eco canada

Careers in Selected Environmental Sub-Sectors

Policy and Legislation (PL)
Communications and Public Awareness (CPA)
Education and Training (ET)
Research and Development (RD)

Current Job Trends and Future Growth

September 2017

Canada

Funded by the Government of Canada's Sectoral Initiatives Program

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 Canada's growing environmental 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.

Acknowledgements

ECO Canada wishes to express its appreciation to all the organizations and individuals that contributed their time and effort to the development of this report.

This study was funded by the Government of Canada's Sectoral Initiatives Program, whose continuous support is much appreciated.

We acknowledge the substantial contribution of Field Guide Consulting and express gratitude to the numerous individuals who contributed their time and insights to this project.

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Foreword

This report presents the findings of the ECO Canada Environmental Employment Outlook, an employment model that is informed by a combination of ECO Canada's environmental surveys over the 2003– 2016 period, analysis of job advertisements for environmental jobs, and econometric modelling. The ECO Canada Environmental Employment Outlook was supplemented by interviews with 39 experts in the ECO Canada sub-sectors of Communications and Public Awareness, Education and Training, Research and Development, and Policy and Legislation.

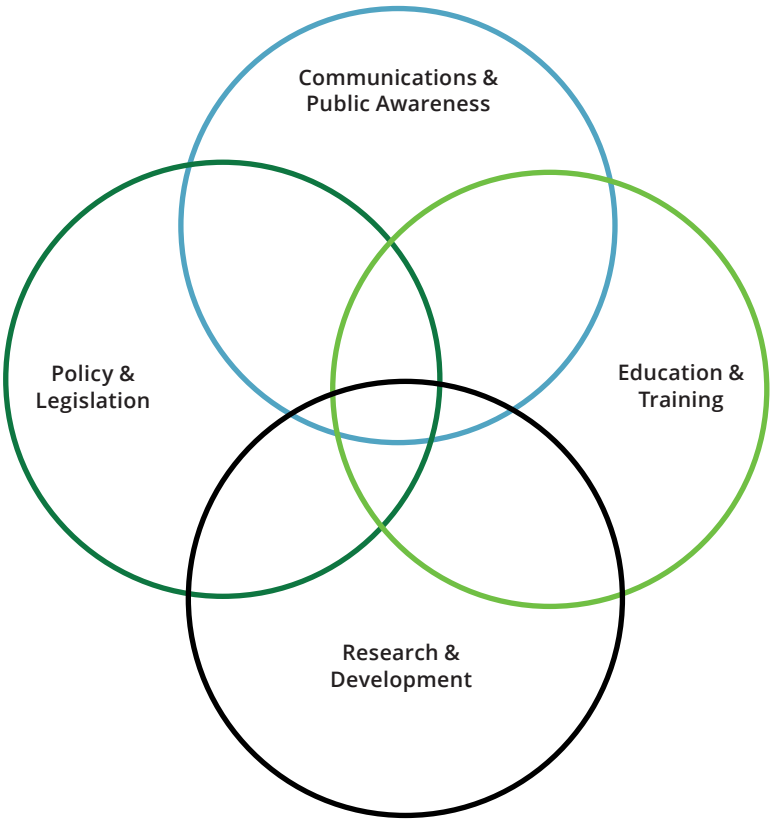
Introduction

Canada's Communication and Public Awareness (CPA), Education and Training (ET), Research and Development (RD), and Policy and Legislation (PL) environmental sub-sectors are comprised of professionals who are actively involved in environmental education and training, development of solutions and technologies, and the communication, research, and analysis of environmental topics.

CPA-ET-RD-PL professionals often move between these four sub-sectors and apply skills acquired in one sub-sector to other sub-sectors (see Figure 1). For this reason, the four sub-sectors are covered in this single report.

The CPA-ET-RD-PL sub-sectors are broad and multi-disciplinary. Professionals working in these sub-sectors have diverse educational backgrounds in fields such as engineering, law, education, physical sciences, and business.

Figure 1: Overlapping and Interrelated Sub-Sectors



CPA professionals communicate environmental information, promote environmental programs, and assure compliance with regulations. They are trained in disciplines such as communications, physical sciences, engineering, and marketing.

ET professionals provide environmental education at schools, universities, heritage sites, nature organizations, and ecotourism locations. They also provide workplace environmental training. ET professionals are generally trained in environmental sciences.

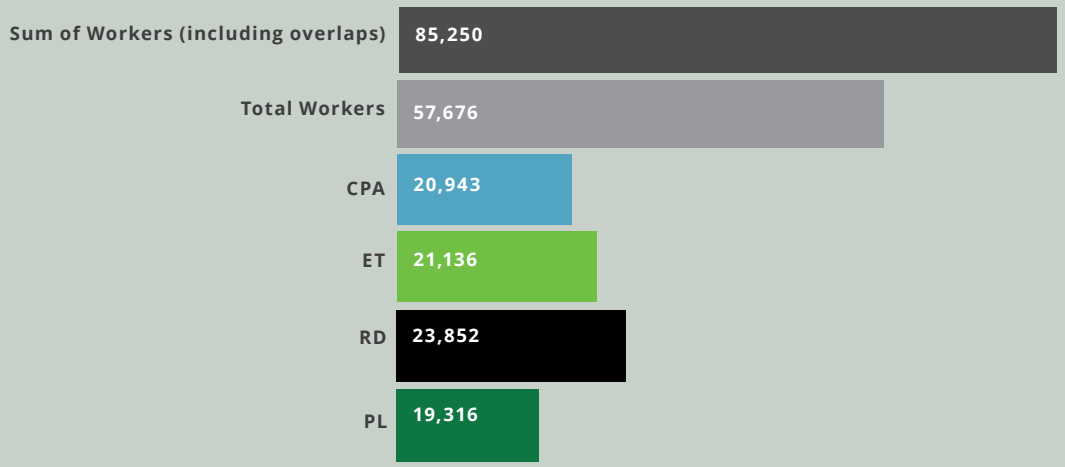
RD professionals conduct and support research on environmental topics as well as develop technology and solutions to address environmental problems. They have educational backgrounds in science, engineering, and land use.

PL professionals research and develop policy, and study and enforce environmental legislation.

This report focuses on core CPA-ET-RD-PL professionals who perform activities directly related to the CPA-ET-RD-PL sub-sector competencies[1], and typically spend more than half of their time doing so.

In 2015, there were an estimated 57,700 core environmental professionals working in the environmental sub-sectors of CPA, ET, RD, and PL. Each sub-sector has a range of about 20,000 to 24,000 professionals. However, the sub-sector sizes total to more than 57,700 as many individuals work in more than one sub-sector (see Figure 2).

Figure 2: Number of Core Professionals in CPA-ET-RD-PL Sub-Sectors and Totals, 2015



Source: ECO Canada Environmental Employment Outlook

[1] For a listing of the competencies in the sub-sectors, refer to http://www.eco.ca/certification/whats-my-specialty/

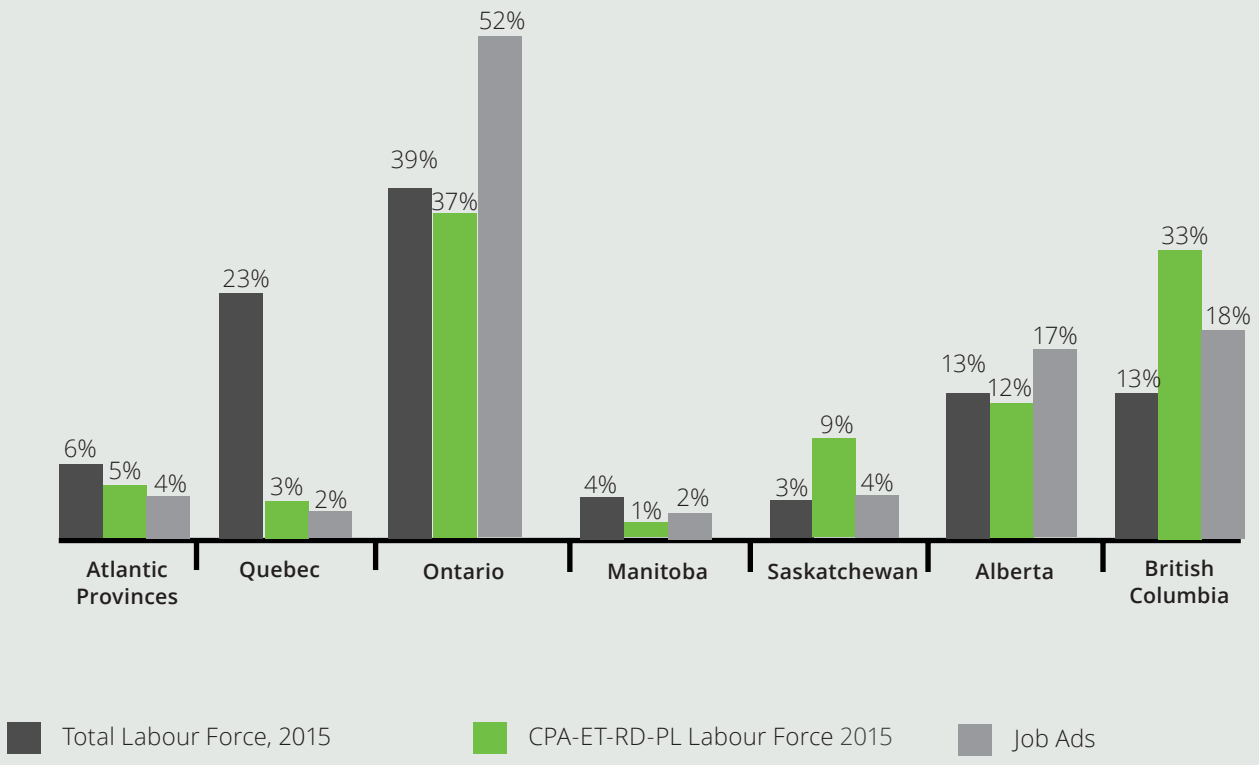
CPA-ET-RD-PL professionals are in highest demand in Ontario and British Columbia.

- In 2015, Ontario had both the greatest number of employed CPA-ET-RD-PL professionals (37% of all in Canada) and the highest number of posted jobs (52% of all in Canada).

British Columbia also had high numbers of employed CPA-ET-RD-PL professionals (33% of all in Canada).

Alberta and Saskatchewan also showed relatively high numbers of employed CPA-ET-RD-PL professionals (12% and 9% respectively).

Figure 3: Labour Force of CPA-ET-RD-PL Professionals by Province, 2015



Source: ECO Canada Environmental Employment Outlook; Environmental Job Ads Database, Burning Glass; Statistics Canada

Practice Areas

Practice Areas describe clusters of fields of work in which professionals are most often employed. The fields describe the linkages which create similarities between workers, and may be based on goals or on activities or on places of work.

Practice Areas are not the same as occupations. One Practice Area may have workers from different occupations whose contributions all combine to reach a goal.

This section of the report, starting with Figure 4, describes the Practice Areas where core CPA-ET-RD-PL professionals are found. The next section of the report describes their occupations.

Figure 4: Key Practice Areas within CPA, ET, RD, and PL

Practice Areas				
Communications and Public Awareness (CPA)				
Public Engagement	Planning	Indigenous Communications	Media & Public Relations	Project & Program Management
Environmental Management	Communications Specialists	Community-Based Stewardship	Public Health Communications	Marketing & Promotion
Education and Training (ET)				
Outdoor Environmental Education	Topic-Specific Environmental Education	Traditional Indigenous Education	Environmental Training	Education & Academia
Research and Development (RD)				
National & Provincial Ministries and related	Applied Research	University Research	Software Programming & Data Analysis	Ancillary & Enabling
Policy and Legislation (PL)				
Environmental Litigation, Law & Counsel	Policy Research & Consulting	Regulatory Compliance	Policy Development & Indigenous Communities	

Sources: Multiple, including qualitative interviews and databases, consultant analysis

CPA Sub-Sector Practice Areas

CPA work is broadly divided into internal communications and external communications.

- Internal communications requires gathering external information and disseminating it to internal audiences, often with the goals of assuring compliance with regulations and/or promoting environmental and corporate social responsibility programs.
- External communications focuses on simplifying complex information for general audiences, and is needed in all audience sectors (government, private, and public).

Communications and Public Awareness sub-sector work falls into 10 distinct areas of practice.

Public Engagement: professionals promote public awareness; gather and interpret public input to shape policies and projects. May include or work with engineers, biologists, geologists, planners, public works managers, and others.

Planning: professionals specialize in land-use planning and environmental impact assessments; manage planning reviews for cities, provinces, and the private sector, and may manage role of public input in land-use planning. Includes engineers, biologists, geographic information system (GIS) specialists, regulatory specialists; often multi-disciplinary.

Indigenous Communications: specialists effectively communicate the potential impacts of company, community, or government operations on traditional lands, with goal of building constructive relationships between Indigenous and non-Indigenous communities and businesses.

Media and Public Relations: professionals shape messages and stories that are covered in print, digital, social, and online media; raise awareness of environmental issues, hazards, strategies, and action plans.

Project and Program Management: professionals manage environmental programs such as energy retrofit, effectively translate complex environmental information into actionable goals, communicate information about projects and programs. Responsible for stakeholder relations. Usually work in the public and non-profit sectors.

Environmental Management: professionals work with businesses and the public sector to manage environmental impacts and implement ongoing management practices for projects and sites. Both internal and external communication needed. Includes scientists, water resource engineers, and other specialists and often work in public sector.

Communications: specialists collect, analyze, and simplify complex information for the use of decision makers and the public; may develop social media marketing strategies and communications plans.

Community-Based Stewardship: professionals conduct environmental communications and public awareness work with the goal of encouraging grassroots involvement of local residents and public stakeholders in environmental and conservation activities. Often work or volunteer for nonprofit groups.

Public Health Communications: professionals enforce environmental regulations, inform the public of health issues linked to environmental factors (e.g., air quality). Includes inspectors and nurses.

Marketing and Promotion: professionals support product and services sales teams, as well as specific industries or sectors (e.g., green building), by communicating environmental benefits and features through online and print media, video and digital content, and other marketing strategies. Includes persons with traditional sales and marketing backgrounds, but may also include scientists, engineers, IT programmers, or entrepreneurs.

ET Sub-Sector Practice Areas

Education and Training sub-sector work falls into 5 distinct areas of practice.

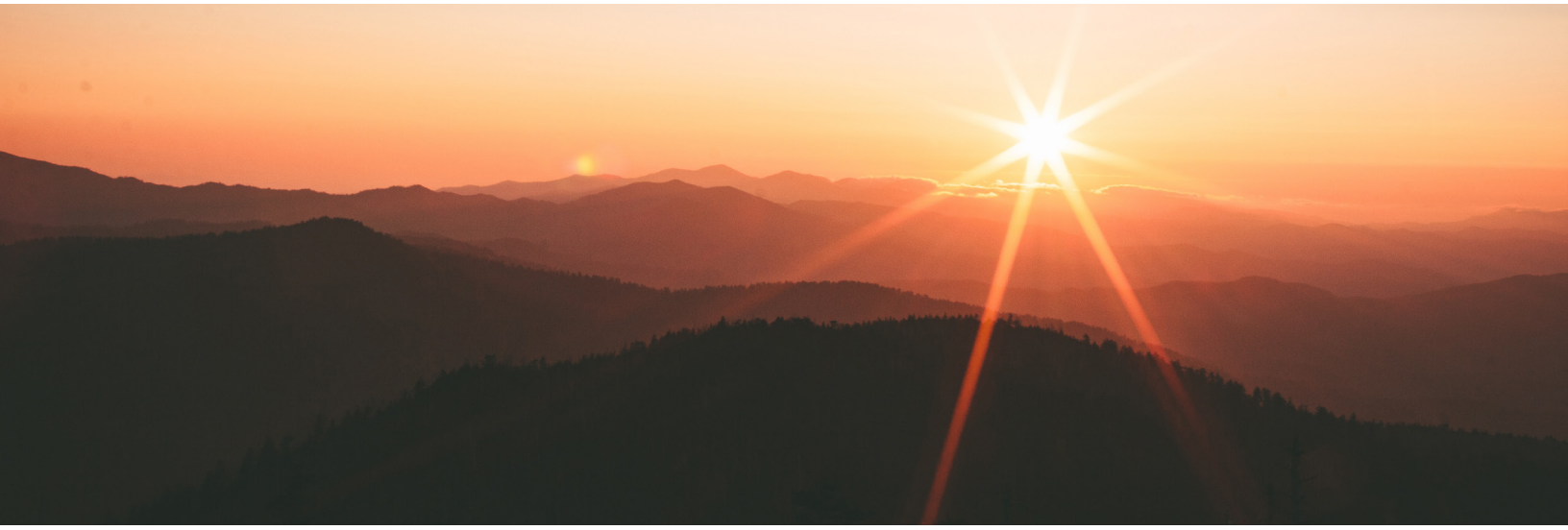
Outdoor Environmental Education: professionals work as instructors, interpreters, guides, volunteers, and natural heritage practitioners to provide outdoor, place-based learning which increases ecological literacy and forms community partnerships. May be specialized based on their place of work (e.g., schools, heritage sites, ecotourism locations, nature organizations) or their area of practice (e.g., wetlands, biosphere ecology).

Topic-Specific Environmental Education: Professionals focus on one topic of environmental education such as water conservation, fish and wildlife, sustainable agriculture, natural heritage, waste management, or conservation. Often work for land conservation organizations, government, and advocacy groups.

Traditional Indigenous Education: educators and trainers develop curriculum from an Indigenous perspective on water, land, wildlife, and other topics; may capture traditional knowledge, including the knowledge of elders.

Environmental Training: professionals provide training on hazardous waste handling and disposal and environmental management in the workplace. Often work in occupational health and safety, construction, waste management, and air quality fields. Includes consultants, technicians, and field professionals.

Education and Academia: ET professionals in formal educational settings teach environmental studies, environmental sciences, and other fields linked directly to environmental work (e.g., ecology, biology, hydrology, earth science). Other fields, such as sustainable agriculture and government policy, have integrated environmental education requirements which may be taught by education and academia professionals. (In addition, within elementary secondary and post-secondary education and academic settings, there is a limited number of CPA career opportunities with the primary goal of building environmental awareness of fields such as conservation, natural heritage, and ecosystem management).



RD Sub-Sector Practice Areas

Research and Development sub-sector work falls into 5 distinct areas of practice, two of which are grouped by type of employer.

National and Provincial Ministries and related: professionals conduct scientific research on specific topics relevant to organizations such as Natural Resources Canada, Environment and Climate Change Canada, Parks Canada, Fisheries and Oceans Canada, other national bodies, and provincial ministries and research councils. Frequent research areas include climate change, protected species, environmental protection, environmental monitoring, and water. Includes research scientists, technologists, technicians, and field workers.

Applied Research: professionals conduct research in energy, transportation, agriculture, industry, environmental architecture, engineering, and other areas with the goal of informing the design and development of systems, products, services, and technologies with an environmental benefit. May be conducted by non-profit or government-funded research institutes, industry, consulting firms, and governments.

University Research: professionals conduct environment-related research in fields such as life sciences, physical sciences and business management (e.g., corporate sustainability); many universities are involved in innovation pathways in which connections are made between university researchers and entities engaged in commercialization of technologies, businesses, and others, which result in research findings being commercialized or licensed. Includes professors, research assistants, lab technologists, and others.

Software Programming and Data Analysis: professionals program and perform statistical analysis, as well as develop quantitative data models based on field observations or other secondary data; may also develop new technologies used in environmental management such as GIS.

Ancillary and Enabling: professionals support environmental research by performing such tasks as coordinating complex research programs, evaluating investment potential for new technologies and consulting on complex research designs.

PL Sub-Sector Practice Areas

Policy and Legislation sub-sector work falls into 4 distinct areas of practice. The fields of environmental law and legislation and environmental policy are distinct, with different although sometimes related career paths.

Environmental Litigation, Law and Counsel: professionals in environmental law are broadly divided into litigators who address issues in the courts and those who advise on legislation; some also teach environmental law. They typically have law degrees supplemented by a firm grasp of science, and may work for NGOs[2], governments, or the private sector.

Policy Research and Consulting: professionals analyze and recommend environmental policies on topics such as, for example, climate policy, pesticide regulation, energy retrofits or energy development regulation. They have diverse educational backgrounds and may be employed by NGOs, international organizations, research organizations, government, or other entities.

Regulatory Compliance: professionals help businesses understand environmental regulations by communicating requirements, assuring compliance, and working with regulatory bodies. They have diverse educational backgrounds, including accounting, corporate governance, sustainability, law, or business.

Policy Development & Indigenous Communities: professionals review, analyze and communicate policy relevant to Indigenous communities. They may be employed by consulting firms, governments, businesses, or Indigenous communities. The communities often seek to train Indigenous persons to conduct policy work but also recruit workers from outside their organizations.

[2] Non-governmental organizations

Occupational Categories

This section of the report describes the occupations in which core CPA-ET-RD-PL professionals work. It complements the previous section on Practice Areas to provide a full picture of the CPA-ET-RD-PL sub-sectors.

Employment in the Combined Sub-Sectors

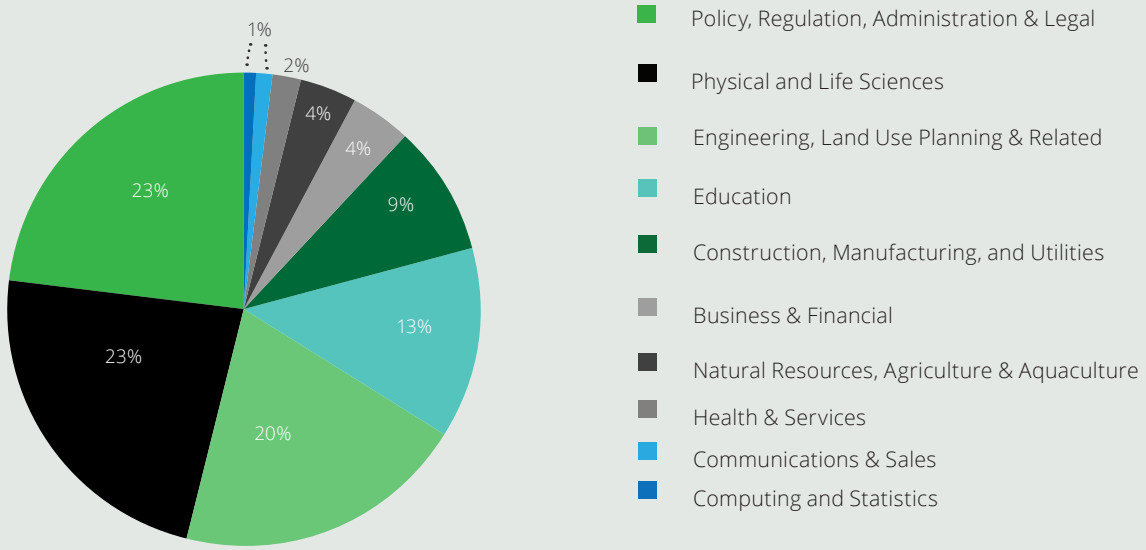
In 2015, there were an estimated 57,700 core environmental professionals working in the environmental sub-sectors of CPA, ET, RD, and/or PL.

As shown in Figure 5, the five largest occupational categories are,

- Policy, Regulatory, Administration and Legal – 23% (13,357 workers)
- Physical and Life Sciences – 23% (13,300 workers)
- Engineering, Land Use Planning and Related – 20% (11,581 workers)
- Education – 13% (7,326 workers)
- Construction, Manufacturing and Utilities - 9%o (5,300 workers)

The balance worked in: Business and Financial; Natural Resources, Agriculture and Aquaculture; Health and Services; Communications and Sales; Computing and Statistics; and/or other.

Figure 5: Core Labour Force in Combined CPA-ET-RD-PL Sub-Sectors, by Occupational Category[3], 2015



Source: ECO Canada Environmental Employment Outlook

[3] National Occupational Classification (NOC)

Employment within each Sub-Sector

Just as the Practice Areas for each of the four sub-sectors are different from each other, the occupational categories for each of the four sub-sectors vary.

Consistent with the patterns identified in the Practice Areas, Figure 6 shows that CPA and PL have similar patterns with these two at the top: Policy, Regulation, Administration & Legal (44% and 46% respectively), Engineering, Land Use Planning & Related (21% and 20% respectively); ET shows these two at the top: Education (30%), Policy, Regulation, Administration & Legal (18%); RD shows these two at the top: Physical and Life Sciences (47%) Engineering, Land Use Planning & Related (29%).

Figure 6: Core Labour Force in each of CPA-ET-RD-PL Sub-Sectors by Occupational Category, 2015

Source: ECO Canada Environmental Employment Outlook

Figure 7: Examples of Common Occupations by Sub-Sector

Communications and Public Awareness

Environmental Planner	Communications Manager	Plant Manager
Economist	Process Engineer	Business Analyst

Education and Training

Professor	Indigenous Liaison	Interpreter
Park Manager	Field Support Specialist	Safety Officer

Research and Development

Quality Control Specialist	Environmental Scientist	Research Technician
Clean Energy Researcher	Environmental Engineer	Fisheries Biologist

Policy and Legislation

Policy Analyst	Compliance Specialist	District Planner
Regulatory Specialist	Lawyer	Environmental Specialist

Source: Environmental Job Ads Database, Burning Glass

CPA-ET-RD-PL Employers

CPA-ET-RD-PL employers are mentioned in various sections of this report. They are found in public and private sectors. Some use volunteers extensively as well as paid workers.

Here is a comprehensive list.

- National and provincial government ministries, and associated organizations such as government research councils
- Municipalities and local organizations
- Indigenous communities
- NGOs and advocates
- Parks and conservation organizations
- Environmental consulting and engineering firms, service firms, entrepreneurs, and consultants
- Research, academia, and education, ranging from elementary through secondary to post-secondary

Environmental Skills for CPA-ET-RD-PL Occupations

The findings of the 2016 ECO Canada Survey of Environmental Employers showed that CPA-ET-RD-PL employers strongly seek both **technical expertise** related to a particular environmental field and **expertise related to the CPA-ET-RD-PL subsector**.

For technical expertise, that most often means expertise in:

- A particular sub-sector or speciality within a sub-sector such as water resource management, air quality analysis, wildlife conservation, sustainable agriculture, energy efficiency and so on.

For CPA, that most often means expertise in:

- Public engagement
- Campaign management
- Environmental communications

For ET, that most often means expertise in:

- Ability to provide training for specific environmental technical skills, which often coincides with an education background

For RD, that most often means expertise in:

- Conduct of research
- Statistical skills to perform quantitative analysis
- Critical thinking skills linked to innovation

For PL, that most often means expertise in:

- Establishing policy, especially determining standards and measurements
- Knowledge of regulations and compliance

Employers also look for professionals with soft skills in project management, written and verbal communication, problem solving and the ability to work independently.

CPA-ET-RD-PL Career Paths

Most professionals follow diverse career paths that touch on several (if not all) of the four sub-sectors.

Communications and Public Awareness

CPA professionals usually begin their career with formal education in either a scientific discipline (e.g., biology, engineering, public health) or a social science discipline (e.g., communications, statistics, political science). Some also have business, marketing, or information technology educational backgrounds.

To be successful in a CPA career, specialization (acquired through further education or work experience or the many specialty certifications available to the profession) is required. Specialization is particularly important for professionals with a social science background.

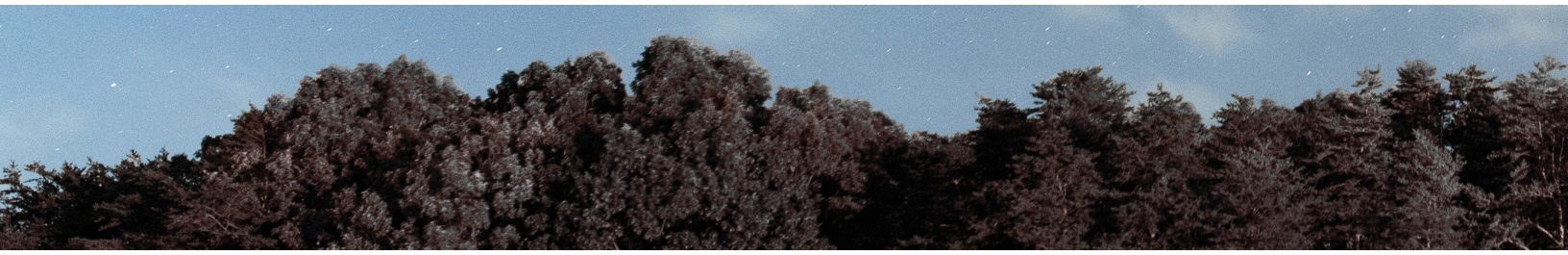
TO BE SUCCESSFUL IN A CPA CAREER, SPECIALIZATION IS REQUIRED

CPA professionals working in advocacy and government organizations have many job opportunities with positions available at all experience levels, as well as well-defined career tracks. Private sector roles are usually less defined; professionals may find themselves moving laterally from occupation to occupation instead of vertically. Volunteer and internship experience can be helpful for gaining entry-level positions.

Education and Training

ET professionals often have strong personal interest in and appreciation for nature. Many begin their careers as a volunteer interpreter or guide which can ultimately lead to formal educator roles or work with consulting firms, non-profits, and government organizations. Along the road, ET professionals usually gain formalized education, usually in environmental science. Some also attain a master's degree in education.

ET professionals must be flexible and able to move between jobs easily as some positions may only be available on seasonal, contract, or limited bases. Professional development for ET workers is important and tends to link to specific communities of practice.



Research and Development

Career paths for core RD professionals usually start with advanced education (often at the post-graduate level) in social, life, and physical sciences. The productive career years then begin in an entry-level applied or pure research position which may involve internship or a research assistant position. RD professionals usually maintain a career-long focus on their domain of expertise (e.g., wetlands, forestry, energy). Certifications and professional qualifications such as Registered Agrologist, Professional Biologist, Registered Professional Forester and others, regulate the RD sub-sector and reinforce the need for higher education.

CERTIFICATIONS AND PROFESSIONAL QUALIFICATIONS REGULATE THE RD SUB-SECTOR AND REINFORCE THE NEED FOR HIGHER EDUCATION

RD professionals often work in dual positions. For example, an agricultural engineer may work as a consultant and teach at a local college.

Policy and Legislation

Careers in the law side of PL practice typically begin with a law degree. The early years are spent analyzing and writing documents on environmental policy; after sufficient experience, the PL lawyer may begin to give formal opinions.

Careers in the policy side of PL practice rarely begin with entry-level positions. Rather, they arrive after years of experience in a policy-making environment which creates a broad understanding of interrelated systems. This might include internships, working for elected officials or similar roles. Their educational backgrounds are very diverse.

Hiring and Retention Challenges

In the 2016 ECO Canada Survey of Environmental Employers, about 1 in 5 of employers (22%) had experienced hiring difficulties in the previous year, most often due to a lack of professionals with adequate work experience.

Consistent with their need for skilled expertise, employers expressed particular difficulties recruiting candidates to occupations in the following areas:

- Science (e.g., biologist, ecologist, environmental technician),
- Environmental consulting and engineering (e.g., environmental consultant, environmental engineer)
- Management (e.g., senior level project manager, park manager)
- Communications and awareness (e.g., campaigner, Indigenous liaison)
- Research (e.g., clean energy researcher, environmental monitor)

Of the CPA-ET-RD-PL employers who expected future hiring challenges, 2 in 3 (67%) were concerned about finding experienced staff with 4 years' experience or more.

Industry Trends

Although there are different trends affecting demand for professionals in each sub-sector, two key drivers of employment in all CPA-ET-RD-PL sub-sectors are:

- Growing public awareness and interest: Public awareness of and interest in environmental issues is creating an increased demand for environmental education, understood as meaningful and actionable environmental information
- Growing legislation, regulation, and policies: Governments are introducing more legislation, regulation, and policies to address climate change, renewable energy, and other environmental issues such as green cities

Communications and Public Awareness Trends

The CPA sub-sector is expected to see steady growth in demand for professionals, driven by strengthening of interest in environmental issues and a large volume of new environmental legislation and regulations.

As well, the CPA sub-sector is seeing steady growth in the skill requirements for professionals, driven by the exploding mix of social and digital media and a trend towards science-based measurement of outcomes.

Table 1: Trends Affecting Future Demand for CPA Professionals

Effect	Driver	Trend Description
↗	Public interest in environment growing	Over the past 30 years, there has been a growing interest in the environment, especially among younger generations. There is a trend toward placing a high value on sustainability and environmental awareness that is driving an appetite in the public for meaningful and actionable environmental information.
↗	Regulations more complicated	Regulations are getting more and more complicated. The private sector has more to navigate which drives a need for more internal communications to assure corporate compliance and environmental responsibility.
↗	Legislated breadth of environmental content increasing	Legislation is driving new needs for CPA. For instance, in the Province of Ontario, the Planning Act is requiring that environmental issues affecting public health be taken into account with city planning. This has the intent of creating healthier and more sustainable cities, often with denser housing that supports mass transit, leading to lower emissions than personal vehicles.
↗	Regional attitudinal differences	The dynamics affecting the labour market are different geographically. For example, in Alberta, the carbon tax is new and some stakeholders see it as negative. This perception is going to drive communication in the province as individuals, businesses and governments seek to understand how to reduce their carbon footprint.
↗	Employers seeking professionalism	There is a shift toward increasing professionalism in communications and public awareness. Employers are looking for communications and awareness experience and skill sets. It is becoming an area of profession rather than "stuff that has to be done."
↗	Science-based communications & measurement needed	There is a shift toward rigorous, data-based measurement of communication effectiveness. Science-informed communications strategies for community engagement and behaviour change are becoming the norm.
→	Social & digital media platform proliferation	Social media has had a massive impact in communication. The public looks at Twitter, Facebook, LinkedIn and other apps/systems, tracking them daily. These platforms have replaced direct mail and other print media as the main places where the public gathers information. This drives a need for communications professionals to use a wide range of digital media and new technology platforms to engage with their audiences.
→	Abbreviated communications	Social media platforms require communication to be shorter and get directly to the point: sound bites rather than longer in-depth reports.
→	Social & digital media measurement needed	Measurement of social media is also evolving. CPA practitioners must evaluate effectiveness that is based on (and goes beyond) figures like a number of hits, impressions, clicks, etc.
→	International communications shifting to multilingual formats	International organizations are changing the ways that they deliver their communications programs. For instance, Parks Canada once offered personal nature programs through guided tours, but with a larger number of multilingual visitors, these deliveries are changing to non-personal communication to assure every visitor's communication needs are met.
→	Targeted marketing required	There is a shift away from so-called "feel good" and "feel bad" campaigns because they have been shown to be ineffective. In their place, more campaigns are rooted in community-based marketing with very specific, targeted behaviour change targets with a target audience. These communications are both science-based (opposed to based in feelings about the earth) and written in plain language (accessible to all audiences).
↘	Spending cuts (government)	Governments are cutting back on spending, including cuts to public awareness programs. Governments have to do more with less and this drives a need for greater creativity and innovation in communication strategies.
↗ ↘	Changes in views of political leaders	Political changes also drive changes in the field of CPA. The environmental views and values of the elected officials and their advisors can reshape communications.

Source: Expert Interviews

Education and Training Trends

The ET sub-sector is expected to remain a stable part of the environmental sector. Rising interest in youth and outdoor education, and the expanding range of environmental legislation and regulations which need training, support growth. On the other hand, funding challenges and movement towards online modularized teaching and training may dampen sub-sector growth.

Table 2: Trends Affecting Future Demand for ET Professionals

Effect	Driver	Trend Description
↗	More interest in environmental education for youth	There is a growing public interest in environmental education for young people. In particular, programs that offer hands-on nature education beginning in early childhood are growing in popularity.
↗	Integrated subject matter curricula in schools	Environmental education has been folded into many fields within school the curricula, rather than being delivered only as an independent subject taught in a single course.
↗	More environmental regulations need special training	There are a growing number of environmental regulations that drive demand for special technical training for safety, environmental protection, and resource management.
↗	Social license issue publicity increases interest in environmental education	There is a linkage between environmental education, communication and public awareness with regard to social license to operate. Media coverage of environment-related events can raise awareness of issues quickly and build support. For example, protests of pipeline crossings in traditional lands have quickly gained attention through traditional and social media. With the increased public awareness, there is an opportunity for education on related topics.
→	Switch to positive from negative messaging	In the past, provocative images used by educators to raise worries about the environment did not lead to the desired behavioural changes. The current trend is toward positive information that explains the science behind environmental issues and inspires people to change through storytelling and giving ways to become involved.
↗ ↘	Economy ups and downs affect funding for environmental education	The economy plays a role in demand for environmental education, with less emphasis during down cycles.
↗ ↘	Political views on importance of environmental education	The political environment affects whether environmental education is taught in schools and what is emphasized and taught. Some governments do not offer it while others invest heavily in it.
↗ ↘	Mixed trends from increasing technology in environmental education	There is a slight trend toward greater use of technology in environmental education. For instance, volunteers in environmental monitoring collect information on data platforms. Even though hands-on field experience remains a major emphasis in environmental education, some environmental training is following general workplace trends in education and training, with more training being delivered online in short, concise segments.
↘	School spending cuts for environmental education in schools	While some outdoor environmental education programs are growing in popularity, funding for environmental education at some public schools is in decline. Generally, within the field of environmental education, there is a lot of work, but not a lot of funding.

Source: Expert Interviews

Research and Development Trends

The demand for environmental RD professionals is expected to grow in the private sector in fields such as renewable energy, energy efficiency, and green technology.

Demand in the public sector is expected to remain stable or possibly decline as government roles shift, but hiring is expected to remain stable as experienced scientists, engineers, and technicians retire.

Table 3: Trends Affecting Future Demand for RD Professionals

Effect	Driver	Trend Description
↗	Private-sector business growth	Many experts expect that the future growth in environmental research will occur primarily in the private sector at consulting firms and businesses.
↘	Government downsizing	In many government organizations, there has been a long-term history of continual downsizing. There has been a shift in what is valuable within government and commensurate loss of research scientists. Governments have moved out of some research areas for environmental monitoring (e.g., the BC government moved away from directly managing forests, creating designations such as Registered Professional Biologists or Professional Foresters who work as consultants).
↘ ↗	Industry Cycles Up or Down	Industry growth or contraction can drive environmental research. For example, the downsizing of the forestry sector over several decades resulted in much fewer researchers working in wood products. The recent uptick in forest technologies is driven by growing demand for high-tech forest products and sustainable forestry practices.
→	Retirement replacement	Retirements of experienced research professionals are driving hiring growth in some sectors. As experienced scientists in government and industry retire, there is a demand for new researchers to fill these roles.
→	Trends to research specialization, and to relating specialties to bigger trends	There is a trend in research toward increasing specialization, as well as research in intersecting fields related to bigger trends like climate change.
→	Digital technology growing	Scientific research is requiring a larger amount of work using new software, big data, and tools to manage information.

Source: Expert Interviews

Policy and Legislation Trends

The demand for policy and legislation professionals is expected to grow based on three key drivers: climate change, transitions in energy use, and growing global stress on resources. PL professionals will be in demand in all sectors (public and private), at the global, national, provincial, and local levels.

Table 4: Trends Affecting Future Demand for PL Professionals

Effect	Driver	Trend Description
↗	Urgency of Addressing Climate Change	There is growing awareness of the urgency of climate challenge in Canada and elsewhere. This is the top issue driving the creation of new environmental policy. As governments become more aware of the challenge, people with policy experience are likely to be in great demand.
↗	Need for developing countries to address climate change	There is a growing need for developing countries to increase capacity for climate change responsibility. This will drive a need for technical assistance that could be provided by Canadians overseas.
↗	Transition to Renewable Energy	The energy system that underscores society is being affected by the global transition to renewable energy. This complicated transition is creating huge challenges and driving a need for policy considerations.
↗	Growing global shortage of resources	The world has traditionally had a linear economy that starts with natural resources and ends in waste management. As population grows, however, there are not enough resources to continue this path. There is a growing need for cyclical and circular processes that minimize resource demands. This may mean manufacturing things in a way that creates streams that are beneficial to the biological system. So-called "cradle to cradle" certified products may become a necessity and will drive the need for policies that encourage and motivate businesses and individuals to support the change.
↗	Growing public engagement around environmental law and policy	Public engagement with regard to creation of environmental law and policy is a fairly recent development and is having a broader impact on policies.
↗	Municipalities becoming green	The trend toward greener communities and cities is driving creation of roles at the city level for stronger local environmental policy.
↗	More court time on negative environmental impact	Toxic tort firms are growing and prosecuting environmental negligence and nuisance.
→	Need to account for social media impacts	Social media is playing a new role in policy development which is driving needs for environmental workers to analyze and interpret social media trends. For one instance, the Keystone XL project received major attention on social media.

Source: Expert Interviews

Career and Employment Demand Outlook

The 2016 survey of CPA-ET-RD-PL employers found:

- In the 12 months prior to survey when the Canadian economy had contracted, only 17% reported a net increase in CPA-ET-RD-PL labour force and 19% reported a decrease, primarily through layoffs
- However, recovery was on the horizon. Over the forthcoming 24-month period after the survey, about 1 in 3 (32%) expected an increase in labour force and about 2 in 3 (65%) expected labour force to remain constant

The ECO Canada Environmental Employment Outlook affirms the promising outlook. Table 5 shows that the entire Canadian Environmental Employment sector is projected to increase throughout the projection horizon to 2024 as is each of the CPA-ET-RD-PL sub-sectors.

After the slim 2016 year

- PL is projected to grow by 4.6% to 5.1% annually
- CPA is projected to grow by 4.5% to 5.1% annually (overlaps with PL projected)
- RD is expected to grow by 3.0% to 3.2% annually
- ET is expected to grow by 1.9% to 3.0% annually

Table 5: Demand for Environmental Professionals in Canada: The Environmental Sector and Selected Sub-Sectors, 2015-2014

Environmental Sub-Sector	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total Environmental Sector	374,525	353,156	364,005	376,615	389,426	402,916	416,711	431,452	447,244	464,210
Growth		**-6.1%**	**3.0%**	**3.3%**	**3.3%**	**3.3%**	**3.3%**	**3.4%**	**3.5%**	**3.7%**
Communications and Public Awareness	20,943	21,360	22,372	23,512	24,696	25,947	27,253	28,656	30,164	31,785
Growth		**2.0%**	**4.5%**	**4.8%**	**4.8%**	**4.8%**	**4.8%**	**4.9%**	**5.0%**	**5.1%**
Education and Training	21,136	16,299	16,623	16,994	17,380	17,782	18,201	18,670	19,195	19,787
Growth		**-29.7%**	**1.9%**	**2.2%**	**2.2%**	**2.3%**	**2.3%**	**2.5%**	**2.7%**	**3.0%**
Research and Development	23,852	22,153	22,847	23,634	24,417	25,214	26,020	26,864	27,745	28,666
Growth		**-7.7%**	**3.0%**	**3.3%**	**3.2%**	**3.2%**	**3.1%**	**3.1%**	**3.2%**	**3.2%**
Policy and Legislation	19,319	21,310	22,344	23,502	24,700	25,963	27,278	28,685	30,194	31,813
Growth		**9.3%**	**4.6%**	**4.9%**	**4.9%**	**4.9%**	**4.8%**	**4.9%**	**5.0%**	**5.1%**

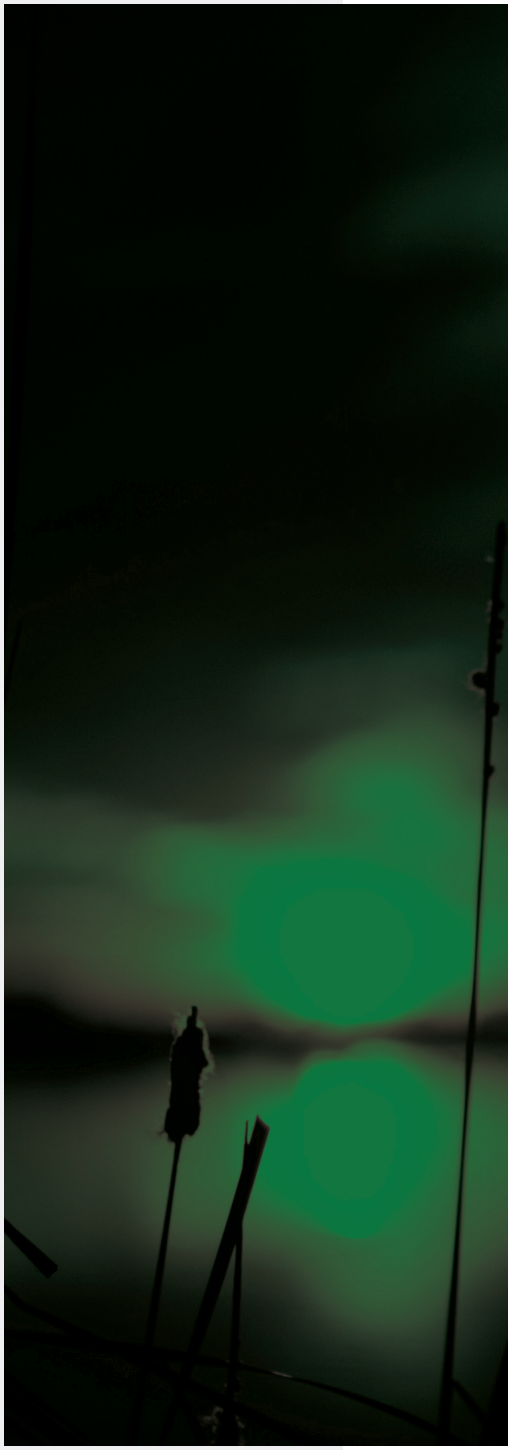
Source: : ECO Canada Environmental Employment Outlook. Notes: Sums do not match totals due to overlap of jobs across multiple sub-sectors.

In Summary

The CPA-ET-RD-PL sub-sectors are expected to continue to grow at a steady rate to the current projection horizon of 2024, creating a vibrant and diverse future for core CPA-ET-RD-PL professionals.

Steadily growing public attention paid to environmental issues, and increasing legislation and regulation are drivers to growth in demand for professionals.

Increasing breadth and complexity of social and digital media are drivers to growth in required skill levels.



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This project was funded by the Government of Canada's Sectoral Initiatives Program.
The opinions and interpretations in this publication are the author's and do not necessarily reflect those held by the Government of Canada.

ECO Canada (2017).
Careers in Selected Environmental Sub-Sectors:
Policy and Legislation (PL)
Communications and Public Awareness (CPA)
Education and Training (ET)
Research and Development (RD)
Current Job Trends and Future Growth

Labour Market Research.
Environmental Careers Organization of Canada.

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