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LABOUR MARKET INFORMATION

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# **Analysis of Canada's Environmental Online Job Postings: Scope and Methodology**

June 2021

## Introduction

With at least 75% of job vacancies in Canada advertised on the web, online job posting data have emerged as a useful indicator of hiring needs and trends. Millions of jobs are posted online daily by employers in Canada, providing an opportunity for researchers to study the state of the job market in real time.

ECO Canada gathers and analyzes trends within the green economy to provide up-to-date, relevant, and credible information and insights on Canada's environmental workforce. One approach to guide decision making within organizations and for individuals, is to analyze the number of environmental jobs advertised online. Our Job Posting Analysis (JPA) presents a snapshot of online recruitment activity and trends for Canadian environmental workers. Data and insights include numbers of environmental online job ads by region, occupation, industry and environmental specialization, relative to all online job ads across the country over time.

### Job Posting Analysis (JPA) Informs Decision Making

The analysis of job postings has many benefits, including the use of data by:



**Job seekers:** Data tells them where the jobs are, what skills are in demand and which sectors of the economy are hiring.



**Employers:** They get insights into which skills are transferable and when supply is short.



**Policymakers:** Real-time data allows early detection of employment trends.



**Academic planners:** Data provides relevant information regarding environmental talent and training needs.

Canada's environmental workforce is spread throughout industries and occupations. Because of this, it is not possible to directly gather data on the environmental workers using standard employment data classifications, such as the National Occupational Classification (NOC) system. ECO Canada has developed an approach to analyze environmental job vacancies in Canada to address this unique challenge.

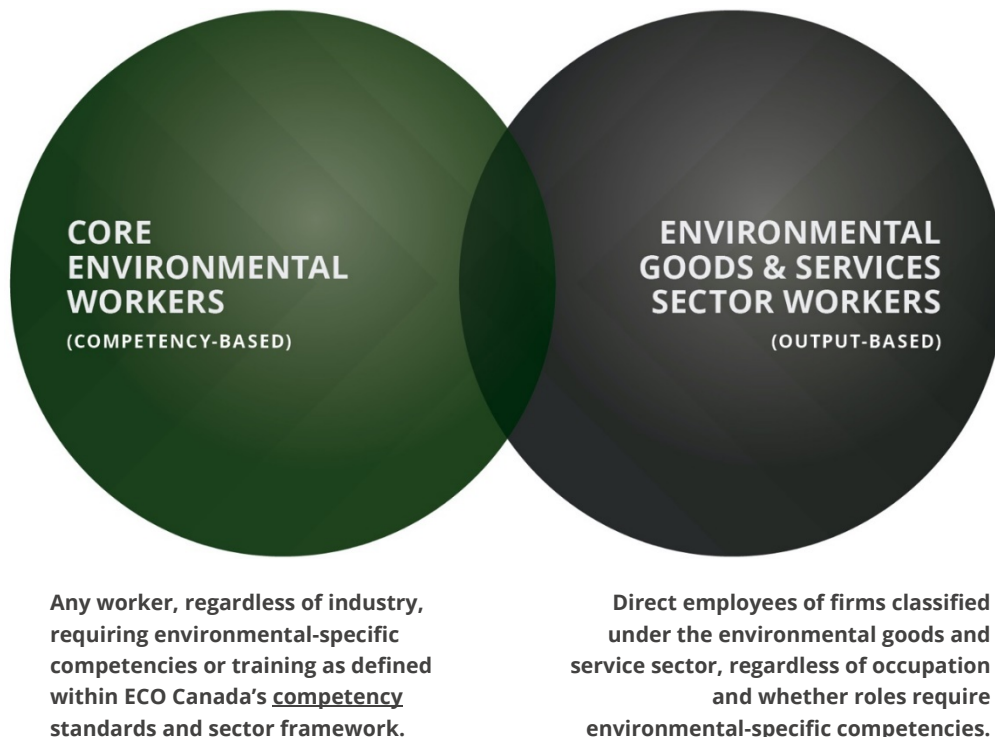
# Canada's Environmental Workforce

ECO Canada has consistently classified Canada's environmental workforce as those that drive and support the goals of natural resource management, environmental protection, and sustainability. This definition is broad and defines environmental workers as:

1. **Core environmental workers:** Those in occupations requiring specialized environmental knowledge, skills or training regardless of industry (e.g., an Environmental Engineer in a mining company or an Energy Policy Analyst working for the federal government).
2. **Environmental goods and services workers:** Those directly employed in environmental goods and services firms, including those who may or may not require specialized environmental knowledge, skills or training (e.g., an Accountant and a Sustainability Specialist working in a solar panel manufacturing company). For firms that have both environmental and non-environmental business operations, only employees directly supporting the environmental portion of the business are environmental workers.

**Figure 1**

*The Environmental Workforce Defined: Two Classification Streams*



## Scope and Methodology

In 2019, we revised our JPA methods to account for workers who are employed by environmental goods and services providers, including those who do not require specialized environmental competencies. These are in addition to those workers who require specialized environmental knowledge, skills or training (core environmental workers), some of whom may also be employed by environmental goods and services providers. We did this by revising the keywords and phrases used for filtering environmental job ads. Through an extensive review of individual job ads, ECO Canada identified keywords and phrases likely to appear in job ads for environmental workers (either core environmental workers or environmental goods and services workers) but unlikely to appear in non-environmental job ads. A new algorithm for filtering environmental job ads was developed and applied to the new database of job ads.

Revising the scope of the environmental workforce has impacted our results in three areas:

1. The number of job ads available in the database.

The new database provides a larger database of online job ads to be filtered, as well as a higher number of environmental job ads.

2. The occupational distribution of job ads.

There is a higher proportion of environmental workers overall, but a lower proportion of environmental workers in some occupational groups.

3. The regional distribution of job ads.

There is an increase in the total number of job ads in each province, however, the proportion of job ads attributed to each province or territory changed has shifted.

JPA allows for environmental job ads to be identified based on the textual content of the job postings and provides a detailed picture of the environmental job market in Canada. This updated method provides us with a new baseline of environmental jobs and EnviroShare, while also addressing the gaps in French-language and territorial job data. A detailed comparison of our former and new JPA data for 2018 can be found in our *Environmental Jobs and Influence on Industry: A Key Segment of the Canadian Workforce* report.

### Expanding our approach

In 2019, we switched data suppliers and revised our JPA method to expand our access into the full range of Canadian job ads and increase our visibility into the results. The JPA now encompasses postings within the Canadian territories and in both official languages.

### ***Identifying environmental job postings for the Canadian workforce***

Over the last few years, companies have built large databases using online job search platforms. Our approach uses a dataset compiled by Gartner TalentNeuron, which includes data from sources such as Monster.ca, the Canada Job Bank, Emploi-Québec, WorkBC, BCJobs.ca, JobServe, [ECO Job Board](#), as well as the job boards of organizations.

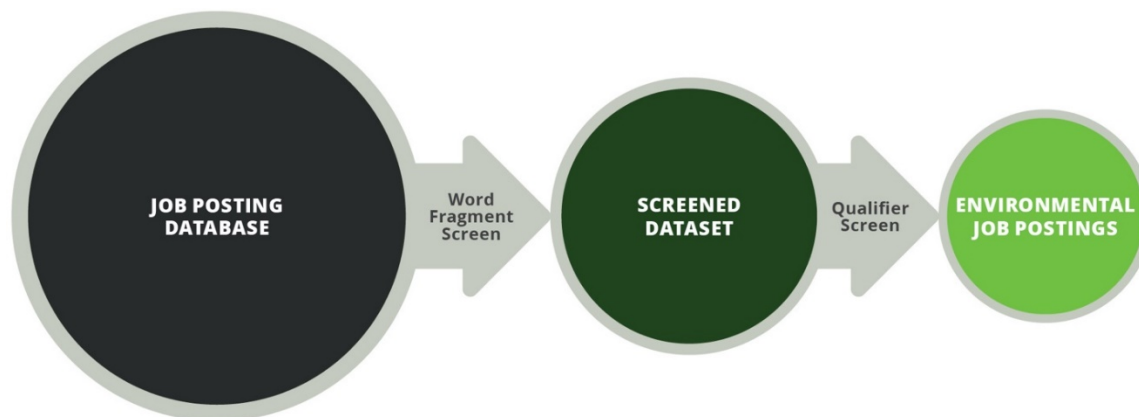
The TalentNeuron dataset includes information such as the full text of the job description (in French or English), job type (full-time versus part-time), location, level of desired education, and additional skills or certifications required for the position.

TalentNeuron analyzes posting data to identify unique positions (to reduce the possibility of duplication over multiple sites) as well as the occupation of the position as defined by NOC. If key components of a NOC code or regional information were missing, these data were not included in the model as part of the analysis. ECO Canada uses the TalentNeuron database to identify the total number of job postings in Canada and classifies job ads that have environmental components. This is achieved by searching for keywords in the database and filtering using the following steps:

1. The entire TalentNeuron database is searched against a screening set of 124 word fragments that typically appear in English and French environmental job descriptions. Postings that pass the screening test are put in a screened dataset for further analysis.

**Figure 2**

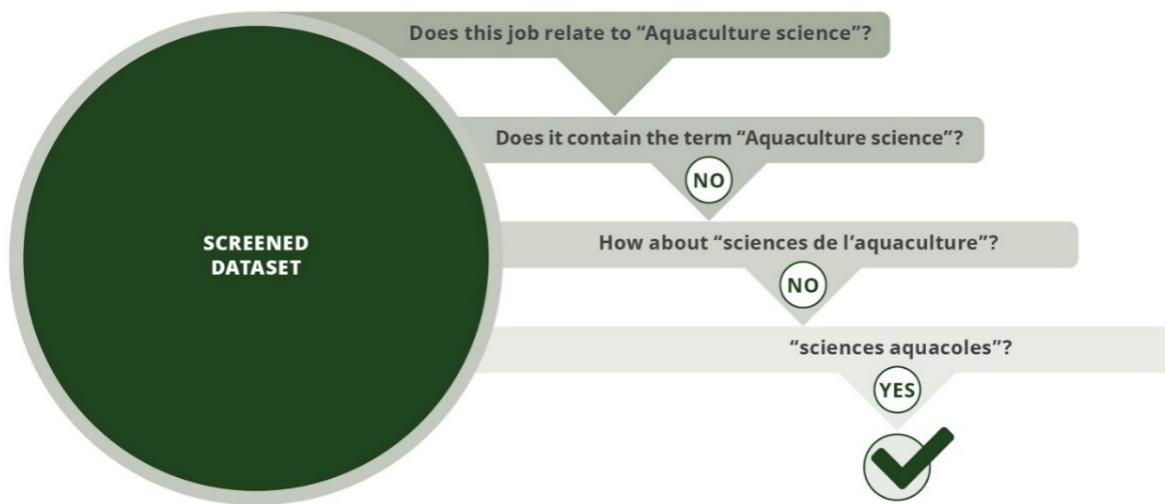
*Identifying Environmental Job Postings*



2. An additional set of 505 qualifying search terms are then applied to the job postings. Each search term is further associated with a list of variants to capture differences in language and terminology. For example, the qualifying term “aquaculture science” is associated with the following variant text strings: “aquaculture science”, “sciences de l’aquaculture”, and “sciences aquacoles”. A job posting with at least one variant match is classified as having a positive match for the qualifying term “aquaculture science”.

**Figure 3**

*Refining and Qualifying Screened Dataset (Stage 2)*



Each job listing is tested against each variant. Each unique position advertised is then given a score based on how many qualifying terms tested positive in job posts for that position. Job postings above a particular score threshold are classified as “environmental positions” for analysis and reporting.

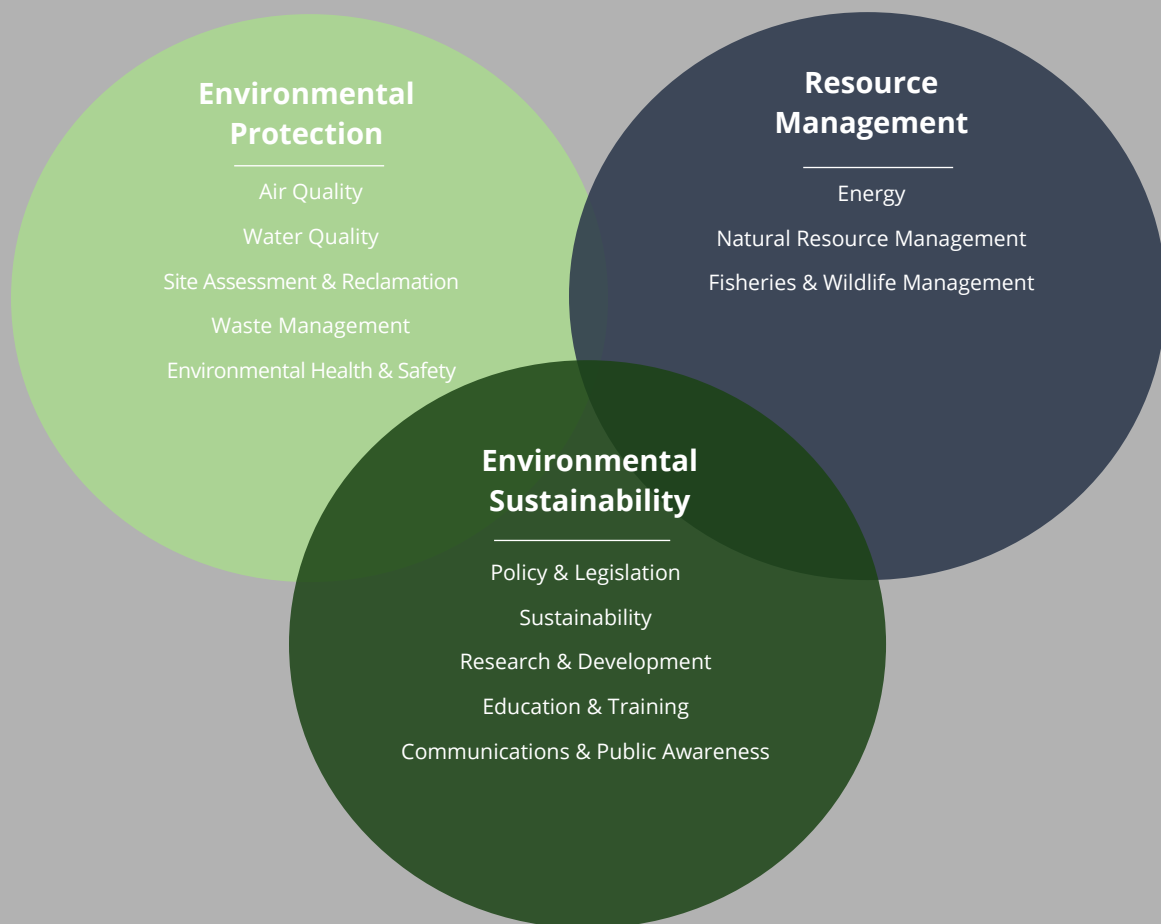
To align job postings to industries, four sequential filters were used:

1. Some job postings included an industry classification and this information was assumed to be correct.
2. Names of posting companies were cross-referenced against corporate registries, and the registered primary industry classification was used for the posting except in the case of holding companies.
3. Small companies or organizations were classified through keywords in the posting. For example, a company with “plumbing” in their name would be classified within the plumbing contractor industry.
4. Finally, the resulting occupation shares of the workforce were re-weighted against the actual distribution of industries and occupations for each Province and Territory.

Data are available **nationally and by province and territory** on a **quarterly and annual** basis. Data are also available **by occupation, by industry** and **by environmental specialization**. Occupations are defined and grouped by National Occupational Classification (NOC). Industries are identified and grouped by North American Industry Classification (NAICS). Environmental specializations align with environmental competencies and are grouped within ECO Canada's sector model (see Figure 4).

**Figure 4**

*ECO Canada's Sector Model*



### ***Estimating the share of environmental jobs ads in Canada***

Determining the number of online job ads that are classified as environmental is one measure of the JPA. Analyzing the occupations by their EnviroShare presents a different perspective. “**EnviroShare**” is the share of all positions in the TalentNeuron database that are classified as environmental positions. EnviroShare was calculated for each occupation and region. While an occupation might rank high in the number of environmental job ads, its EnviroShare might be higher or lower compared to the national average.

### ***Interpreting online job postings***

ECO Canada’s analysis of job postings has limitations. Environmental job ads are based on a sample of online job ads scraped from the internet by Gartner TalentNeuron. While this sample provides some great information about hiring activity in Canada, it is important to note the following:

- Not all jobs are advertised, and not all posted jobs are actually filled.
- Jobs might be posted in both English and French.
- Not all job aggregator websites can be scraped.
- The sources of job ads (employer websites/job posting aggregators) come and go, changing over time, which results in fluctuations in the number of job ads scraped, independent of the number of jobs available.
- The common practice of posting the same job ads on multiple websites can potentially lead to the over-estimation of job ads.
- Not all environmental job ads can be mapped to a specific region, occupation, industry or specialization, resulting in the creation of unclassified categories that may vary across reports.

Where multiple instances of the same job ad occur, whether in different platforms or languages, software is used to identify and eliminate these duplications.

Another consideration is that a job posting may reflect more than one job opening, since organizations may post one job ad to attract potential candidates for numerous positions. Alternatively, job postings may be placed by organizations with no current job opening to collect resumes for potential future openings.

It is also the case that we expect to see more job postings among certain occupations due to higher employee turnover in those careers. Thus, an increase in job postings for a particular occupation does not necessarily reflect an increase in the total number of jobs.

Despite these challenges, the analysis of job ads does serve as an indicator of hiring trends and provides real-time information otherwise unavailable to those interested in the state of the job market. ECO Canada aims to use consistent methodology so that trends can be identified over time.



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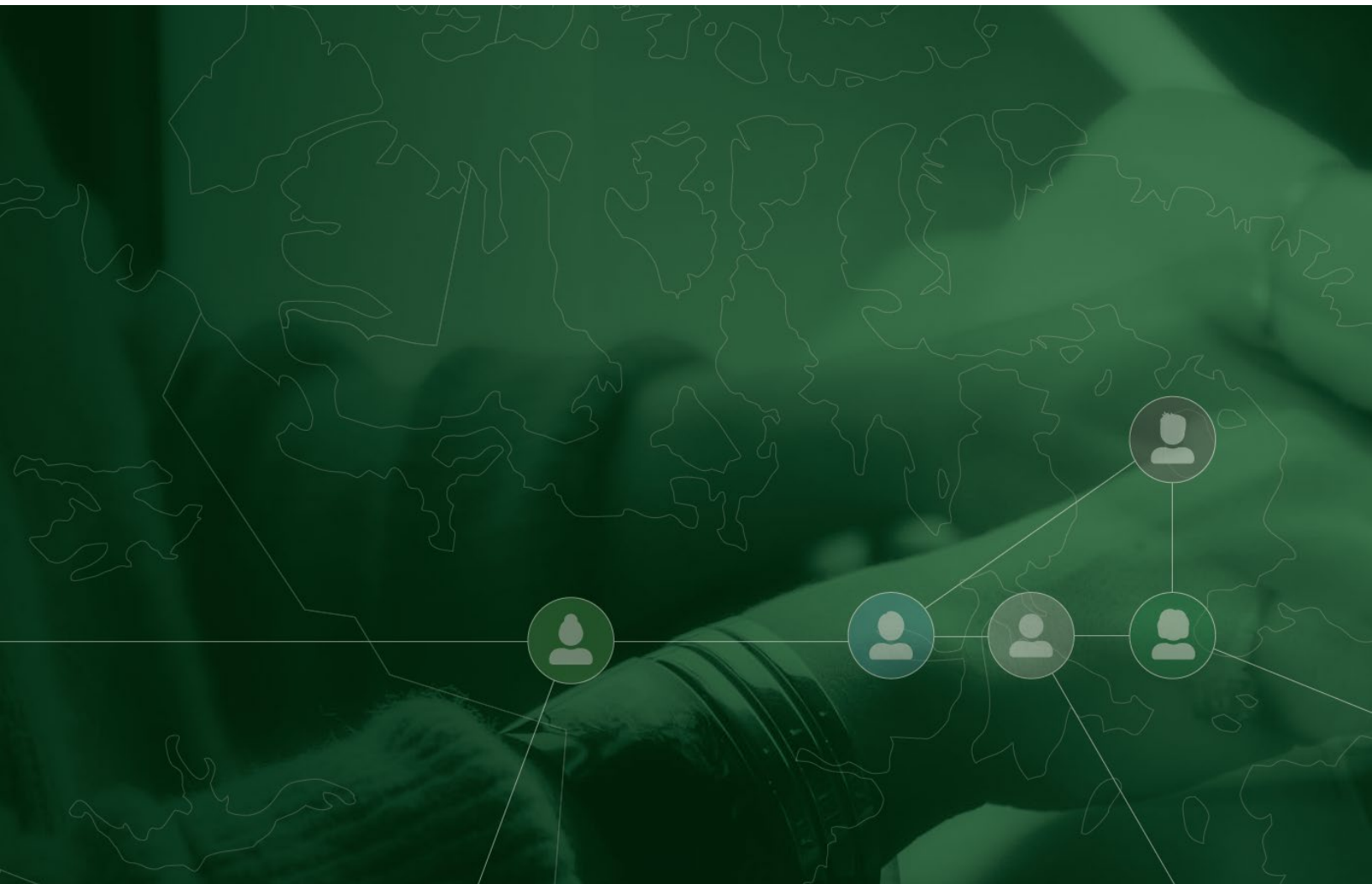
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- Labour Market Information Council
- Ken Banister and Associates
- North Shore Environmental Consultants
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