements will be a more significant factor for employers who have workers in:

- Research and development;
- Environmental health and safety;
- Water quality;
- Waste management;
- Environmental education; and
- Site assessment & reclamation.

Replacement demand due to retirement will be less of a problem for occupations such as:

- Carbon and climate change mitigation;
- Alternative/renewable energy; and
- Natural resource management.

**Figure 15**  
Environmental workforce by age and gender



**Table 19**  
Environmental employees age 55 and older by occupational areas

NOS Category	Total environmental employees	Environmental employees age 55 or older	Percentage age 55 and older
Research & development	48,684	7,016	14%
Environmental safety and health	271,671	38,626	14%
Water quality	114,333	15,775	14%
Waste management	188,377	25,943	14%
Environmental education & training	120,623	16,463	14%
Site assessment and reclamation	137,940	18,821	14%
Environmental communication and public awareness	131,085	17,352	13%
Air quality	66,628	8,548	13%
Policy and legislation	103,249	13,073	13%
Carbon and climate change mitigation	36,676	4,326	12%
Alternative/renewable energy, eco-efficiency	71,287	8,401	12%
Eco-preservation/ wildlife and fisheries management	41,831	4,835	12%
Natural resource management	49,582	5,199	10%
<b>Total Environmental Employees</b>	<b>682,289</b>	<b>100,844</b>	<b>15%</b>

Note: Workers are typically employed in more than one NOS category.

\* In addition to the ECO Canada NOS categories, the other categories included are 'carbon and climate change mitigation' and 'alternative / renewable energy and eco-efficiency'.

Future retirements of environmental employees will have different impacts on each industry. The greatest impact will likely be felt in the manufacturing industry where 23% of environmental employees are age 55 or older. Replacement demand for environmental workers will also be higher than average in:

- Healthcare and social assistance;
- Education;
- Other Services (except public administration);
- Wholesale & retail trade;
- Utilities; and
- Transportation and warehousing.

As older workers in the environmental sector reach retirement age, they will be replaced by a workforce that has higher levels of education. Nearly half (48%) of all environmental workers 55 or age older do not have post-secondary education. Older workers in the environmental sector are less likely to have higher levels of education. While 36% of workers in the environmental sector have a bachelors degree or higher, only 27% of environmental workers age 55 or older have attained the same level of education.

**Table 20**  
Environmental employees age 55 and older by industry

Industry	Environmental employees	Environmental employees age 55 or older	Percentage age 55 or older
Agriculture, Forestry, Fishing and Hunting	41,878	4,260	10%
Mining, Quarrying, and Oil and Gas Extraction	11,405	845	7%
Construction	89,020	6,979	8%
Manufacturing	71,934	16,527	23%
Wholesale Trade/Retail Trade, Utilities, Transportation and Warehousing	111,808	21,632	19%
Professional, Scientific and Technical Services, Information, Finance and Insurance, Real Estate and Management of Companies	72,625	7,833	11%
Administration and Support, Waste Management and Remediation	36,124	3,827	11%
Education, Health and Social Assistance, and Other Services (except Public Administration)	142,665	29,874	21%
Arts, Recreation, Accommodation and Food Services	59,252	5,299	9%
Public Administration	45,578	3,767	8%
<b>Total</b>	<b>682,289</b>	<b>100,844</b>	<b>15%</b>

**Table 21**  
Educational attainment by age

Occupational Areas*	Environmental workers age 55 or older	Percentage of workers age 55 and older	Number of environmental workers	Percentage of environmental workforce
Masters, doctorate, or higher	6,934	7%	77,908	11%
Bachelor degree or equivalent	20,671	20%	171,184	25%
College or equivalent	25,113	25%	207,865	30%
Less than post-secondary	48,126	48%	225,332	33%
<b>Total</b>	<b>100,844</b>	<b>100%</b>	<b>682,289</b>	<b>100%</b>

n=507



## APPENDIX A ADDITIONAL SUMMARY TABLES

**TABLE A1**  
National employment change March 2009 - March 2010

Labour Force Category	Employment March 2010 (thousands)	Increase in Employment March 2009 to March 2010 (thousands)	Percent Change from March 2009 to March 2010
Employees	14268.1	106.9	0.8
Self-employed	2695.1	40.6	1.5
Public sector employees	3475.5	95.7	2.8
Private sector employees	10792.6	11.2	0.1
All industries	16963.2	147.5	0.9
Goods-producing sector	3751.1	-10.1	-0.3
Agriculture	306.3	-14.6	-4.5
Natural resources	335.2	10.8	3.3
Utilities	146	-3.3	-2.2
Construction	1195.9	52.5	4.6
Manufacturing	1767.7	-55.6	-3
Services-producing sector	13212.1	157.6	1.2
Trade	2657.6	25.8	1
Transportation and warehousing	782.4	-58.9	-7
Finance, insurance, real estate and leasing	1098.1	20	1.9
Professional, scientific and technical services	1258.7	71.1	6
Business, building and other support services	642.6	-28.8	-4.3
Educational services	1236	60.6	5.2
Health care and social assistance	2010.9	64.5	3.3
Information, culture and recreation	765.5	15.8	2.1
Accommodation and food services	1092.4	27.4	2.6
Other services	731	-53.9	-6.9
Public administration	936.9	14	1.5

Source: Statistics Canada Labour Force Survey Release April 9, 2010

**TABLE A2**  
Female environmental employees by industry

Industry	Number of Female Environmental Employees	Percentage of Environmental Employees Who Are Female	Percentage of All Employees Who Are Female
Agriculture, Forestry, Fishing and Hunting	10,945	26%	30%
Mining, Quarrying, and Oil and Gas Extraction	2,437	21%	18%
Construction	9,122	10%	12%
Manufacturing	24,433	34%	29%
Wholesale Trade/Retail Trade	28,385	30%	49%
Utilities, Transportation and Warehousing	3,542	19%	46%
Information, Finance and Insurance, Real Estate and Mgt. of Companies	2,438	33%	54%
Professional, Scientific and Technical Services	22,310	34%	45%
Administration and Support, Waste Management and Remediation	13,519	37%	45%
Education, Health and Social Assistance	96,266	79%	76%
Arts, Recreation, Accommodation and Food Services	33,823	57%	58%
Other Services (except Public Administration)	8,714	42%	53%
Public Administration	15,669	34%	47%
<b>Total</b>	<b>271,603</b>	<b>40%</b>	<b>47%</b>

# APPENDIX B METHODOLOGY

## DEFINITION OF ENVIRONMENTAL EMPLOYMENT

Environmental employment is defined as individuals who spend 50% or more of their work time on activities associated with environmental protection, resource management, or environmental sustainability. Specifically, this includes the following activities:

- **Environmental Protection**
  - Protection of air;
  - Carbon and climate change mitigation;
  - Water and land quality ;
  - Waste management;
  - Restoration and reclamation;
  - Human and environmental health and safety; and
  - Environmental protection management.
- **Resource Management**
  - Fishery;
  - Wildlife;
  - Forestry;
  - Sustainable agriculture;
  - Energy efficiency;
  - Alternative or renewable energy;
  - Parks and natural reserves; and
  - Natural resource management.
- **Environmental Sustainability**
  - Education;
  - Research and development;
  - Policy and legislation;
  - Communications and public awareness; and
  - Sustainable development.
- **Other environment related activities.**

## SURVEY DESIGN

The survey was designed by ECO Canada and RDA Global to meet the study objectives. The survey included a short questionnaire for all organizations and a long questionnaire for organizations that identified themselves as having environmental employees. While 1,697 organizations responded to short questionnaire (they did not have environmental employees), 507 organizations

responded to the long questionnaire. On the basis of the definition above, organizations were asked to complete the long questionnaire if they employed one or more full-time or part-time employees whose work is related to the environment. Organizations not employing environmental employees were asked to answer a few questions about the organization's workforce, which was used to estimate the total environmental workforce. The survey was administered both by phone and online. A total of 2,132 firms responded to the survey by phone and 72 responded via the online questionnaire.

## SAMPLE PLAN

In order to ensure statistical reliability of the results, it was estimated that a sample size of at least 1,200 responses was required, with specific quotas for each industry category. Once the sample frame was established, a random sample contact database was created using the following sources:

- InfoCanada Database;
- Mail Prospects (Human Resource Managers);
- ASDE, Survey Sampler, Inc.;
- Canadian Company Capabilities; and
- Contacts supplied by several industry-based membership organizations agreeing to participate in the study.

A stratified random sample of 26,039 organizations across Canada were contacted by phone and email and invited to participate in the survey. In total, the survey contact database had 26,039 employers who were contacted for the survey. Of this number 2,912 represented defunct businesses or organizations with telephone numbers that were not in service. The valid sample for the survey for telephone follow-up activities was 23,127 employers. The survey sample frame was constructed using the estimates of the total number of employers by NAICS codes (based on data available in the Canadian Business Patterns Database from Statistics Canada).

**TABLE M11**  
Survey quotas and counts of responses

Industry	NAICS Codes	Quota	Total Responses	Responses From Employers with Environmental Employees
Agriculture, Forestry, Fishing and Hunting	11	125	209	51
Mining, Quarrying, and Oil and Gas Extraction	21	100	122	31
Water, Sewage and Other Systems	2213	50	57	19
Construction	23	115	189	42
Manufacturing	31-33	115	235	49
Wholesale Trade/Retail Trade	41, 44-45	10	125	21
Transportation and Warehousing	48-49	25	96	17
Information and Cultural Industries	51	10	54	5
Finance and Insurance, Real Estate and Rental and Leasing	52 and 53	10	96	3
Professional, and Technical Services	54 (other codes)	25	80	13
Architecture, Engineering and Related services	5413	100	84	19
Scientific Research and Development services	5417	50	35	5
Environment Consulting	54162	50	48	21
Remediation Services	56291	75	136	46
Management of Companies and Enterprise	55	10	24	5
Educational Services	61	35	52	8
Health Care and Social Assistance	62	35	94	19
Arts, Entertainment and Recreation and Accommodation and Food	71,72	25	146	25
National and Provincial Parks and Wildlife Management	712190	25	7	3
Other Services (except Public Administration)	81	10	78	7
Administrative and Support	561	25	53	12
Waste Management	562	100	147	58
Federal	921	25	15	10
Provincial and Territorial	922	25	9	2
Municipal	923	25	51	16
<b>Grand Total</b>		<b>1200</b>	<b>2204</b>	<b>507</b>

## PRE-TEST

A pre-test of the survey was performed in the last week of January, 2010. The pre-test was used to identify any difficulties that respondents might have understanding or responding to the survey questions. Pre-test activities included:

- Preparation of a field test sample with 200 employers;
- Edits made to the questionnaire, based on difficulties experienced by employers; and
- Review and finalization of the phone and online versions of the survey.

In the pre-test, it was observed that a larger than expected percentage of employers were indicating that they have environmental employees (a higher percentage than that of the 2007 survey). As a result, a survey question was added to ask respondents how many of their environmental employees spend 50% or more of their time on environmental activities.

The response allowed for a segmentation of environmental employees into two distinct groups: (1) employees who spend any amount of time on environmental activities, and (2) employees who spend most (greater than 50%) of their time on environmental activities.

In addition, a few other questions were changed or added to ensure that the questions were suited for the respondent.

## RESPONSE RATES

As shown in the table below, a total of 2,204 responses to the survey were received, which includes respondents who agreed to take the survey but were not eligible for the long questionnaire since they did not have any environmental employees. The overall response rate of the survey is 10%.

**TABLE M12**  
Survey response rate

Industry Group	Total Establishments	Valid Sample	Completions	Response Rate
Agriculture, Forestry, Fishing and Hunting	51,234	3,104	207	7%
Mining, Quarrying, and Oil and Gas Extraction	11,475	909	120	13%
Construction	211,159	2,978	188	6%
Manufacturing	69,455	3,048	233	8%
Wholesale Trade/Retail Trade	254,030	702	123	18%
Utilities, Transportation and Warehousing	97,555	1,769	150	8%
Information, Finance and Insurance, Real Estate and Management of Companies	388,821	1,301	146	11%
Professional, Scientific and Technical Services	277,849	2,579	265	10%
Administration and Support, Waste Management and Remediation	88,693	1,730	331	19%
Education, Health and Social Assistance	111,602	2,576	142	6%
Arts, Recreation, Accommodation and Food Services	106,827	1,338	142	11%
Other Services (except Public Administration)	158,619	362	76	21%
Public Administration	3,820	731	81	11%
<b>Total</b>	<b>1,831,139</b>	<b>23,127</b>	<b>2,204</b>	<b>10%</b>

As shown in Table M13, 23% of the 2,204 establishments responding to the survey indicated that they employed one or more environmental workers. Overall, employers in sectors such as public administration and administration and support / waste management are most likely to report having an environmental employee in the organization.

**TABLE M13**  
Proportion of establishments with one or more environmental worker

Industry Group	Total Number of Establishments Responding to the Survey	Number of Establishments With One or More Environmental Workers	Proportion of Establishments With One or More Environmental Workers
Agriculture, Forestry, Fishing and Hunting	207	51	24.6%
Mining, Quarrying, and Oil and Gas Extraction	120	31	25.8%
Construction	188	42	22.3%
Manufacturing	233	49	21.0%
Wholesale Trade/Retail Trade	123	21	17.1%
Utilities, Transportation and Warehousing	150	36	24.0%
Information, Finance and Insurance, Real Estate and Management of Companies	146	8	5.5%
Professional, Scientific and Technical Services	265	63	23.8%
Administration and Support, Waste Management and Remediation	331	116	35.0%
Education, Health and Social Assistance	142	27	19.0%
Arts, Recreation, Accommodation and Food Services	142	25	17.6%
Other Services (except Public Administration)	76	7	9.2%
Public Administration	81	31	38.3%
<b>Total</b>	<b>2,204</b>	<b>507</b>	<b>23.0%</b>

The margin of error for all the establishments in the major industry groups is presented in Table M14. The margin of error for all establishments is  $\pm 2\%$  at a 95% confidence interval. The sampling method results in margins of error of a maximum of  $\pm 11\%$  at a 95% confidence level. For industry strata, the margin of error ranges from  $\pm 5\%$  for administration and support and waste management and remediation to  $\pm 11\%$  for other services and public administration.

**TABLE M14**  
Margin of error in estimation of environmental employment

Industry Group	Number of Establishments in Canada	Number of Survey Responses	Margin of Error
Agriculture, Forestry, Fishing and Hunting	51,234	207	$\pm 6.8\%$
Mining, Quarrying, and Oil and Gas Extraction	11,475	120	$\pm 8.9\%$
Construction	211,159	188	$\pm 7.1\%$
Manufacturing	69,455	233	$\pm 6.4\%$
Wholesale Trade/Retail Trade	254,030	123	$\pm 8.8\%$
Utilities, Transportation and Warehousing	97,555	150	$\pm 8.0\%$
Information, Finance and Insurance, Real Estate and Management of Companies	388,821	146	$\pm 8.1\%$
Professional, Scientific and Technical Services	277,849	265	$\pm 6.0\%$
Administration and Support, Waste Management and Remediation	88,693	331	$\pm 5.4\%$
Education, Health and Social Assistance	111,602	142	$\pm 8.2\%$
Arts, Recreation, Accommodation and Food Services	106,827	142	$\pm 8.2\%$
Other Services (except Public Administration)	158,619	76	$\pm 11.2\%$
Public Administration	3,820	81	$\pm 10.8\%$
<b>Total</b>	<b>1,831,139</b>	<b>2,204</b>	<b><math>\pm 2.1\%</math></b>

The margin of error by industry for those establishments that employ at least one environmental employee is presented in Table M15. However the margin of error for all establishments employing environmental employees is  $\pm 4.4\%$  at a 95% confidence interval. Within industry segments the margin of error ranges from  $\pm 9\%$  for the industry including administration, support, waste management, and remediation to  $\pm 19.6\%$  for arts, recreation, accommodation and food services.

**TABLE M15**  
Margin of error on environmental employment by environmental employers

Industry Group	Number of Establishments in Canada (with Environmental employees)	Number of Survey Completes (with one or more environmental employees)	Margin of error
Agriculture, Forestry, Fishing and Hunting	12,623	51	$\pm 13.7\%$
Mining, Quarrying, and Oil and Gas Extraction	2,964	31	$\pm 17.5\%$
Construction	47,174	42	$\pm 15.1\%$
Manufacturing	14,606	49	$\pm 14.0\%$
Wholesale Trade/Retail Trade and Utilities, Transportation and Warehousing	66,784	57	$\pm 13.0\%$
Information, Finance and Insurance, Real Estate, Management of Companies, Professional, Scientific and Technical Services	87,360	71	$\pm 11.6\%$
Administration and Support, Waste Management and Remediation	31,083	116	$\pm 9.1\%$
Education, Health, Social Assistance and Other Services	35,830	34	$\pm 16.8\%$
Arts, Recreation, Accommodation and Food Services	18,808	25	$\pm 19.6\%$
Public Administration	1,462	31	$\pm 17.4\%$
<b>Total</b>	<b>318,694</b>	<b>507</b>	<b><math>\pm 4.4\%</math></b>

## LIMITATIONS OF THE RESEARCH

**Coverage:** The survey frame includes firms that were willing to participate in the telephone or online survey and were drawn from a random and stratified sample of employers within each NAICS industry segment. The desired quota of responses in some industry segments was difficult to complete due to limited sample size, a small population size, or a lack of willingness or interest for the respondents to participate in the survey. At the outset of the project, we sought to collect at least 1200 responses, with specific quotas for each industry. In addition, we wished to receive at least 30 responses from employers in each industry who have environmental employees and were willing to respond to the long questionnaire. These responses could then be used to estimate the incidence of workers in each occupation within each industry category. In some industries this could not be achieved because the percentage of firms who have environmental employees is low—although this could not be anticipated at the outset because no previous research at this level has been completed. In total 2,204 firms responded to the survey and 507 had environmental employees and responded to the long questionnaire. A larger number of responses would have resulted in a smaller margin of error for the survey. The margins of error (at a 95% confidence) are described in the previous tables.

**Sampling error:** The survey is based on a random sample of business establishments but is stratified with specific quotas of responses for each industry-defined strata. At the outset of the survey, our expectation was that sub-populations (different industries) vary considerably in their demand for environmental employees in certain occupations. For example, waste management workers are more likely to work in the waste management industry than in agriculture. Since we thought it was advantageous to sample each sub-population independently, a set of strata was developed for each industry. The groupings of industries into strata reflected our expectation that certain industries are similar in their demand for environmental employees in certain occupations. For instance, we thought that demand for environmental occupations would be similar for some professional services such as accounting, business services, or legal services. However, we thought that demand for workers in these industries would be qualitatively different from demand for workers in the environmental consulting industry. All strata were mutually exclusive: firms in every industry were assigned to only one stratum and no industry was excluded. Random sampling was applied within each stratum. This was done to improve the representativeness of the sample by reducing sampling error. The responses were weighted by the population of all establishments and employment for the firms in each strata. The use of assumptions to define strata is a limitation for the research. However, previous research does not identify differences in occupational demand for environmental occupations at a micro-industry level. The survey is therefore subject to error related to the strata defined. A table describing the sampling error for each industry strata precedes this section.

**Response rates:** Response rates for this survey were lower than that of previous surveys conducted by ECO Canada. This may be due to survey fatigue among employers as well as formal policy not to participate in surveys. Public entities have implemented similar measures to reduce the burden of surveys on their organizations. These policy measures greatly increase the complexity required to obtain a survey response and thus reduce the number of surveys completed. In addition to survey fatigue, we believe that there are conditions that affect this survey's target audience (HR managers) that, in turn, lower response rates. General market surveys such as this one pose more of a challenge than those that have a dedicated audience or database.

In many firms, the economic slowdown has resulted in staffing cuts over the last 18 months. Typically in post-recessionary periods, firms do not *quickly* recommence hiring as demand returns. Rather, the level of per-employee productivity grows for a significant period before hiring resumes. In effect, during this period, the firm's output and revenues grow but the firm doesn't hire new employees. At a certain point, the labour market improves and workers find greater level of workforce mobility as their confidence in the economy increases. As over-worked employees complain or leave the company, firms begin to hire again. This situation occurred in the past two recessionary periods and is likely to be occurring now as well.

**Comparability over time:** The 2007 study was based on the proportion of environmental employees/ total employees by industry applied to total national employment in the industry. In the 2010 survey, we have asked employers to consider their workforce and determine the percentage of workers who spend any time performing environmental activities related to their work tasks and then estimate what percentage of those workers spend more than 50% of their time on environmental activities. The second measure is the figure that is most closely aligned with figures from the 2007 survey and is used throughout this report to represent environmental employment.

**Benchmarking and revisions:** The survey was compared with the results of previous surveys. There were considerable differences in the methodology, sample frame, and questionnaire with the previous studies, and thus they should not be compared as equals. The 2010 survey results for workers spending 50% or more of their time on environmental employment are of the same order of magnitude as the findings of the 2007 survey.

**Comparability with other data sources:** No other current sources of information on the number of environmental employees exist in Canada at a national level.

**Other important aspects:** A relatively large number of firms declined to participate in the survey and this may have affected some qualities of the findings. We believe that the value proposition of the survey was not compelling enough to the respondents. In exchange for their time, we offered respondents good intelligence on the state of the environmental industry and a chance at a draw for one of two cash prizes. When we attempted to recruit partners to assist with survey completes (related industry associations and organizations), the most common reason for refusal was that the survey was not targeted specifically to the needs of the industry segment. We found that explaining the value of the cross-industry horizontal survey was not compelling enough for most organizations. Other objections were related to the length of the survey. While survey length didn't typically reduce the willingness of an individual respondent to participate, it did reduce the willingness of partner organizations to give us access to their membership.

# APPENDIX C

## EMPLOYER QUESTIONNAIRE

### SHORT QUESTIONNAIRE (ALL EMPLOYERS)

**S0** How many paid employees are currently employed at this location? Include full-time and part-time employees who are on payroll for this location.

[ENTER NUMBER]

**S1** Of the [insert number from S0 here] employees working at this location, how many of these individuals would you consider as environmental employees?

Environmental employment is any activity associated with:

- Environmental Protection (e.g. air, water and land quality, waste management, restoration and reclamation, human and environmental health and safety, carbon and climate change mitigation, and environmental protection management);
- Resource Management (e.g. fishery, wildlife, forestry, sustainable agriculture, energy efficiency, alternative or renewable energy, parks and natural reserves, and natural resource management);
- Environmental Sustainability (e.g. education, research and development, policy and legislation, communications and public awareness, and sustainable development);
- Other environment related activities.

[ENTER NUMBER]

**S2** How many of these individuals would you consider spend 50 % or more of their time on environmental work?

[ENTER NUMBER]

## LONG QUESTIONNAIRE (ENVIRONMENTAL EMPLOYERS)

### Employer Background

**A1** The organization name I have is [insert organization]...is this correct?

Yes

No. Please enter the correct name: \_\_\_\_\_

**A2** And the location I have is [INSERT ADDRESS/CITY/PROVINCE/POSTAL CODE]. Is this all correct?

Yes

No. Please enter the correct information below:

Company Information

Address

City

Province

Postal Code

**A3** And, the main phone number I have on file for you is [insert phone number]. Is this correct?

Yes

No. Please enter the correct phone number: \_\_\_\_\_

**A4** And the industry you are in is [INSERT INDUSTRY DESCRIPTION]. Is that right?

Yes

No – Please select the industry group below that best describes your firm's main business activities.

#### Identifying Industry

- Agriculture, Forestry, Fishing and Hunting
- Mining and Oil and Gas Extraction
- Construction
- Manufacturing
- Utilities
- Transportation and Warehousing
- Professional, Scientific and Technical Services
- Administrative and Support, Waste Management and Remediation Services
- Educational Services and Health Care and Social Assistance
- Public Administration
- Wholesale Trade/Retail Trade
- Information and Cultural Industries
- Finance and Insurance, Real Estate and Rental and Leasing
- Management of Companies and Enterprises
- Arts, Entertainment and Recreation and Accommodation and Food Services
- Other Services (except Public Administration)
- Water, sewage and other systems
- Environment Consulting
- Architecture, Engineering and Related services
- Scientific Research and Development services
- Waste Management
- Remediation Services
- Administrative and Support
- Educational Services
- Health Care and Social Assistance
- Federal
- Provincial and Territorial
- Municipal

## Environmental Employee Profile

- B1** Of the [INSERT TOTAL NUMBER OF ENVIRONMENTAL EMPLOYEES FROM S1] environmental employees, what percentage of individuals have the following educational levels as their highest completed level of education?

Level of Education	Percentage of Environmental Workers
Masters, Doctorate or higher	[ENTER PERCENTAGE]
Bachelor	[ENTER PERCENTAGE]
College	[ENTER PERCENTAGE]
Less than post-secondary	[ENTER PERCENTAGE]

- B2** Of the [INSERT TOTAL NUMBER OF ENVIRONMENTAL EMPLOYEES FROM S1] environmental employees, what percentage belong to the following demographic groups?

Demographic Group	Percentage of Environmental Workers
Female	[ENTER PERCENTAGE]
Aboriginal	[ENTER PERCENTAGE]
Recent immigrant (in the past 5 years)	[ENTER PERCENTAGE]

*Notes: Aboriginal people include those who are First Nations, Inuit, and Métis. A recent immigrant is a person who is new to Canada in the last 5 years or less. If you are uncertain on the percent of employees in the particular demographic group, please estimate. Your best guess will be sufficient.*

- B3** Of the [INSERT TOTAL NUMBER OF ENVIRONMENTAL EMPLOYEES FROM S1] environmental employees, what percentage belong to the following age groups:

Age Group	Percentage of Environmental Workers
29 or under	[ENTER PERCENTAGE]
30-44	[ENTER PERCENTAGE]
45-54	[ENTER PERCENTAGE]
55-64	[ENTER PERCENTAGE]
65 or older	[ENTER PERCENTAGE]

- B4** Of the [INSERT TOTAL NUMBER OF ENVIRONMENTAL EMPLOYEES FROM S1] environmental employees at this location, how many are in each of the following categories?

Level of Worker	Percentage of Environmental Workers
Entry Level: Usually a recent graduate with no work experience.	[ENTER PERCENTAGE]
Junior Level: Usually from 1 to 3 years of experience.	[ENTER PERCENTAGE]
Intermediate Level: Usually from 4 to 7 years of experience.	[ENTER PERCENTAGE]
Senior Level: Usually 8 years and more.	[ENTER PERCENTAGE]

**B5** Of the [INSERT TOTAL NUMBER OF ENVIRONMENTAL EMPLOYEES FROM S1] environmental employees at this location, what percentage are managers?

[ENTER PERCENTAGE]

*Notes: We consider a manager to be any worker who provides leadership, accountability and plays a role in the hierarchy of your organization in addition to possessing baseline technical expertise.*

**B6** Out of the [INSERT TOTAL NUMBER OF ENVIRONMENTAL EMPLOYEES FROM S1] environmental employees at this location, what percentage of these employees are involved in the following activities at this location?

Category	Description/ Examples	Percentage of Environmental Workers
Air Quality	Air Quality Testing, Monitoring, Modeling, Air Pollution Abatement, etc.	[ENTER PERCENTAGE]
Water Quality	Water Quality Testing, Monitoring, Resource Management, Water Pollution Abatement, etc.	[ENTER PERCENTAGE]
Site Assessment and Reclamation	Site Remediation, Restoration, and Reclamation	[ENTER PERCENTAGE]
Waste Management	Waste Management, Collection, Reduction, Treatment & Disposal	[ENTER PERCENTAGE]
Environmental health and safety	Occupational Health and Safety, Industrial/Occupational Hygiene	[ENTER PERCENTAGE]
Alternative/ Renewable Energy, Energy, Eco Efficiency	Energy Efficiency Management, Wind/ Solar/hydro/other power generation, bio-fuels, etc.	[ENTER PERCENTAGE]
Eco-Preservation / Wildlife and fisheries management.	Management of wildlife and fisheries	[ENTER PERCENTAGE]
Natural resource management	Management of forests, parks, etc.	[ENTER PERCENTAGE]
Environmental Education & Training	Environmental Training and Education	[ENTER PERCENTAGE]
Research & Development	Eco-Innovation, Environmental Research	[ENTER PERCENTAGE]
Policy and Legislation	Development of Environmental Policies/ Legislation & Compliance Monitoring	[ENTER PERCENTAGE]
Communication and Public Awareness	Communications and Public Awareness	[ENTER PERCENTAGE]
Carbon and climate change mitigation	Carbon measurement, carbon capture, reduction of carbon emissions, etc.	[ENTER PERCENTAGE]
Other: Please Specify:		[ENTER PERCENTAGE]

## Current Labour Demand and Employee Turnover

**C1** How many environmental positions have you filled or tried to fill at this location over the past 12 months?

[ENTER NUMBER]

**C2** Thinking of all the environmental positions you filled or tried to fill at this location over the past 12 months, how many were for the following reasons?

Reason	Number of Environmental Workers
Replacement of someone who left his/her position for any reason	[ENTER NUMBER]
Fill a newly created position	[ENTER NUMBER]
Other reason: _____	[ENTER NUMBER]

**C3** How many of these environmental positions were you able to fill?

[ENTER NUMBER]

**C4** Did you experience difficulties in hiring environmental employees at this location?

Yes

No [SKIP TO C6]

**C5** You indicated that this location of your organization was impacted by difficulty in recruiting environmental employees. What do you think contributed to this difficulty?

How much has this issue affected this location of your organization?

Contributing Factor	How much has this issue affected this location of your organization?				
	Did not Contribute at all.			Strongly Contributed	
Difficulty recruiting due to remote location	1	2	3	4	5
Difficulty recruiting due to compensation levels offered	1	2	3	4	5
Difficulty recruiting due to lack of qualified applicants	1	2	3	4	5
Difficulty recruiting due to a weak recruiting program	1	2	3	4	5
Other difficulty recruiting (please specify)	1	2	3	4	5

**C6** Over the past 12 months, did you fill, or try to fill, any environmental positions at this location?  
If yes, how difficult was it to fill the particular position(s)?

Did you fill or try to fill?	Level of workers	If yes, how difficult was it?				
		Not Difficult at all		Very Difficult		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Entry Level (Usually a recent graduate with no work experience)	1	2	3	4	5
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Junior Level (Usually from 1 to 3 years of experience)	1	2	3	4	5
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Intermediate level (Usually from 4 to 7 years of experience)	1	2	3	4	5
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Senior Level (Usually 8 years and more)	1	2	3	4	5

**C7** Over the past 12 months, did you hire, or try to hire, any [INSERT FROM LIST] at this location?

Did you hire or try to hire?	Demographic Group	If yes, please describe the strategy your organization used to hire or make a special effort to hire.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Recent Immigrants: <i>Recent immigrant refers to those who immigrated within past 5 years.</i>	[OPEN ENDED]
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Aboriginal People: <i>Aboriginal people include those who are First Nations, Inuit, and Métis.</i>	[OPEN ENDED]
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Transitioning workers from other industries	[OPEN ENDED]
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	International workers	[OPEN ENDED]

**C8** Did you experience any challenges while hiring or making an effort to hire any [INSERT FROM LIST] at this location?

Did you experience hiring challenges?	Demographic Group	If yes, please describe the challenges you faced in hiring or trying to hire.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Recent Immigrants: <i>Recent immigrant refers to those who immigrated within past 5 years.</i>	[OPEN ENDED]
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Aboriginal People: <i>Aboriginal people include those who are First Nations, Inuit, and Métis.</i>	[OPEN ENDED]
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Transitioning workers from other industries	[OPEN ENDED]
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	International workers	[OPEN ENDED]

**C9** Over the past 12 months, which of the following areas of work did you hire environmental employees?

Action	Category	Description/ Examples
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Air Quality	Air Quality Testing, Monitoring, Modeling, Air Pollution Abatement, etc.
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Water Quality	Water Quality Testing, Monitoring, Resource Management, Water Pollution Abatement, etc.
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Site Assessment and Reclamation	Site Remediation, Restoration, and Reclamation
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Waste Management	Waste Management, Collection, Reduction, Treatment & Disposal
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Environmental health and safety	Occupational Health and Safety, Industrial/Occupational Hygiene
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Alternative/ Renewable Energy, Energy, Eco Efficiency	Energy Efficiency Management, Wind/ Solar/hydro/other power generation, bio-fuels, etc.
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Eco-Preservation / Wildlife and fisheries management	Management of wildlife and fisheries
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Natural resource management	Management of forests, parks, etc.
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Environmental Education & Training	Environmental Training and Education
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Research & Development	Eco-Innovation, Environmental Research
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Policy and Legislation	Development of Environmental Policies/ Legislation & Compliance Monitoring
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Communication and Public Awareness	Communications and Public Awareness
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Carbon and climate change mitigation	Carbon measurement, carbon capture, reduction of carbon emissions, etc.
<input type="checkbox"/> Hired <input type="checkbox"/> Did not Hire	Other. Please Specify:	

**C10** How many environmental employees have left your organization in the past 12months?

[ENTER NUMBER]

[0] (SKIP TO E1)

**C11** Which of the following reasons would you say are the major reasons why environmental employees at this location are no longer working with your organization? [SELECT ALL THAT APPLY]

Reasons

- Agriculture, Forestry, Fishing and Hunting
- Better benefits in another organization
- Higher salary in another organization
- Better Work life balance
- Better Opportunities for career advancement
- Downsizing of your business or workforce
- Poor worker performance
- Retirement of current employees
- Other: Please describe: \_\_\_\_\_

### Current Recruitment Strategies in the Environmental Sector

**D1** Over the past 12 months, which of the following recruitment strategies did you use to hire environmental employees for this location and how effective were the recruitment strategies?

Did you use this Strategy?	Strategy	If yes, how Effective Was it?				
		Not Effective At All		Highly Effective		
[ ]Yes [ ]No [ ]Unsure	Co-op programs	1	2	3	4	5
[ ]Yes [ ]No [ ]Unsure	Corporate website	1	2	3	4	5
[ ]Yes [ ]No [ ]Unsure	Internal recruiters	1	2	3	4	5
[ ]Yes [ ]No [ ]Unsure	Newspapers	1	2	3	4	5
[ ]Yes [ ]No [ ]Unsure	On-campus recruitment	1	2	3	4	5
[ ]Yes [ ]No [ ]Unsure	Online job banks	1	2	3	4	5
[ ]Yes [ ]No [ ]Unsure	Personal contacts (referrals)	1	2	3	4	5
[ ]Yes [ ]No [ ]Unsure	Recruitment agency	1	2	3	4	5
[ ]Yes [ ]No [ ]Unsure	Acquisition of another firm or organization	1	2	3	4	5
[ ]Yes [ ]No [ ]Unsure	Other (please specify)	1	2	3	4	5

**D2** You rated these recruiting strategies as highly effective:

[USE LIST FROM D1- SCORES 4 AND HIGHER]

What was it about these methods that made them effective?

[OPEN ENDED]

**D3** To what extent do you think each of the following contributed successful recruiting (by successful recruiting we mean you got the correct person for the job and was able to retain him)?

Contributing Cause	How much did it improve success in recruiting?				
	Did not improve recruiting success			Strongly improved recruiting success	
Strong corporate brand	1	2	3	4	5
Reputation as an employer of choice	1	2	3	4	5
Use of existing employee network	1	2	3	4	5
Effective HR department	1	2	3	4	5
Clearly explained recruiting processes	1	2	3	4	5
Use of diverse recruitment techniques (niche job boards, online advertising, etc.) – Not relying on one single method	1	2	3	4	5
Speed of hiring process	1	2	3	4	5
Competitiveness of wage and benefits package offered	1	2	3	4	5
Due to the source used for recruiting	1	2	3	4	5
Other (please specify)	1	2	3	4	5

## Engagement, Retention, and Turnover of Environmental Employees

Engagement can be defined as an employee's willingness and ability to contribute to the company's success. An employee who highly engaged is one who is fully involved in, and enthusiastic about, his or her work. And thus will act in a way that furthers their organization's interest.

All employees can be classified into one of four levels of categories:

- (1) **Engaged Employees:** Those who fully understand their roles and responsibilities, and give full effort to their work. They are highly motivated, bringing a high level of passion or energy to their work.
- (2) **Enrolled Employees:** These workers fully understand their roles and responsibilities and give some effort to their work, however they are somewhat less motivated and have lower levels of energy or passion about their work.
- (3) **Disenchanted Employees:** These workers have a lower level of understanding of their responsibilities and roles and have a low level of emotional connection toward their work and low level of motivation.
- (4) **Disengaged Employees:** These workers are rationally and emotionally disconnected from their work. They are not motivated and are generally poorly performing workers.

**E1** Based on this definition, what % of your environmental workforce would you describe as belonging to each of the four categories?

Percentage of environmental employees at this location fall into each category?	Percentage
Engaged Employees	[ENTER PERCENTAGE]
Enrolled Employees	[ENTER PERCENTAGE]
Disenchanted Employees	[ENTER PERCENTAGE]
Disengaged Employees	[ENTER PERCENTAGE]
<b>TOTAL</b>	<b>100%</b>

*[Require percentages to add to 100%]*

**E2** What are the greatest strengths of your organization in promoting employee engagement? [SELECT ALL THAT APPLY]

- Strong leadership from senior management
- Strong HR department policies
- Corporate goals
- Other opportunity for career advancement
- Professional development opportunities
- Better benefits
- Retirement benefits
- Vacation or paid leave benefits
- Educational reimbursement
- Flexible work schedules
- Other Fringe benefits (e.g. relocation assistance, bonuses, day care for children, gyms)
- Retention training for managers
- Rewards for performance
- Ownership options such as stock options
- Team building activities and exercises or team cohesion activities outside the work environment
- Management feedback tools (such as Manager report cards from those they manage)
- Challenge employees with greater responsibility or increasing variety of their tasks
- Unexpected rewards
- Others: Please Specify:

**E3** How much does your organization provide for the professional development of each environmental employee per year on average? This includes conferences, seminars, courses, etc. [SELECT ONLY ONE RESPONSE]

**Professional Development Spending per Employee**

- \$0
- Less than \$100
- \$100 to \$499
- \$500 to \$999
- \$1,000 to \$1,999
- \$2,000 or more
- Unsure

**Future Growth and Labour Demand**

**F1** You said that there are [INSERT TOTAL NUMBER OF ENVIRONMENTAL EMPLOYEES FROM S1] environmental employees currently working at this location. How many environmental employees do you anticipate to have in 2012 (in 2 years) at this location, including full-time and part-time?

[ENTER NUMBER]

**F2 Which of the following areas of work do you expect to hire environmental employees in the next two years?**

Action	Category	Description/ Examples
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Air Quality	Air Quality Testing, Monitoring, Modeling, Air Pollution Abatement, etc.
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Water Quality	Water Quality Testing, Monitoring, Resource Management, Water Pollution Abatement, etc.
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Site Assessment and Reclamation	Site Remediation, Restoration, and Reclamation
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Waste Management	Waste Management, Collection, Reduction, Treatment & Disposal
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Environmental health and safety	Occupational Health and Safety, Industrial/Occupational Hygiene
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Alternative/ Renewable Energy, Energy, Eco Efficiency	Energy Efficiency Management, Wind/Solar/hydro/other power generation, bio-fuels, etc.
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Eco-Preservation / Wildlife and fisheries	Management of wildlife and fisheries
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Natural resource management	Management of forests, parks, etc.
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Environmental Education & Training	Environmental Training and Education
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Research & Development	Eco-Innovation, Environmental Research
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Policy and Legislation	Development of Environmental Policies/ Legislation & Compliance Monitoring
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Communication and Public Awareness	Communications and Public Awareness
<input type="checkbox"/> Plan to Hire <input type="checkbox"/> No plan to Hire	Carbon and climate change mitigation	Carbon measurement, carbon capture, reduction of carbon emissions, etc.
<input type="checkbox"/> Plan to Hire	Other. Please Specify:	

**F3** Are there certain high demand occupations that your organization has difficulty finding or recruiting? [OPEN ENDED]

**Pre-coded list:**

- Environmental Engineer
- Environmental Technician/Technologist
- Lab Technician/Technologist
- Hydrogeologist
- Civil Engineer
- Remediation Specialist
- Air Quality Technician/Technologist
- Conservation Officer
- Waste Management Specialist
- Aquatics/Marine Biologist
- Meteorologist
- Agrologist
- Project Manager
- Land Use Planner
- Geoscientist

**F4** Are there specific area where you anticipate hiring a large number of workers? [OPEN ENDED]

**Pre-coded list:**

- Environmental Engineer
- Environmental Technician/Technologist
- Lab Technician/Technologist
- Hydrogeologist
- Civil Engineer
- Remediation Specialist
- Air Quality Technician/Technologist
- Conservation Officer
- Waste Management Specialist
- Aquatics/Marine Biologist
- Meteorologist
- Agrologist
- Project Manager
- Land Use Planner
- Geoscientist

**F5** Are there any specific job levels you anticipate having trouble filling on a regular basis?

Will you have trouble filling positions at this level?	Level of workers
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Entry Level (Usually a recent graduate with no work experience)
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Junior Level (Usually from 1 to 3 years of experience)
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Intermediate level (Usually from 4 to 7years of experience)
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Senior Level(Usually 8 years and more)

**F6** In the future, to what extent do you anticipate that you will access each of the following sources of labour to fill open positions?

Percentage of each source to be used to fill open positions	Percentage
Recent Student	[ENTER PERCENTAGE]
Transitioning workers from other industry	[ENTER PERCENTAGE]
Workers in environmental industry	[ENTER PERCENTAGE]
Aboriginals	[ENTER PERCENTAGE]
Immigrants	[ENTER PERCENTAGE]
International Workers	[ENTER PERCENTAGE]

## Future Growth and Labour Demand

**G1** How many locations do you have including this location Canada-wide?

[ENTER NUMBER]

**G2** How many employees work for your organization Canada-Wide?

### Number of Workers

- 1 (Owner and no other employees)
- 2 -5
- 6 - 10
- 11 - 15
- 16 - 20
- 21 - 50
- 51 - 100
- 101 - 250
- 251 - 1000
- More than 1000

**G3** Please select the sector which best describes your organization.

### Sector

- Private sector
- Public sector -Municipal
- Public Sector - Provincial
- Public Sector - Federal
- Not-for-profit / Charitable organization



ECO CANADA

Environmental Careers Organization

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ECO Canada (2010).

*2010 Profile of Canadian Environmental Employment*

Labour Market Research.

Environmental Careers Organization of Canada.



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