

COMPETENCY PROFILE:

# CLIMATE CHANGE SPECIALIST

## ROLE OVERVIEW

Climate change specialists study the changes in weather over time. They do this by looking at the trends in wind, temperature, lightning, sunshine, and rainfall (amongst others). This information helps them to make sense of climate trends and changes, which allows specialists to see how human activity affects the weather. Climate change specialists look at how society can adapt to and lessen the impacts of climate change and how people can positively impact and protect the environment.

## ALSO KNOWN AS:

- Environmental Expert
- Ecosystem Project Manager
- Environmental Advisor
- Environmental Compliance Expert
- Environmental Consultant
- Environmental Sustainability Expert

## NATIONAL OCCUPATIONAL CLASSIFICATION:

- 41400 – Natural and applied science policy researchers, consultants, and program officers

## EDUCATION AND EXPERIENCE

- The minimum education required is a bachelor's degree in geology, geochemistry, physics, geophysics, or meteorology to understand climate change fundamentals.
- A master's degree or Ph.D. may be necessary for research roles or positions requiring deep specialization.
- Certification is not mandatory but belonging to a professional group like the Canadian Meteorological and Oceanographic Society is advantageous for career development.
- Professional membership offers networking opportunities and access to cutting-edge research and enhances professional credibility.
- Advanced degrees focus on specific climate change aspects, contributing to scientific research and knowledge.
- An educational foundation starts with a relevant scientific discipline, which can be enhanced through advanced studies and professional affiliations for those aiming for research-intensive roles.

## TECHNICAL



### Budget and Cost Management

Develops comprehensive plans to monitor and evaluate operational budgets and costs to account for all climate analysis activities and spending to sustain operations.

- Monitors the operating cost and budget metrics of site processes, procedures, and performance to ensure operations remain viable.
- Provides senior leadership with input in developing a cost management plan to manage project costs, possibilities, and limitations.
- Documents all resource and financial costs to ensure accurate accounting of project stages.
- Documents and reports on the site operations costs and budget metrics to communicate potential profits and losses to external stakeholders and internal decision-makers.
- Leads the development of a cost management plan to establish procedures and documentation to manage project costs throughout the project lifecycle.

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### Data Analysis

Uses established statistical methods to analyze and interpret data, identifying trends, patterns, and opportunities to inform strategic decisions.

- Confirm climate data is sufficient and valid before analysis to ensure data collection within the current requirements of legislation, survey plans, and/or specifications.
- Uses appropriate methodologies and techniques to analyze field survey data to produce accurate, reliable, and unbiased results.

- Applies mathematical and scientific models to analyze and derive solutions to specific problems.
  - Seeks feedback from other technical specialists to confirm interpretations and ensure all conclusions are aligned with the project plan.
  - Prepares technical and research reports on observations, findings, and/or impacts to communicate results to stakeholders, industry, government, or the public.
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## **Data Visualization**

Develops weather and climate models based on personal analyses and summarizes these models in reports and articles for specialists and the public. This approach aims to make the effects of climate change on various systems broadly understandable.

- Uses computer programs to create weather and climate models to visualize the observed changes over time.
  - Translates complex subjects into simple language to make the information accessible to the average layperson.
  - Creates and uses mathematical weather and climate models to better estimate the impact of ongoing and future environmental changes.
  - Uses impact models and other visualization techniques to illustrate how human activities respond to climate.
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## **Field Surveys**

Conducts field surveys to collect information on the area's changing climate and ecosystem organisms to determine the viability of projects and the impacts of human activity on the ecosystems.

- Defines a survey's purpose, scope, and objectives to collect the necessary data and minimize the study's impact on the local environment.
  - Applies appropriate techniques to conduct field surveys to ensure data is accurate, reproducible, and relevant to the survey plan.
  - Use survey equipment and instrumentation to collect and analyze samples and data to identify the site's natural characteristics.
  - Analyzes data gathered and formulates site-specific conclusions to improve the environment.
  - Identifies any potential contamination or pollution and develops plans to eliminate contamination and restore the site to its natural state.
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## **Project Coordination**

Develops a comprehensive project management plan to define how climate analysis and adaptation projects are executed, monitored, and controlled, integrating any subsidiary plans to perform the necessary actions and processes required to complete the project.

- Defines the scope, strategy, and objectives for the technical aspects of projects and programs to establish parameters and deliverables.
- Develops a work breakdown structure to provide the project team and relevant stakeholders with a detailed overview of the deliverables.

- Tracks the progress of operational plans to adjust, assess the achievement of strategic goals, incorporate lessons learned, and acknowledge contributions.
- Identifies and differentiates immediate and deferred adaption strategies and actions to create an approach responsive to relevant policies and policy limitations.



## Communication

Positively directs outcomes by delivering communication (both written and verbal) that results in a better understanding of goals and objectives captures interest, and gains support for immediate action.

- Interprets and presents data results to stakeholders and senior management to facilitate decision-making.
- Asks questions when assigned unfamiliar tasks to ensure understanding and accuracy.
- Prepares documentation for existing and upcoming products to describe functionality and composition and communicate technical specifications in plain language to a broad audience.
- Uses non-technical language to communicate effectively with team members of all experience levels.

## Problem-Solving

Identifies problems and uses logic, judgment, and evidence to evaluate alternative scenarios and recommend solutions to achieve a desired goal.

- Considers the impact on the organization and environment when analyzing specific project objectives and goals.
- Analyzes meteorological data to understand trends and potential areas of concern to take appropriate actions where required.
- Applies mathematical models and techniques to perform analysis and create solutions to specific problems.
- Approaches problems with a balance of logic and creativity to develop innovative solutions.
- Takes an unbiased stance on interpreting new information to solve a problem objectively.



## Environmental Policies

Helps create environmental policies and practices based on available data to alter human behaviours and slow climate change.

- Applies evidence-based decision processes and synthesizes relevant data to generate defensible policy recommendations that support sustainable climate adaptation strategies/initiatives.
- Generates solutions that align with short—and long-term goals and current knowledge about climate risks to create feasible and actionable options.
- Applies an analysis of risk patterns in climate change to propose solutions that mitigate future risks.
- Builds from and leverages existing sustainability, climate adaption, energy, biodiversity, and emissions reduction theories to create the most robust possible responses.
- Simplifies observations to essential variables to create strategies for environmental remediation.

## Environmental Policy Evaluation

Evaluate the sustainability of an organization's policy(s) to develop suitable alternatives to support mitigating climate change effects.

- Identifies sustainability policies that align with organizational values to support the development of sustainable practices.
- Recommends valid policy alternatives from an organization's standard to improve internal policies and adapt to climate change.
- Combines research on organizational best practices with stakeholder feedback to evaluate the current policy's effectiveness.

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## Health, Safety and Environment (HSE) Compliance

Carry out inspections, oversee remedial projects, and generate site reports to ensure that the operation complies with regulatory requirements, internal policies, procedures, and client expectations.

- Monitors regulatory frameworks to ensure the organization is proactive in their compliance.
- Conducts workplace inspections to verify adherence to relevant regulations, internal policies, procedures, and client expectations.
- Opens and monitors HSE files for non-compliance to ensure remedial action is taken to resolve issues.
- Supports the organization in meeting HSE regulatory reporting and permit requirements to avoid compliance-related disruptions to the operation.
- Records and tracks HSE successes and failures for statistical and reporting purposes and publishes essential results, including performance against organizational key performance indicators, to inform site decision-makers.

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## **Regulatory Compliance**

Adheres to specific regulations, codes, and legislation within a defined jurisdiction to ensure the health and safety of all team members.

- Analyzes relevant regulations, legislations, and standards to ensure programs comply with laws, regulations, and standards on sustainability.
- Applies a working knowledge of regulatory requirements governing licensing or zoning to ensure an organization's compliance, regardless of which location or site
- Generates solutions aligned with organizational goals and government regulations to create lasting and effective fixes.



## Climate Adaptation Science

Identifies interactions between humans and the environment to monitor changes in the climate and develop adaptation plans that are informed by scientific understanding.

- Identifies the complex interactions between climate and other systems to capture that complexity in climate change analysis.
- Interprets global and local climate trends, impacts, challenges, and concerns to inform policies and practices.
- Studies aspects of changes in the climate to understand the potential effects of activities on the natural and human environments.
- Incorporates Indigenous knowledge and learning into climate adaptation plans to inform a holistic, well-rounded approach.

*This profile is a living document. If you have any feedback or would like to help us improve the profile, please reach out to [research@eco.ca](mailto:research@eco.ca).*