Canada's National Strategy Respecting Environmental Racism and Environmental Justice

2026-2031



Environment and Climate Change Canada
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Minister's Foreword

I am pleased to present Canada's National Strategy Respecting Environmental Racism and Environmental Justice 2026–2031. Developed under the authority of the National Strategy Respecting Environmental Racism and Environmental Justice Act, this Strategy represents an important step in strengthening our understanding of environmental racism and advancing environmental justice across the country.

A clean, healthy, and sustainable environment is important for all people living in Canada. Recognizing that environmental harms and risks are not always experienced equally, this Strategy is informed by the knowledge, lived experiences, and perspectives of Indigenous, racialized, and other marginalized communities, as well as organizations, academics, youth, industry representatives, and individuals from across Canada.

The insights shared through engagement and consultation have reinforced the importance of access to information, meaningful participation, partnership, and environmental decision-making informed by the perspectives of Canadians.

Environmental protection and environmental justice are shared responsibilities that require collaboration among all levels of government, Indigenous communities, grassroots organizations, industry, researchers, and citizens. The success of this Strategy, like the broader movement toward environmental justice, relies on different partners fulfilling their respective roles and fostering honest dialogue and transparency in those relationships.

This Strategy is an important milestone, but the work does not end here. Advancing environmental justice will require ongoing dialogue, collaboration, and a commitment to learning from the experiences of communities across the country and preventing environmental racism moving forward. Thank you to everyone who has shared their knowledge, experiences, and perspectives throughout the development of this Strategy.

Together, we can continue building a future in which everyone can benefit from a healthy environment.

The Honourable Julie Dabrusin,

Minister of the Environment, Climate Change and Nature

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Introduction

Royal Assent of the *National Strategy Respecting Environmental Racism and Environmental Justice Act* (the Act) marked an important national commitment to develop a Strategy to advance environmental justice (EJ), and assess, prevent and address environmental racism (ER).

As Canada works to protect lands and waters, sustain the resiliency of healthy ecosystems and tackle climate change, we must ensure that no community is left behind. We must build Canada strong — for all. While the federal government has responsibilities within this space, environmental justice is rooted in community experience, often led at the local and grassroots level. Meaningful participation, community level knowledge, and engagement with those affected must inform this national strategy. This Strategy considers the role of the Government of Canada within the context of EJ, and at the same time recognizes and respects the jurisdiction, including provinces, territories and municipalities, and roles and leadership of other key partners in this space. Success will require collaboration, shared responsibility, and a commitment to building solutions together.

Everyone in Canada should have the opportunity to enjoy a healthy and sustainable environment, and the benefits of a growing clean economy, and strong environmental protection should be shared by all Canadians. By acknowledging and addressing ER, we can build a stronger, more united Canada—one that protects people and the environment and moves forward together. This includes pursuing the necessary conditions to advance EJ:

- community informed decision-making
- fair access to information and participation
- concerted efforts to avoid disproportionate environmental impacts on marginalized and under-represented groups

Abbreviations

CEPA – *Canadian Environmental Protection Act*

CIRNAC – Crown-Indigenous Relations and Northern Affairs Canada

DA – dissemination area

ECCC – Environment and Climate Change Canada

EEPCI – Environmental Effects and Population Composite Index

EJ – environmental justice

ER – environmental racism

FCSAP – Federal Contaminated Sites Action Plan

ISC – Indigenous Services Canada

LSES – low socioeconomic status

NPRI – National Pollutant Release Inventory

PEH – potential environmental hazard

UN Declaration – United Nations Declaration on the Rights of Indigenous Peoples

What the Strategy is

Canada's National Strategy Respecting Environmental Racism and Environmental Justice (2026-2031), or "the Strategy", will guide the federal government and partners in advancing EJ and addressing ER across the country. As Canada works to create stronger, healthier more resilient communities, the Strategy aims to support more equitable benefits for affected communities. The Strategy is informed by analysis of the links between race, socioeconomic status, and environmental risks, and considers measures to advance EJ.

The Strategy recognizes the work already underway across the country. It reflects the contributions of individuals and communities who have been advancing EJ for years. Their insights, advocacy, and lived experience guide and strengthen the federal approach.

As reflected in the Act, the Strategy focuses on situations where environmental hazards intersect with systemic inequities. It concentrates on areas where the federal government has the authorities, leadership, responsibilities or capacity to advance change, including:

- guiding federal institutions in embedding principles of EJ into their policies, programs, and decision-making processes
- seeking to strengthen collaboration and coordination across federal departments and agencies, other orders of government, industry, civil society, academia, and communities
- enhancing participation and representation of impacted communities, particularly Indigenous, racialized, and marginalized groups, in federal environmental decision-making processes
- improving federal capacity, tools, and knowledge systems to assess, anticipate and prevent environmental disparities, while supporting ongoing learning and adaptive approaches

The Strategy recognizes that broader social, historical and economic factors shape ER and unequal environmental outcomes. These issues go beyond the responsibility of any one government or sector — it is a complex whole-of-society challenge. For this reason, the Strategy focuses on actions the federal government can take to best promote collaboration and complement shared responsibility across jurisdictions, sectors and partners.

How we listened and used evidence to shape the Strategy

This Strategy was informed by input from engagement and consultation efforts across a variety of activities and regions. The feedback received provided rich insights and valuable considerations pertaining to the requirements outlined in the Act.

Canada's Environmental Justice and Racism Symposium

Environment and Climate Change Canada (ECCC) hosted a Symposium on September 13 - 14, 2024. It was the first national event of its kind in Canada and launched a national conversation on EJ and ER. Over 300 participants – youth, people with lived experience of ER, academics, advocates, and policy experts – joined the conversation in person and online. The Perspectives and Insights Report summarizes discussions during the two-day event. It highlights key themes, ideas, and resources from participants.

Engagement with Indigenous Peoples

Indigenous peoples in Canada have a special constitutional relationship with the Crown. Section 35 of the *Constitution Act, 1982* recognizes and affirms this relationship, including existing Aboriginal and treaty rights. Indigenous Peoples also have a unique relationship with the natural environment, often intersecting with section 35 rights and rights outlined in the UN Declaration. As such, Indigenous perspectives on EJ may be considered in a separate context than other Canadians.

The department has emphasized engagement specific to contexts of Indigenous Peoples. These engagements highlighted challenges in awareness of federal initiatives and identified common findings:

- strong emphasis on distinctions-based approaches reflecting differences across Indigenous groups, regions, and circumstances, urban and those not represented within a single distinction
- ER is often understood through lived experience, including cumulative impacts over time and across jurisdictions, and is linked to broader social and historical factors
- there is emphasis on respecting Indigenous rights, including earlier and clearer application of rights-based approaches
- understanding specific impacts based on context and history requires direct engagement with affected Indigenous nations and groups
- participants raised concerns about the effectiveness of consultation approaches versus strengthening Indigenous capacity to participate, and the need to enhance accessibility and simplify mechanisms
- participants highlighted a need for clarity on constitutional responsibilities between levels of government and Indigenous governance. In the context of seeking greater assertion of Indigenous governments' authorities (particularly for First Nations lands and territories), there is a general desire for clarity around:
    - the intersections of constitutional responsibilities and interactions with Indigenous rights

    - the increasing role of Indigenous-led governance.
- concerns were raised about data gaps, accuracy, and the importance of Indigenous data sovereignty and knowledge systems

Public Consultation on *Canada's draft National Strategy Respecting Environmental Racism and Environmental Justice 2026-2031*

ECCC invited persons, communities and organizations to provide input on the draft National Strategy through an open 45-day public comment period that began on June 26, 2026, and closed on August 10, 2026. The consultation invited feedback on the overall strategy, including how the Government of Canada can best implement the actions outlined in the draft Strategy priority areas. Over 200 submissions were received from individuals, organizations, academia, and Indigenous governments, communities and organizations.

We heard through input that there was a desire to see how engagement and consultation are considered within environmental justice policy development. Insights from the consultation are included throughout the National Strategy to demonstrate how perspectives are being considered. A more detailed 'What We Heard Report' can be found in the Annex.

Forward considerations

This Strategy is a starting point for continued dialogue and relationship building in the context of environmental justice. The Strategy recognizes the role of engagement and consultation, including where decisions intersect with section 35 and UN Declaration rights. It also acknowledges that community capacity challenges remain an issue, and that some areas of concern fall outside the scope of the Strategy. Whole-of-government efforts, including initiatives led by Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and Indigenous Services Canada (ISC), are advancing consultation practices and capacity considerations.

Gaps in available data are a recurring issue in local efforts to address ER. Finding practical ways to improve data, while respecting Indigenous data sovereignty, remains a key challenge. These issues will continue to be important areas of discussion as Indigenous rights and perspectives are increasingly reflected in environmental decision-making.

Part 1: Understanding environmental racism and justice

Environmental racism

ER is a form of systemic racism that occurs when environmental policies and practices harm certain groups disproportionately based on their race. It has been linked to the disproportionate placement of environmentally hazardous sites (e.g., polluting industries) in or near Indigenous, Black, racialized or marginalized communities. This is shaped by a history of exclusion or underrepresentation in environmental decision-making.

The impacts of ER can include socio-economic, health, general well-being, culture and more. Because ER is systemic, EJ considers how overlapping forms of oppression compound harm, such as historic and ongoing impacts of colonialism. It focuses on how environmental benefits and burdens are distributed, how inequalities link to broader social and economic systems, and on centering community voices in decision-making.

What We Heard

Perspectives on EJ are diverse. These perspectives are shaped by experiences, values, and different ways of knowing. A part of advancing EJ in the Canadian context is building an understanding of these perspectives and discussions.

Advancing EJ as a concept in federal policy and regulatory contexts requires considering how it could be practically applied. When concepts that are born in grassroots and advocacy spaces are applied by large institutions, there can be a perception that the concept is not being 'meaningfully' applied or that it is being co-opted.

It is necessary to consider how EJ as a concept can be advanced in the federal context and practically reflect procedural, recognitional, distributive, and restorative justice. This may not reflect all perspectives of EJ but can aim to consider and implement EJ in actionable and measurable ways.

Environmental justice

Working toward EJ requires creating the conditions for meaningful engagement in environmental decision-making, in order to seek more equitable distribution of environmental outcomes. This concept, advanced by grassroots organizations, is rooted in four principles: procedural, recognitional, distributive, and restorative justice.

Procedural justice

Procedural justice means including affected people in decisions that impact their lives and

creating meaningful opportunities to participate. It also requires removing barriers to participation, so decisions reflect lived experience and community needs. This includes improving access to clear, reliable, and timely information to Indigenous, racialized and marginalized communities, and providing opportunities for communities to be heard.

What We Heard

Many participants described procedural justice as communities having control over final decisions. In the federal context, EJ can help make decision-making more equitable by improving access to information, supporting meaningful engagement, and ensuring diverse perspectives and lived experiences are considered. Federal decisions must also reflect the broader public interest, including consideration of potential costs and benefits.

Federal processes already incorporate principles that reflect EJ in environmental decision-making. For example, Gender-Based Analysis Plus helps assess how decisions may impact people differently by taking a gender- and diversity-sensitive approach. Regulatory development also considers impacts on health, safety, well-being, the economy, and the environment. In addition, the Right to a Healthy Environment Implementation Framework under the Canadian Environmental Protection Act, 1999 (CEPA) requires that CEPA-related activities be informed by the principles of environmental justice, intergenerational equity, and non-regression.

Some input from Indigenous respondents emphasized processes that uphold rights and support self-determination as being central to procedural justice. This includes early and consistent engagement and consultation processes that reflect free, prior and informed consent.

Recognitional justice

Recognitional justice means respecting the lived experiences and values of affected communities. It acknowledges that many marginalized communities have long cared for the land while being excluded from decision-making. This aligns with Indigenous and other worldviews that recognize the inherent value of ecosystems. Recognitional justice seeks to improve how community knowledge is treated as valid evidence and challenges narrow definitions of expertise.

What We Heard

Recognitional justice was a key theme in consultation input, with participants emphasizing the importance of recognizing the diverse identities, histories, and experiences of people and communities affected by environmental racism. Participants highlighted a wide range of experiences, including those of Indigenous Peoples, Black Canadians, newcomers, migrants, persons with disabilities, rural communities, and others.

Experiences of environmental racism vary across communities and are shaped by local contexts, histories, and lived experiences. At the national level, recognitional justice can help inform how the federal government engages with communities by acknowledging community-defined perspectives and experiences. Communities are best placed to describe their own lived experiences, and those perspectives should help inform engagement and policy development.

Distributive justice

Distributive justice considers how environmental benefits and burdens are experienced by different groups and communities. The goal is that no group bears disproportionate environmental risks based on race, income, or other characteristics, and for affected communities to enjoy a healthy environment.

What We Heard

Many participants called for reducing environmental burdens and highlighted the importance of understanding cumulative effects, including when multiple environmental risks and climate change impacts affect a community over time.

Advancing EJ can improve access to information, support participation in environmental decision-making, and help identify communities facing disproportionate environmental risks. While it is not possible to eliminate all environmental burdens, identifying and addressing areas where communities may be overburdened can help inform future decisions and support actions that bring environmental benefits.

Participants also emphasized that, for many Indigenous Peoples, the natural environment is deeply connected to culture, language, spirituality, and ways of knowing. Rights-based approaches that support meaningful consultation and engagement can help ensure these connections are understood and respected in decision-making.

Restorative justice

Restorative justice means acknowledging past and ongoing harms and focusing on those who experienced them. It prioritizes inclusion of impacted communities in creating solutions. In the context of EJ, this includes taking responsibility for environmental harms and risks. It also involves rebuilding trust and strengthening relationships with affected communities.

What We Heard

Participants highlighted restorative justice as a way to recognize the historical and ongoing impacts of environmental decisions on communities. This includes understanding what decisions have been made, and how those decisions impact the community. Understanding past decisions and their lasting effects can help inform more equitable approaches to addressing environmental harms. Respondents framed restorative justice as a way to rebuild relationships and trust with communities.

Some participants also viewed restorative justice as an approach to environmental enforcement and redress. Existing federal programs may support restorative outcomes in certain circumstances. For example, the Environmental Damages Fund directs money from environmental fines and penalties to projects that benefit the environment, often in affected communities. Other federal programs, such as funding available under the Fisheries Act and the Vessel Remediation Fund, can also support environmental restoration and community capacity-building.

Part 2: Examining the link between race, socio-economic status and environmental risk

Background

This plain language summary has been prepared to summarize the study to examine the link between race, socio-economic status and environmental risk, which is available in Annex A. This plain language summary also reflects the public engagement and consultation that has occurred since Royal Assent of *An Act Respecting the Development of a National Strategy to Assess, Prevent and Address Environmental Racism and to Advance Environmental Justice* (the Act).

Introduction

As required by the Act, the study is intended to support a better understanding of environmental racism and environmental justice in Canada. The study examines the relationship between race, socio-economic status, and environmental risk, and provides information on the location of environmental hazards.

The study also considers broader factors relevant to environmental justice, including participation in environmental decision-making, concerns related to the fair application of environmental laws and policies, and existing federal programs that may contribute to environmental justice outcomes.

Environmental racism and environmental justice are complex issues that are shaped by environmental, social, economic, historical, and local factors. The study provides an evidence base to help inform federal decision-making and support efforts to assess, prevent, and address environmental racism and advance environmental justice in Canada.

Why we conducted the study

One of the study's key findings is that environmental racism and environmental injustice are complex issues, particularly when examined at a national scale. Understanding the issues requires multiple sources of information and context. Data, statistics, and maps can help identify patterns, but they cannot fully capture community experiences or local realities.

For example, data alone cannot determine whether environmental injustice is occurring in a community. It is also important to understand a community's history, lived experiences, and perspectives. Other factors, such as how decisions were made, who was involved, and the nature of the environmental concern, can also provide important context.

This summary explains the study's approach and key findings in plain language. It is intended to provide an accessible overview for individuals, communities, and organizations interested in environmental justice and environmental racism.

This document does not include technical details. Readers who would like more information on the methodology, analysis, and findings are encouraged to consult the technical summary in Annex A.

How the study was shaped

This is the first national study of environmental racism and environmental injustice conducted by the Government of Canada. While researchers, communities, and organizations across the country have contributed important work on these issues in specific places and contexts, a study at the national level had not previously been undertaken.

Several factors helped shape the study's approach and scope, including the requirements of the Act, the federal context in which the work was conducted, and a commitment to transparency and accessibility.

The Act was introduced through a Private Member's Bill. It reflected concerns and priorities raised by communities, advocates, researchers, and parliamentarians regarding environmental racism and environmental justice in Canada.

The Act's preamble provides important context for understanding its intent. It recognizes that Indigenous, racialized, and other marginalized communities can face disproportionate environmental burdens and notes concerns about the location of environmentally hazardous sites, including landfills and polluting industries, in areas where these communities live.

As a result, the study focused on understanding the relationship between environmental risks and the experiences of Indigenous, racialized, and marginalized communities, with particular attention to environmentally hazardous areas and activities.

Examining EJ through a federal lens

The study was designed to support the development of a national strategy and to inform federal action. As a result, the analysis focused on issues that could be examined at a national scale and that are relevant to the federal government's roles and responsibilities.

The work was led by Environment and Climate Change Canada (ECCC), the department responsible for developing the Strategy. While environmental justice is relevant to the mandates of many federal departments, provinces, territories, Indigenous governments, and municipalities, this study was undertaken within the federal government’s mandate and available authorities.

This perspective shaped both the scope of the study and the questions it sought to answer.

A starting point for understanding

The study does not identify or label specific communities as having experienced environmental racism or environmental injustice. Environmental racism and environmental injustice are complex

issues that require an understanding of local histories, lived experiences, and community perspectives. Instead, the study provides information that can support policy development and help communities, governments, and other interested parties better understand patterns of environmental risk across Canada.

The study can also help communities compare local conditions with broader national trends and support informed discussions about their experiences and concerns.

The purpose of the study is not to establish definitive conclusions about environmental racism or environmental justice in individual communities. Rather, it provides a starting point and a national baseline of information to support ongoing learning, research, dialogue, and action.

Supporting ongoing research and dialogue

Environmental justice principles emphasize access to information, transparency, and meaningful participation. Consistent with these principles, the study was designed using nationally available and publicly accessible data wherever possible.

What is a methodology? A methodology is the overall approach used to carry out a study. It describes the data, methods (different ways of analyzing information) and steps used to answer the research questions and understand the results. National, publicly available data sources were selected wherever possible, so that anyone could explore the methodology and use it for their own purposes.

As Canada's first national study of environmental racism and environmental justice, this work represents an important starting point. Future research, community knowledge, and lived experience will continue to strengthen understanding of these issues over time.

The study's focus and approach

The study had four main objectives:

1. Build a national evidence base to support a better understanding of environmental racism and environmental justice in Canada.
2. Identify and assess the federal data, tools, and information available to study these issues.
3. Use the best available evidence while recognizing the strengths and limitations of existing data.
4. Reflect input received through engagement with Canadians, including communities and individuals with lived experience.

An examination of the link between race, socio-economic status and environmental risk

A key requirement of the Act was to examine the relationship between race, socio-economic status, and environmental risk.

To do this, the study explored how the location of environmental hazards relates to the characteristics of nearby communities. In other words, it examined both where environmental hazards are located and who lives nearby. Several approaches were considered, including examining:

- specific environmental events, such as spills or accidents
- exposure to environmental hazards over time, such as living near industrial facilities
- exposure to specific substances or pollutants

Because the study was conducted at a national scale using federal data sources, it focused on potential exposure to environmental hazards over time. This approach made it possible to examine environmental conditions consistently across Canada.

The analysis considered several types of environmental hazards, including:

- facilities reporting to the National Pollutant Release Inventory
- active and suspected federal contaminated sites
- federally regulated wastewater effluent sources

Engagement and consultation activities identified many environmental issues and hazards of concern. However, balancing the requirements of the Act, areas of federal authority and practical considerations, such as the availability of national data, informed this approach. These national datasets provide information across Canada and allow for consistent comparisons between regions and communities.

To understand community characteristics, the study used information from the Census of Canada. The analysis considered:

- race, based on populations who self-identify as Indigenous or as members of racialized groups
- socio-economic status, using indicators such as income, educational attainment unemployment that are commonly associated with socio-economic conditions

Mapping environmental hazards and communities

The Act also required information and statistics relating to the location of environmental hazards.

Maps are a valuable tool for understanding how environmental hazards and population groups are distributed across geographic areas. They can help illustrate patterns, identify areas where environmental hazards and community characteristics overlap, and support further analysis.

These maps provide a national picture of where environmental hazards and community characteristics overlap. They can help communities, governments, researchers, and other

interested parties better understand local circumstances and compare them with broader national patterns.

While the maps can highlight areas for further exploration, they do not identify or label communities as having experienced environmental racism or environmental injustice.

Identifying national patterns

In addition to mapping, the study examined whether there are patterns in how environmental hazards and community characteristics are distributed across Canada. Using the same data sources, the analysis explored questions such as:

- are racialized, Indigenous, or lower socio-economic status communities more likely to be located near environmental hazards
- are there patterns in the distribution of environmental hazards across different types of communities
- how do environmental and social factors overlap across Canada

Examining these questions helps build a clearer national picture of potential environmental inequities and provides information that can support future policy development and decision-making.

Understanding the limits of the data

The study used established statistical methods to identify and analyze patterns within large national datasets.

Statistical methods are tools that help researchers organize information, compare groups, and identify patterns that may warrant further examination. They are particularly useful when working with large amounts of information from across the country.

These methods can help identify trends and differences between places and population groups. However, statistics alone cannot explain why a pattern exists, nor can they capture the histories, experiences, perspectives, or concerns of individual communities.
For this reason, the study should be viewed as one source of evidence among many. Community knowledge, lived experience, local context, and ongoing engagement remain essential to understanding environmental racism and environmental justice.

Similarly, the absence of a strong statistical relationship does not necessarily mean that environmental injustice is not occurring in a particular community. Environmental racism and environmental injustice are complex issues and understanding them requires both quantitative evidence and community perspectives.

Key findings and insights

The study explored whether there are national patterns in the relationship between environmental hazards, race, and socio-economic status, and where potential environmental inequities may be more likely to occur. The findings provide important insights into how environmental and social factors overlap across Canada, while also highlighting the complexity of measuring and understanding environmental racism and environmental justice at a national scale.

Are there patterns? Are some communities more impacted by environmental risks and hazards than others?

Key takeaway

- There is no single, universally accepted method for measuring environmental racism or environmental injustice. As a result, the study used a range of analytical approaches to examine the relationship between environmental hazards, race, and socio-economic status.
- Different methods can highlight different patterns in the data because they examine information in different ways.
- Using multiple approaches helps provide a broader picture of how environmental and social factors may be related across Canada.

What does this tell us

National-scale analysis can provide a useful starting point for understanding broad patterns. More focused and local analysis can help to provide more context and information needed to understand what is happening.

What does this mean

No single statistical method provided a complete picture. Instead, the results highlight the importance of considering multiple approaches and recognizing that national-scale quantitative analysis has limitations. Understanding these patterns requires local context, community experiences, and historical factors. At a national level, results reveal patterns, not causes.

Exploring the details

Some methods suggested that Indigenous and lower socioeconomic status populations were more likely to be located near environmental hazards, while visible minority populations were less likely. However, when the geographic area used for analysis became larger, these patterns often changed and sometimes reversed.

Similarly, some methods showed positive relationships between certain population groups and hazards, while others found weak relationships or different patterns depending on the geographic scale being examined.

In other words, the analysis found evidence of relationships between population characteristics and environmental hazards, but the strength and direction of those relationships were not consistent across methods. This suggests that conclusions about disproportionality can vary depending on how proximity, community, and geographic boundaries are defined.

The study also looked at whether some communities and environmental hazards were found together more often than would be expected. These results also varied depending on the analytical approach that was used.

Where is potential environmental inequity highest

Key takeaway

- ECCC created an index (or score) to combine information on populations of concern and potential environmental hazards.
- The index helps identify patterns of potential environmental inequity across Canada, but it cannot on its own determine where environmental racism or environmental injustice is occurring.

What does this tell us
Areas with higher values are locations where environmental hazards and population characteristics associated with environmental justice concerns are more likely to overlap.

What does this mean
Determining whether environmental racism or environmental injustice is occurring requires more information than a national index can provide. Local histories, community knowledge, lived experiences, and the specific circumstances of a place are essential for understanding what the results may mean in practice.

Exploring the details
Using the same data outlined above, ECCC developed an index to combine information on populations of concern and potential environmental hazards. An index is a way of combining several pieces of information into a single score.

Indexes help to make complex information easier to summarize, compare, and identify patterns. While indexes can help show patterns, they simplify lived realities and don't capture the unique circumstances of individual communities.

The purpose of mapping an index is to make complex information easier to understand. The map can highlight patterns across regions and can help identify areas that may require further study, while recognizing that the index does not capture all local circumstances or community experiences.

The "Environmental Effects and Population Composite Index" (EEPCI) combined:

- a combined measure for Potential Environmental Hazards, including:
    - hazard density of
        - sites that reported to the National Pollutant Release Inventory (NPRI)
        - federal contaminated sites
        - federally regulated wastewater facilities
    - population
    - land area
- and population characteristics:
    - the proportion of racialized people in an area
    - the proportion of Indigenous people in an area
    - social and economic disadvantages

The first version of the map used Census Dissemination Areas (small geographic areas used for census data) (See Annex A, Figure 3). Because these areas vary in size across the country, it was difficult to compare them visually, especially at the national scale.

To improve consistency, the data were also mapped using a grid of equal-sized hexagons. Using same-sized areas helps make national and regional patterns easier to see and compare. However, this approach highlights broader regional trends, not the experiences of specific communities.

The map can help identify areas where environmental justice concerns may be more likely to occur, including regions with higher concentrations of industry and larger populations. However, the map should not be used on its own to determine which communities are experiencing environmental injustice or where inequities are greatest. The results depend on the data used and the assumptions made during the analysis, and they do not capture important local context or community experiences.

One pattern shown in the hexagon map (See Annex A, Figure 4) shows higher index values in coastal regions, likely reflecting access to transport and resources (e.g., water) for industry. It also highlights regions known to have population density and industrial activity. Because the hexagons are all the same size, this approach makes broad regional patterns easier to see across Canada.

In contrast, maps based on Census dissemination areas (See Annex A, Figure 3) are more likely to highlight local differences and unique community-level results (both positive and negative) that may not be visible in larger-scale maps, and require more explanation based on lived experience.

What the study means for communities and future research

Key takeaways

- Environmental racism (ER), environmental justice (EJ) and environmental inequity are experienced differently across Canada and are shaped by local histories, places, and community perspectives.
- While this study identifies national patterns, it cannot fully capture the lived experiences of communities affected by environmental harms and inequities.
- Throughout the development of the Strategy, communities emphasized that experiences of ER and environmental inequity are real and tangible parts of everyday life. The study provides an important starting point for understanding ER and environmental inequity at a national scale and for informing future work.
- The methodology and data used in the study are publicly available, creating opportunities for additional research and learning.

What does this tell us

The findings demonstrate both the value and the limitations of national-scale analysis.

The study reveals broad patterns that can help identify areas for further attention and research. At the same time, it confirms that ER and EJ are complex concepts that cannot be fully understood through quantitative analysis alone. Lived experience remains essential for understanding the historical, cultural, social, and geographic contexts that shape community realities.

The findings also show that different approaches to measuring ER and environmental inequity can produce different results. Factors such as the analytical methods used, the geographic scale examined, and the assumptions underlying the analysis can all influence outcomes.

What does this mean

For the federal government, the study provides a foundation for continuing to strengthen understanding of ER and EJ across Canada and for informing future policy, research, and action.

For communities, the study may serve as a resource to support local discussions, planning, and research where there is interest, opportunity, and capacity. The results may also provide a useful baseline against which future research can be compared.

Importantly, the availability of the study's methodology and data is not intended to place additional responsibilities on communities. Rather, it offers an optional tool that communities, researchers, and organizations may choose to use to support their own efforts and priorities.

Exploring the details

The study highlights several important considerations when interpreting or applying findings related to ER, inequity and EJ:

- ER and EJ can be defined and understood in different ways. As a result, measurement approaches may vary depending on the research question and context
- results can differ depending on the methodology used. This may lead to differing interpretations and ongoing discussions about the most appropriate analytical approaches
- national analyses can identify broad trends but cannot capture all local realities. Findings may change depending on available data, geographic boundaries, and analytical assumptions
- proximity-based analyses require careful interpretation. Without sufficient context, they may not accurately reflect community experiences or conditions
- the scale of analysis matters. Larger geographic units can provide consistency and support national comparisons but may overlook local experiences. Smaller units can better reflect community realities but may present challenges for interpretation and visualization. Both perspectives are important for understanding ER and EJ

These considerations reinforce the importance of transparency about methods, assumptions, and limitations. They also highlight the value of combining quantitative evidence with community knowledge and lived experience to develop a more complete understanding of EJ issues.

What we learned

This study demonstrates both the opportunities and limitations of national-scale analysis. It provides new information about patterns of environmental risk across Canada while underscoring that understanding ER and EJ requires more than statistics alone.

The findings highlight the importance of combining evidence, lived experience, local knowledge, and meaningful engagement. As Canada's first national study on these issues, it establishes a baseline for future work and contributes to a shared foundation for ongoing research, dialogue, policy development, and action.

Part 3: Canada's National Strategy Respecting Environmental Racism and Environmental Justice 2026-2031

The National Strategy sets out to build stronger, healthier and more resilient communities in Canada. It focuses on reducing barriers to engagement, strengthening accountability, and working together so all communities can benefit from a healthier environment.

The Strategy recognizes that ER and unequal outcomes stem from broad social, historical, and economic forces that no single government or sector can address alone. Meeting this challenge means coming together, uniting efforts across governments, sectors, and communities—to build lasting solutions. The Strategy focuses on the federal role, demonstrating how we can move forward together to build a stronger, a more inclusive and resilient future.

Vision

To advance environmental justice, supporting equal access to environments communities feel are healthy, safe and more secure.

Guiding principles

The Strategy recognizes the importance of actions that are developed with the participation of rights holders, where appropriate, in a manner consistent with the Government of Canada's commitment to take effective measures to achieve the objectives of the United Nations Declaration on the Rights of Indigenous Peoples. Other key international frameworks, like the United Nations Convention on the Rights of Persons with Disabilities, and the United Nations International Decade for People of African Descent, can help to drive inclusive actions. There are four guiding principles envisioned here.

Protecting the environment in environmentally hazardous areas

Efforts to protect the environment should be grounded in a clear understanding of the harms disproportionately experienced by impacted communities, including Indigenous, racialized and other marginalized communities. Priority should be given to preventing environmental damage and strengthening ecological safety for affected communities.
Environmental protection should be guided by best-available science and Indigenous Knowledge Systems.

Acknowledging lived experiences and realities, and respecting differences

Policies and actions should be informed by a clear understanding of what causes inequities and how environmental, social, and economic well-being are connected. Particular attention should be given to Indigenous, racialized, and other marginalized communities, and those whose livelihoods depend on natural resources. Learning more about each community's local realities helps us see how environmental pollution makes existing inequalities worse.

Strengthening access to environmental information

Communities should have access to meaningful information about the environment, including environmental hazards and their impacts. Timely, accurate, accessible and relevant information is essential for informed decision-making. Strengthening access to information enables communities to better understand, respond and advance solutions to EJ challenges.

Building meaningful relationships and ensuring inclusive participation

Inclusive decision-making requires creating meaningful opportunities for affected communities of different backgrounds and experiences to shape decisions that impact their lives. Efforts should focus on identifying and removing barriers to participation, including considerations for fostering safe, respectful spaces for participation. Valuing the knowledge and experience within communities, unlocks better, more practical solutions that reflect local realities and strengthen our collective future.

Priorities and actions

Working toward the Government of Canada's vision to advance EJ so communities can benefit from a healthier environment is an ongoing process. This Strategy outlines initial proposed federal actions, grounded in four priority areas identified through engagement and consultation.

Priority area one: Promoting environmental justice across federal government institutions

This priority area supports embedding EJ principles across federal policies, programs, and priorities. By integrating EJ into decision-making, incremental systemic changes could:

- reduce environmental disparities
- improve trust and relationships between the federal government and Indigenous, racialized and otherwise marginalized communities
- support a fairer distribution of environmental outcomes for all Canadians

What we heard

- Desire for an office to lead federal EJ efforts, coordinate implementation and support accountability, including reporting on progress.
- A whole-of-government approach to improve and prioritize the consideration of EJ/ER in how decisions are made is highly desired.

- Embedding these considerations in federal environmental policies, programs and initiatives across the federal government is seen as key in advancing EJ and preventing ER.

What we are doing:

- Tasking officials within ECCC to lead Canada's efforts to advance EJ and the implementation of the strategy.
- Establish and lead a federal community of practice to support the integration of EJ and ER in federal decision-making; leverage and aim to improve existing tools like Gender-based Analysis Plus to better understand and integrate these considerations; and share pertinent information about ER case studies.
- Identify opportunities to reflect EJ as a priority across federal policies, frameworks and strategies.

Priority area two: Strengthening collaboration and coordination on assessing, preventing and addressing environmental racism for a stronger Canada

ER is complex, systemic, and shaped by overlapping challenges. Many of these issues fall outside federal jurisdiction. However, the Government of Canada can play a key role to assess and address ER in a way that is unified and contributes to effective solutions that better serve communities unduly impacted by environmental harms.

What we heard

- A desire to ensure transparency and accessibility of methodologies of the study examining the link between race, socio-economic status and environmental risk. A foundational methodology can also serve as a baseline for further work to be advanced externally by partners.
- Restorative justice is emphasized as a key response to advancing EJ and addressing ER. Restorative justice was discussed in a range of ways, including in better accounting for historical and legacy issues as well as current and future enforcement approaches.
- Communities benefit from accessible, timely, relevant and free environmental information to better understand environmental issues relevant to their communities.
- Input emphasized that communities hold valuable lived experience, knowledge and expertise. Enabling their participation in research, monitoring impacts, and building their capacity around EJ education and implementation is highly desired.

What we are doing

- Developing a transparent methodology to assess environmental burden and social vulnerability nationally that can be shared externally.

- Leading policy development on restorative justice approaches in the context of environmental policy, including research to applying restorative justice to EJ at the federal level and identifying current program linkages.
- Establishing a mechanism to make consolidated environmental information accessible to affected communities.
- Identifying opportunities to work with granting agencies and federal funding initiatives to address gaps in research, knowledge, and resources.

Priority area three: enhancing impacted communities' participation in federal environmental policy and decision-making

A key component of advancing EJ is recognizing and reflecting the perspectives of diverse communities, and integrating those perspectives into policies, programs and initiatives that impact them. This priority area aims to improve access and participation of Indigenous, racialized and marginalized communities in engagement and consultation, and to improve understanding of these processes. This includes clarifying whose input was reflected, and how input was reflected in the final outcomes in federal environmental policy decisions.

In the context of Indigenous Peoples, this includes continuing conversations to understand and recognize the variety of Indigenous perspectives on ER and EJ. This work supports more inclusive and transparent environmental policies and engagement practices, contributing to increased trust and more equitable outcomes for communities disproportionately impacted by environmental harm.

What we heard

- Greater transparency of how communities and their input is accounted for in decision is desired.
- Emphasis on strengthening the role of Indigenous Peoples in federal environmental decision-making, including through better engagement and consultation. Input emphasized implementing Free, Prior and Informed Consent (FPIC), and the UN Declaration on the Rights of Indigenous Peoples Act.
- Meaningful involvement of communities in decision-making in issues that affect them is key, but barriers prevent or hinder their full participation.
- Communities are not homogenous – they are made up of individuals with diverse identity factors. Recognizing these differences is key to understanding needs and how to respond to them.

What we are doing

- Supporting better ways to track and communicate information about engagement opportunities, how input was incorporated, data related to representation, outcomes and participation.
- Investigating coordinated departmental approaches to better identify potential impacts to Indigenous rights, and engage with impacted groups.
- Leading the development of a federal framework on inclusive engagement in environmental policy.
- Developing and publishing guidance on addressing common barriers experienced by communities in environmental policy engagement and consultation activities.
- Leading research and recommendations to strengthen recognitional justice in Canadian environmental policy development.

Priority area four: Learning from experience and avoiding recurring challenges

This priority area aims to work towards better equipping the federal government with the knowledge, tools and capacity to:

- assess and anticipate complex risk factors
- prevent recurring challenges
- support continuous improvement in environmental outcomes for Canadians

What we heard

- ER is location specific and tied to a place's history and culture. Input reflected a need to better understand the past so that ER can be prevented in the future. Input also reflected a need for knowledge sharing across federal departments and beyond.
- EJ and ER issues affect people and groups differently. An intersectional approach to better understand these differences is viewed as essential to advancing EJ and addressing ER.
- Input reflected that regulatory and enforcement approaches are not always perceived as fairly, evenly or properly applied.

What we are doing

- Identifying and sharing lessons learned through local case studies of historic instances of ER to support cross-government learning and knowledge sharing.
- Leading the development of federal policy approaches, including research, guidance and tools, to better integrate social, economic, and environmental analysis in federal environmental decision-making processes.
- Working with federal institutions to develop an improved data framework that better supports an integrated assessment of environmental regulatory and enforcement data.

Roles and responsibilities

The Strategy focuses on federal action. However, environmental protection in Canada is a shared responsibility across all levels of government, through legislation, regulation, policy, planning, and resource management. Communities also play a vital role in providing perspectives that help inform and refine efforts to advance environmental justice. This reality could be achieved by:

- leveraging EJ principles (procedural, recognitional, distributive and restorative) to help ensure that decision-making is equitable and inclusive
- considering diverse experiences of impacted communities
- collaborating between governments, and other actors like industry, to facilitate accessible access to information and data to help the public understand potential impacts on communities

Some critical areas where Canada already has obligations or responsibilities that could contribute to advancing EJ principles include:

- responsibilities on federal Crown lands, where the federal government holds primary responsibility for the stewardship and environmental management, including First Nation reserve lands
- **Federal Contaminated Sites Action Plan** (FCSAP), where the Government of Canada identifies, assesses, and remediates contaminated sites, some of which are on or near Indigenous or racialized communities affected by long-term pollution
- **Right to a Healthy Environment** under the Canadian Environmental Protection Act, 1999 (CEPA), which includes consideration of EJ in exercising federal authorities to take action related to managing toxic substances, protecting air and water quality and assessing environmental and health risks, and includes references of:
    - intergenerational equity, which emphasizes that it is important to meet the needs of the present generation without compromising the ability of future generations to meet their own needs
    - non-regression, which means to prevent reduced levels of environmental and human health protection and, where feasible, to continuously improve these levels of protection
    - precautionary principle, which states that "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation
- **Canada's Anti-Racism Strategy**, which commits the federal government to addressing systemic racism across institutions, policies, and initiatives. This could include environmental decision-making, by removing barriers and making systems more inclusive longstanding commitments to intersectional analysis, through the

application of **Gender Based Analysis Plus**, to better understand the impacts of policies, programs and initiatives on diverse groups of people

Moving forward with implementation

Environmental justice is an ongoing process that requires meaningful engagement, transparency, and continuous improvement. The implementation of this Strategy will build on the relationships, perspectives, and knowledge shared throughout engagement to date and will continue to be informed by ongoing dialogue with communities, Indigenous Peoples, partners, and other interested parties.

To support implementation, a complementary action plan has been developed alongside the Strategy. The action plan will provide additional detail on how the Strategy's objectives and actions will be advanced, including specific measures, implementation considerations, and timelines.

Annex A: Examination of the link between race, socioeconomic status and environmental risk

As a part of the *National Strategy Respecting Environmental Racism and Environmental Justice Act* (the Act) the Strategy must include a study that includes:

- an examination of the link between race, socio-economic status and environmental risk
- information and statistics relating to the location of environmental hazards

This study aims to provide an understanding of broad relationships between the location of environmental hazards, and particular community characteristics. To meet the specifications of the Act, it needed to be clarified whether the analysis should focus on:

- specific events
- routine exposure to environmental hazards
- measured exposure to particular chemicals

This, in turn, had an impact on how to understand the concepts of "environmental risk" and "environmental hazard" in the context of the study.

The analytical approach taken in the study prioritized the use of simple terms. They are broad enough to apply across Canada, and its diversity of peoples, industries, and environments. The following interpretations of key terms in the Act were applied to support analysis:

- **race:** populations within the Census of Canada who self-identified as visible minorities ("racialized") or as Indigenous peoples
- **socioeconomic status:** indexed value comprising information about income, education achievement levels, and unemployment rates that are often used to characterize lower socioeconomic status, regardless of race and Indigeneity, as found in the Census of Canada
- **environmental risk/hazards:** emphasis was placed on potential sources of industrial pollution, examined as sites across Canada rather than at levels of specific compounds or outputs. The hazards considered include sites on the National Pollutant Release Inventory, active or suspect federal contaminated sites, and federally-regulated wastewater effluent sources

A key consideration within the Act is the importance of understanding how different population groups are located in relation to environmental hazards. This was raised by participants throughout the legislative and engagement processes in the context of mapping. Therefore, analysis includes visualization in the form of a map bringing together the key information described above. It offers a national picture of where potential environmental inequities may exist. Communities will be able to use the same baseline set of information to understand and compare circumstances.

Development of the Act also highlighted requests for information and statistics to understand possible patterns of communities being disproportionately affected by environmental hazards. This was pursued using the same data resources behind the maps. This will help build a clearer national picture of how different environmental and social factors relate to one another across Canada. It will provide insights that can inform federal decision-making.

Based on these guiding considerations, ECCC developed an approach to examine how race, socioeconomic status, and environmental hazards overlap across Canada. This approach explores key questions such as:

- If there is a pattern between more racialized, more Indigenous or lower socioeconomic status communities and potential environmental hazards
- if racialized, Indigenous, or low socioeconomic status communities are more likely to be located near potential environmental hazards

The study used standard statistical methods to develop an approach that can be applied to different types of information. This helps ensure that similar analyses can be carried out consistently across Canada.

Datasets and variables

The datasets were selected based on a series of guiding principles including using nationally consistent data that were released by the federal government. This approach provided nationwide consistency and the ability to access and manage data. Emphasis was also placed on data with public availability and routine updates to ensure repeatability and accessibility of outcomes. The following population variables and data resources were used to complete the analysis:

- racialized people (“race”) as a variable was based on Census 2021 population statistics for Dissemination Areas (DAs) from Beyond 20/20, using line 1684 divided by line 1683 to create a racialized population rate

- Indigeneity ("Indigenous") as a variable was based on Census 2021 DA-level population statistics from Beyond 20/20, using line 1403 divided by line 1402 to create an Indigenous population rate
- Low Socioeconomic Status (LSES) Index was a newly constructed variable using Census 2021 DA-level population statistics from Beyond 20/20. It was built by creating the following:
    - low income, after tax rate (line 340 over line 335)
    - the lower education rate based on people without at least high school diploma (line 1993 over line 1992)
- unemployment rates (line 2226 over line 2224)
- Where all three rates were available (i.e., not suppressed), they were averaged together to create an LSES Index value that could show relative highs and lows across these three social indicators combined

Population rates were used so that measures were standardized for differing population sizes.

Census data were prioritized, given ability to access a broad range of relatively localized data. However, Census data considers home locations (where people live). Concerns have been raised about work locations as a potential source of environmental exposure and injustice, but data on workplace populations was not readily available for this assessment. As well, some Census data reflects sampling estimates and may reflect errors or inaccuracies associated with sampling processes. However, these are potential sources of error generally acknowledged and mitigated to the extent possible by Statistics Canada.

A metric of potential environmental hazard (PEH) was built to estimate environmental risk. This considers the possibility of interactions between industry/pollution and community populations in defined spaces. The PEH considers current environmental hazards, rather than the past (i.e., potential decades of potential hazards). This avoids drawing connections that may not currently exist, but may also understate legacy concerns. This approach included counts of:

- sites that had reported into the National Pollutant Release Inventory (NPRI) within the last five calendar years (i.e., 2021 to current)
- active or suspected sites in the Federal Contaminated Sites Inventory
- federally regulated wastewater sites (i.e., reporting under the *Wastewater System Effluent Regulations*) that are not located within 3 km of an NPRI site, to reduce potential duplicate reporting between the datasets

To transform the hazard counts to PEH, the number of hazards in each spatial unit was multiplied by the hundred-weight total population of that unit (based on line 1 from Census 2021 in Beyond 20/20, divided by 100). This gave a sense of a total population size that could be affected.

The resulting figure was then divided by the land area (in square kilometers) of the same spatial unit. This reflects the potential spread of the population and hazard counts but assumes that people and hazards are distributed equally over spaces. The resulting PEH value for each spatial unit gives a generalized sense of the possibility that people and hazards will interact.

There are many other sources of environmental hazard that are not captured in the selected datasets, but which may be of particular importance for communities. Furthermore, counts of sites will not consider the outputs in terms of:

- pollution volume
- specific compounds and their toxicity, or
- timing and frequency of releases

However, it is not plausible to address all potential sources of data, compounds, or potential ER/EJ concerns in a single, national approach. The range and type of hazards considered in this analysis will limit the applicability of the results at a local level. Selected hazard data sources reflect a broad cross-section of available federal data, focused on industrial activities and pollution sources. However, the expectation is that the methodologies developed here may be used to examine more specific relationships.

Spatial relationships

To better understand spatial interactions between populations and pollution, a clearly defined spatial approach that aligns people and potential hazards is critical. Acknowledging the different ways this could be examined, three different spatial approaches were examined. They were based on technical feedback from experts and efforts to better understand the implications of changing spatial dynamics, and included:

Simple co-location

Census Dissemination Area (or, DA) population data linked with PEH based on summary of hazard counts within the DA boundaries. This approach was simple. However, it did not account for “boundary” effects, where hazards near a boundary line may still affect other DAs nearby. The sizes of DAs were highly variable, creating the requirement to standardize hazard measures for differing land area.

Tessellated co-location

Canada was re-envisioned as a series of equal-sized (500 square kilometer) hexagons for consistency in spatial comparisons. Populations were assumed to be equally distributed across DAs, and were re-allocated into hexagons using ArcGIS tools. Hazard counts were allocated within the new hexagons as well, "washing out" the PEH standardization for unit size (i.e., all units were 500 square kilometers). Hexagons aggregate total population sizes to give a sense of potential hazard over larger spaces/regions.

Hybrid co-location/proximity

This used the same underlying approach as simple co-location. However, point-based hazards were assumed to impact any DA within a specified distance. To do this, radiuses (0.25 km, 0.5 km, 1 km, 5 km, 10 km, 25 km) were drawn around all potential hazards. The number of hazards whose radiuses intersected each DA at a given distance was used as the count of hazards to create the PEH.

This considers that hazards may affect multiple DA units, but also makes analysis subject to the relevance of the radius being considered. Selecting an appropriate scale for national context across different pollution source types and outputs can be challenging, and not aligned with local concerns. When using DAs, which seek to create somewhat similar population sizes between units, selecting a specific radius also favours inclusion of populations from population dense areas, since the same set radius will be able to "affect" more small spatial units than large. Notably, the hybrid proximity approach was not used for all analyses.

Community

Communities are based on the population within a spatial unit; within a DA, or within a hexagon. Considering different spatial relationships outlined above allows analysts to better understand nuances in how ER/EJ relationships might be understood. Population and PEH values were joined into the same spatial units with the aid of ArcGIS software, and published Census boundary data provided by Statistics Canada.

Methodological approaches

The methodologies used for analysis fall into two broad categories: statistical analysis and visualization.

Statistical analysis

Statistical approaches were selected to address the research questions being posed, with priority for methods that are rigorous and accessible, ensuring they can be interpreted by

broader audiences. This resulted in the selection of five core statistical methodologies that emphasize relationships between population and hazard variables. These are outlined below.

Odds ratios examined the difference in odds of a community having a specified population group (e.g., racialized or Indigenous) depending on the presence of a hazard. This uses binary (e.g., yes or no) exposure and outcome selection. Population presence is the "exposure" and the existence of a hazard was treated as the outcome. Odds ratios provide a distinct consideration of proportionality based on comparison, but have a tendency to increase quickly.

Relative rates were used to examine difference in likelihood of a community having a hazard based on whether certain populations were present. This used the same underlying data as the odds ratios. Relative rates give a sense of disproportionality, but need to be carefully understood when underlying data do not have substantial controls for other factors.

Spearman ranked correlations that correlate the population values and PEH across all spatial units. Ranked correlation addresses strong skew in population rates, allowing directional consideration of very unique outcomes. Correlation values are between 0 (no correlation at all) and 1 or -1 (perfect positive or negative correlation, respectively). Correlation gives a general sense of whether the values moved in similar directions, but not of causality between variables. Interpretation of correlation requires an assumption that there is a stable relationship between variables, which may not be reasonable or logical.

Chi squared tests of independence examine whether having a specific population rate and having a hazard (or hazards) were independent across spatial units. If those variables were not independent, the proportionate deviation from an independent relationship can be measured. These tests are primarily visual (beyond basic independence test statistics) but provide context around odds ratios and relative rates. Ranges of population and PEH were built to separate "0" hazard or population groupings from relatively equal, increasing quartile ranges of non-zero values.

Moran's I measures clustering within variables across spatial units (e.g., whether similarly scaled values are found together). It provides context to support interpretation of other statistical results by examining values between 0 (no clustering) to 1 or -1 (perfect clustering, or perfect dispersion, respectively).

Visualization analysis

Visualization brings together population information and PEH into a single visual output. This task was done by creating an "Environmental Effects and Population Composite Index" (EEPCI). It included the following:

- a "population" variable for each spatial unit that averages the scaled quartile values for visible minority rates, Indigenous population rates, and LSES Index values for each spatial unit

    - single value providing a sense of “who lives here” in context of potential marginalization
    - reflects that having a substantial visible minority, Indigenous population alone may not be entirely “unique”. Communities that have one or both of those populations and relatively poor socioeconomic status may be of increasing concern from an equity perspective
- the quartile range of the PEH value for each spatial unit

The PEH and population quartile values were multiplied together to yield a value between 0 and 16. A value of 0 would indicate either, or both of, no hazard or no population of concern in a unit. A value of 16 would indicate that the unit was in the highest quartile of all variables (PEH, visible minority rate, Indigenous rate, and LSES Index).

Mapping of the EEPCI was completed for all communities where all required data were available. This was completed for both DAs and tessellated hexagons.

Consideration was given to providing separate mapped “layers” of the underlying data. However, this could lead to interpretive challenges for users. The visualized outcome should be clearly aligned with the broader analytical intent of this work. As a result, the maps have focused on providing a single visual outcome considering the same variables across the country to understand where there may be unique relationships or intersections between populations-of-interest and environmental hazards.

Results and initial interpretations

Odds ratios and relative risk

Odds ratios and relative risk ratios were calculated for all spatial relationships, using binary indicators of exposure (population presence, yes or no) and outcome (hazard presence, yes or no). The tables below provide the results for odds ratios and relative risk ratios.

Table 1: Odds ratios of hazards for communities with different spatial relationships

Population Group	Co-Location	0.25 km Hybrid	0.5 km Hybrid	1 km Hybrid	5 km Hybrid	10 km Hybrid	25 km Hybrid	Tess. Co-Location
Visible Minority	0.26	0.37	0.55	0.9	5.61	7	7.38	6.68
Indigenous	2.01	1.76	1.49	1.26	0.65	0.64	0.5	4.7
LSES*	1.78	1.72	1.66	1.51	0.6	0.31	0.11	30.56

* LSES results split exposure at above or below median LSES rate, due to a lack of communities without LSES values, other than for tessellation results.

Table 2: Relative risk of hazards for communities with different spatial relationships

Population Group	Co-location	0.25 km hybrid	0.5 km hybrid	1 km Hybrid	5 km hybrid	10 km hybrid	25 km hybrid	Tess. Co-Location
Visible Minority	0.3	0.44	0.64	0.94	1.27	1.11	1.01	3.57
Indigenous	1.91	1.64	1.37	1.15	0.96	0.98	1	3.51
LSES*	1.71	1.6	1.49	1.29	0.95	0.96	0.99	20.32

* LSES results split exposure at above or below median LSES rate, due to a lack of communities without LSES values, other than for tessellation results.

Note: Shaded cell denotes that this value is not significantly different than "1" at 95% confidence intervals

Co-location and hybrid co-location odds ratios show opposite trends between visible minority communities and the Indigenous and LSES communities. As the radius of effects from a hazard increases, so do the odds of affected communities having visible minorities (moving from lower than 1 odds, or less likely, to nearly 7.5 times the odds). The opposite is true for Indigenous and LSES populations. Of particular interest, this includes a rough “inversion” of the trends between the 1 km and 5 km radius outcomes. In comparison, the tessellated approach indicates that all three population groups, when considered within a broader spatial unit, demonstrate higher odds of being located with hazards. This could reflect that it is more unlikely to find a 500 square kilometer portion of the country with no hazard sites for comparison.

Considering relative risk, the outcomes are substantially less variable than odds ratios. This is likely due to a shift away from a “ratio of ratios” to a ratio of rates. There are similar trends to the odds ratio for many of the results. Notably, with relative risk, the “inversion” of likelihood still happens at 5 km. However, the relative risk trends back towards “1”, where the risk is no different between populations. This could reflect that with proximities of that size or greater, most (if not all) of the DAs and population in Canada would end up being included. As a result, the rates (rather than odds) would start to look similar to “Canadian average”. As with odds ratios, tessellated results indicate higher rates of co-location between hazards and communities/areas with a visible minority or Indigenous population, or higher LSES population.

The “inversion” effect for the proximity results is expected to (at least partially) reflect that a radius will favour the addition of smaller, more population dense DAs into the “affected” population. This may increase visible minority populations included, given substantial visible minority populations living in densely populated areas. This could also partially explain why radiuses may not substantially increase Indigenous populations, given emphasis on more rural or remote areas with larger-sized DAs.

Overall, the results demonstrate that there can be disproportionality in basic relationships. However, the specifics of that disproportionality can change in terms of both magnitude and direction depending on how spatial relationships are characterized. This makes it challenging to draw a single, generalized conclusion around “disproportionality”.

Spearman ranked correlation

Correlation analysis was completed for both DAs and tessellated hexagons, and for the varying levels of hybrid co-location.

Population Group	DA Co-Location PEH	0.25 km Hybrid PEH	0.5 km Hybrid PEH	1 km Hybrid PEH	5 km Hybrid PEH	10 km Hybrid PEH	25 km Hybrid PEH	Tessellation PEH
Visible Minority	-0.19	-0.17	-0.09	0.06	0.68	0.75	0.76	0.45
Indigenous	0.13	0.12	0.08	0.02	-0.25	-0.30	-0.37	-0.01
LSES	0.09	0.11	0.12	0.12	-0.02	-0.07	-0.12	0.05

The results of the correlation analysis show varied correlation values and direction depending on spatial scale, similar to the results of odds ratios and relative risk. In co-location and tessellation, the correlation values are generally relatively weak (e.g., less than 0.2). This may reflect low likelihood of broad, simple variables aligning closely over entire scales of population and hazards. An exception to those weak values is the moderate positive correlation between visible minority population rates and PEH for tessellated communities. When considering proximity through hybrid co-location, using PEH based on counts of potential hazards intersecting with each DA, the result showed similar outcomes as the hybrid proximity results of the odds ratios and relative rates. Specifically, inversion of the relationships between 1km and 5km proximity ranges, and stronger positive correlation between visible minority populations and PEH values at broader ranges. In the context of PEH, these further demonstrate that approaches to measure the relationships between hazards and people is highly dependent on how the spatial relationships are framed. Of particular

interest, the vast majority of all DAs and total Canadian population are included at proximities of 5km or greater. As a result, correlations may be strongly associated with general population dynamics (i.e., hazard scales and population density both increase with higher ranges, favouring inclusion of populations living in more urban centres). Similarly, with moderate correlation at smaller scales, this may suggest that regional scales are better positioned to demonstrate a potential relationship unique to broader populations patterns, while local concerns (often the focus of environmental racism) may not be as clearly defined. That said, moderate results also merit caution against concluding any specific or stable relationship among these variables.

Chi squared test of independence

The chi squared test of independence considers differences between observed and expected outcomes across scaled categories of exposure (i.e., population rates) and outcome (i.e. co-location PEH). The scaled population rates were different between DA spatial units and hexagons due to population aggregation. The differences are reported in Table 4. In general, combining populations into hexagons reduced the within-quartile range for visible minority populations. An exception was the highest quartile. Combining populations in hexagons increased the range within quartiles for Indigenous populations (except the highest quartile), and ranges were relatively stable for LSES.

Table 4: Population rate characteristics by quartile group, based on spatial unit

Quartile	Visible minority % DA	Visible minority % Hexagon	Indigenous identity % DA	Indigenous identity % Hexagon	LSES index x 100 DA	LSES index x 100 Hexagon
Q1 Range	0.4 - 7.7	0.0 - 1.2	0.1 - 2.7	0.1 - 6.6	0.0 - 9.4	2.0 - 13.7
Q2 Range	7.7 - 18.9	1.2 - 2.6	2.7 - 4.9	6.6 - 16.7	9.4 - 12.4	13.7 - 16.7
Q3 Range	19.0 - 40.6	2.6 - 5.3	4.9 - 9.3	16.7 - 75.0	12.4 - 16.6	16.7 - 21.4
Q4 Range	40.6 - 100.0	5.3 - 78.5	9.3 - 100.0	75.0 - 100.0	16.6 - 64.3	21.4 - 56.7

For chi squared test estimates, the expected outcomes are intended to reflect an "independent" scenario (i.e., where the exposure and outcome are not related). The initial

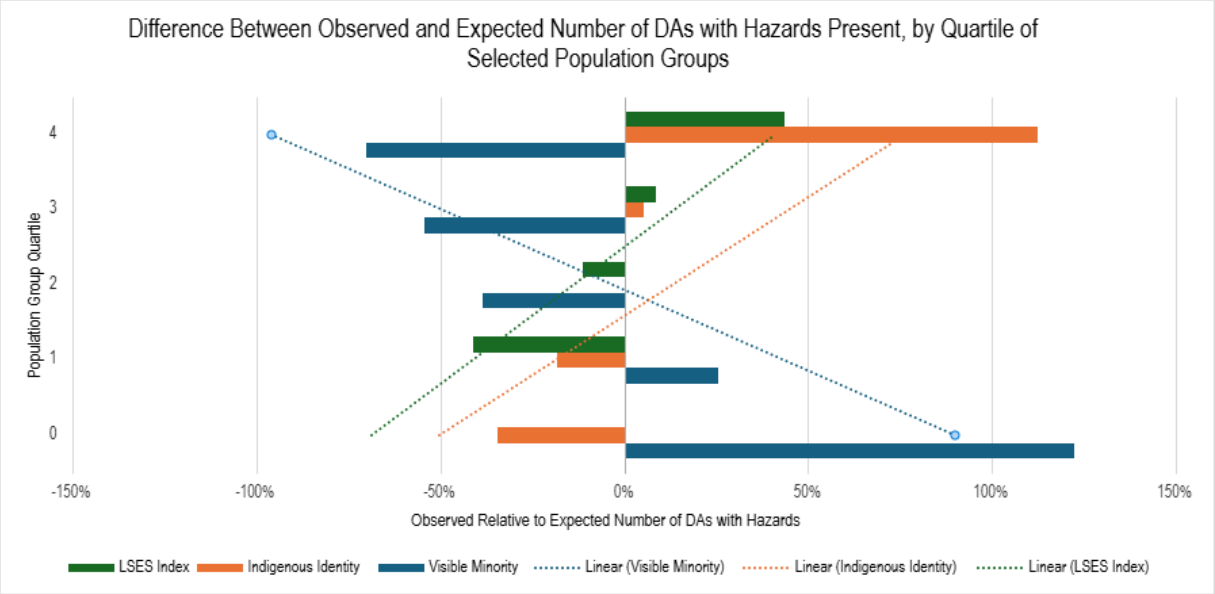
outcome of a chi squared test of independence is a test statistic summarizing the difference of observed values from expected values. In all cases tested, it was determined that population and PEH variables were not independent at the 95% confidence level. This is not surprising, given the relatively large number of communities in the analysis and the ranges of the underlying variables considered. This provides context for previous correlations. While relationships may not be strong, “stable” or consistent, the variables are not entirely independent. These findings, while limited, reveal a discernible relationship that future work could substantiate, when considering the underlying variables are not completely independent.

Potential relationships were considered in terms of percent difference between observed and expected outcomes (based on number of spatial units). The included analysis compared scenarios where the hazard outcome is binary (i.e., yes/no to having a hazard) with population rates scaled (i.e., increasing rates in non-zero quartiles).

There are different results for the co-location and tessellated co-location outcomes (see Figures 1 and 2, respectively). The results are consistent with the findings of correlations, odds ratios, and relative rates. Specifically, direct co-location (Figure 1) tends to indicate inverse effects for visible minority populations and positive increasing effects for Indigenous and LSES populations. For example, inverse effects could be less units than expected actually having hazards in relation to increasing population rates. Positive increasing effects could be more units than expected actually having hazards as population increases.

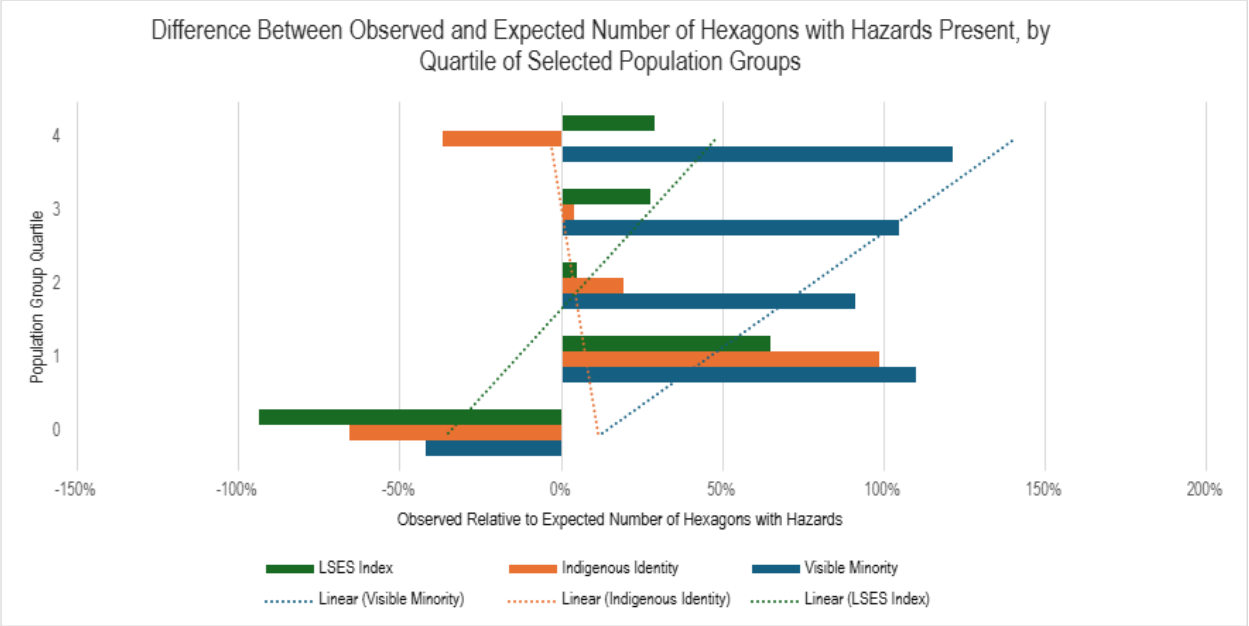
However, when considering tessellated relationships, the inverse relationship for visible minority populations switches to a positive effect (Figure 2). In the same figure, the Indigenous result shows a slight “inverse” outcome in the trendline. This is largely due to a unique pattern. For example, fewer areas with hazards than expected at lowest and highest population rate, but more than expected in moderate population rate groups.

Figure 1: Percent variance in number of DAs with hazards compared to expected, by population type and quartile



Long description: Chart with x axis showing the percent difference between the number of observed and expected Census dissemination areas that have potential hazards, from –150% to 150% increasing in increments of 50. The y axis is a scale of relative population rate sorted into increasing groups from 0 (no population) to 4 (high population rate) for different population groups. Results on the chart are provided for each population group and rate, with visible minority population results in blue bars (ranging from –70% to 122%), Indigenous population results in orange bars (ranging from –34% to 112%), and low socioeconomic status groups in green bars (ranging from –41% to 44%).

Figure 2: Percent variance in number of hexagons with hazards compared to expected, by population type and quartile



Long description: Chart with x axis showing the percent difference between the number of observed and expected hexagonal areas across the country that have potential hazards, from –150% to 200% increasing in increments of 50. The y axis is a scale of relative population rate sorted into increasing groups from 0 (no population) to 4 (high population rate) for different population groups. Results on the chart are provided for each population group and rate, with visible minority population results in blue bars (ranging from –42% to 121%), Indigenous population results in orange bars (ranging from –65% to 99%), and low socioeconomic status groups in green bars (ranging from –94% to 65%).

The same analytical approach was taken using quartile scales for PEH as well. The resulting visualizations are not included here but largely demonstrate the same trends outlined in Figures 1 and 2. They have more "nuance" in specific levels of population and hazard. However, they are substantially more complicated to explain with similar overarching interpretation of results.

Moran's I

The Moran's I analysis was run on DAs rather than hexagons, given the larger number of communities to test. Considering population rates, rather than counts, avoids clustering effects related to total population size effects, rather than population composition. Hazards were examined counts and as PEH, to consider whether the adjustment to PEH could substantially change understandings of potential hazard. The Moran's I test results (see Table 5) were significant to at least the 95% confidence level.

Table 5: Moran's I test results for underlying variables	
Variable	**Moran's I index**
Visible minority population rate	0.414638
Indigenous identity population rate	0.355046
Low socioeconomic status index	0.168100
Hazard count	0.022795
PEH	0.011212

The results of this test indicate moderate levels of clustering in visible minority and Indigenous populations. There was less clustering in combined LSES. This may reflect the strong skew in visible minority and Indigenous rates, often because people choose to be co-located with "like populations".

In comparison, underlying LSES data sources can be more "normally" distributed, giving a sense they would be less likely to cluster together. That said, some areas of increased values can lead to a smaller clustering effect. As well, LSES results may reflect "washing out" since LSES is constructed of three different sub-variables.

Importantly, there is little evidence of clustering in included hazards. This may reflect that hazards are genuinely dispersed, or that combining several hazard types into a single measure obscures individual clustering patterns, or both.

Visualized EEPCI Index

Visualization of the EEPCI was completed for both DAs (Figure 3) and for tessellated hexagons (Figure 4) across the country.

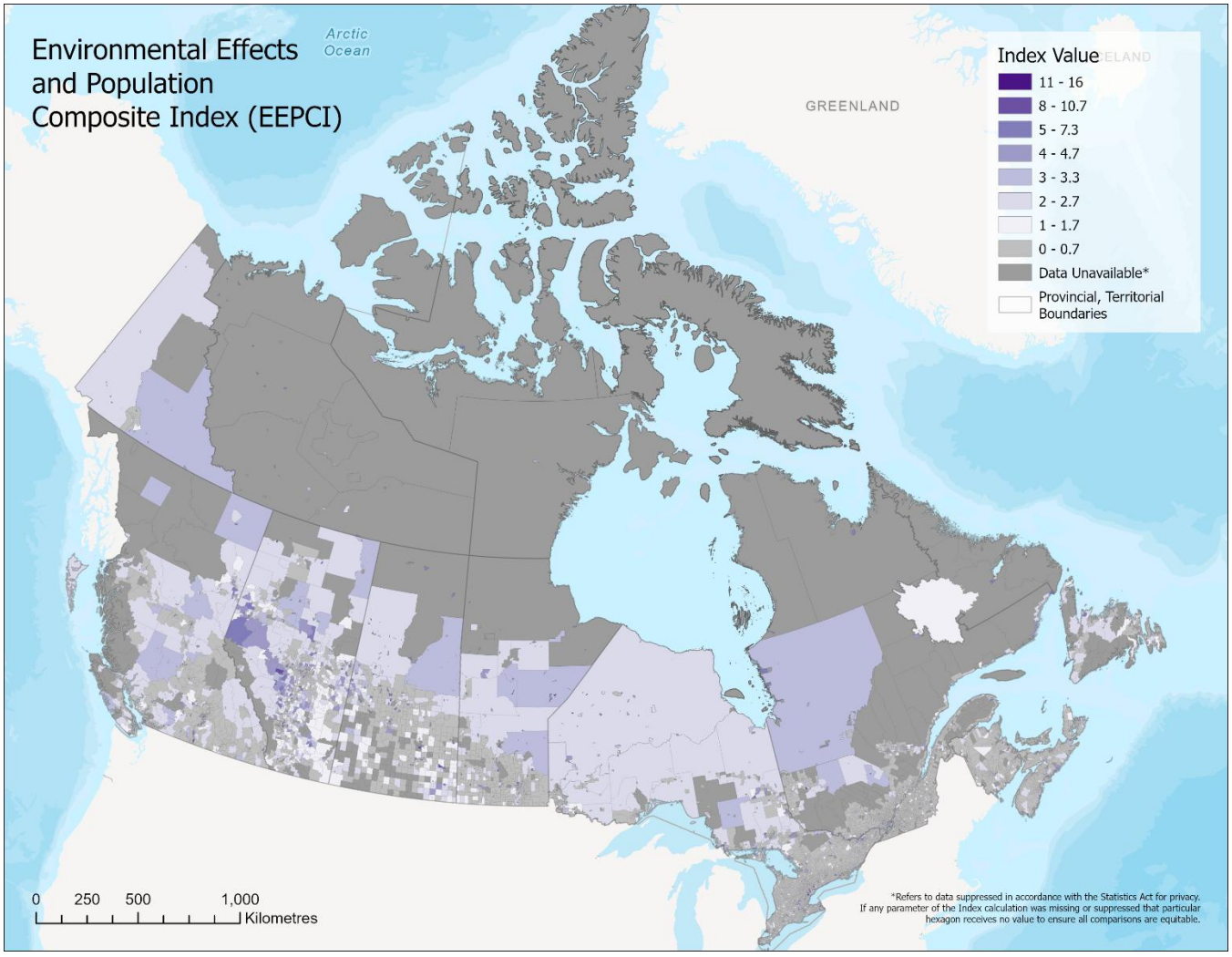
In Figure 3, many of the higher index values are difficult to see on a national/large scale due to relatively small community area. This could be addressed through "zooming in" on a map. However, this does create questions about the intent of mapping efforts as an approach to support comparison across the country. DAs can show very localized outcomes. However, the zoomed in results are focused within set boundaries.

Comparatively, Figure 4 provides more consistent units of comparison. Figure 4 is also perceptibly more effective at highlighting potential areas of interest in Northern communities

that are less visible in DA-based maps. However, when "zooming in" it is unlikely that local communities would find the information as appealing.

A notable trend from Figure 4 is the emphasis on coastal regions, likely reflecting access to transport and resources (e.g., water) for industry. Similarly, it highlights known regions of population density and industrial activity. In that sense, hexagonal approach may better approximate "known" or assumed intersections at higher levels. DA-based approaches may be more likely to identify unexpected local outcomes (both positive and negative) that require more explanation based on experience.

Figure 3: EEPCI Values Across Canada, by DA



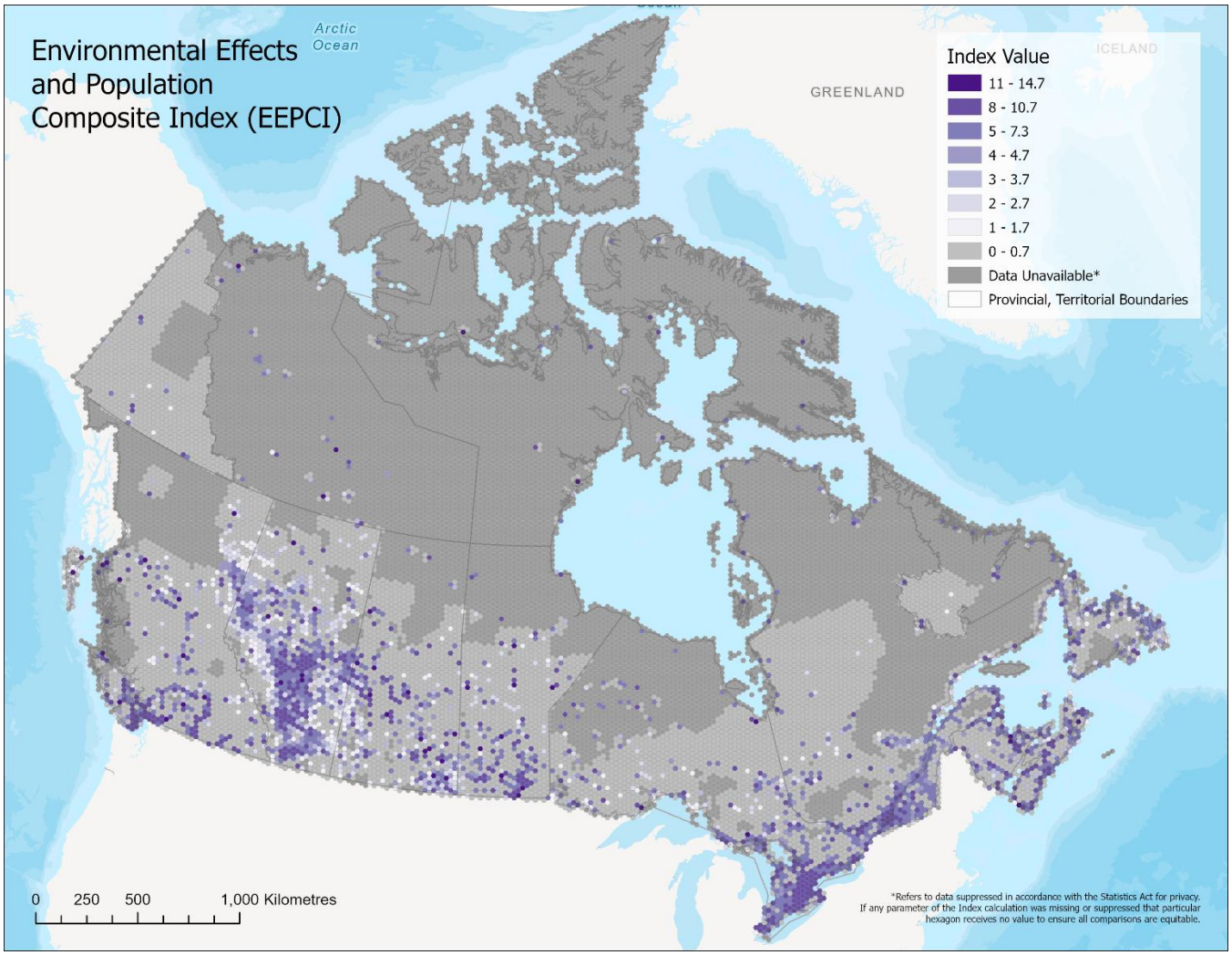
Long description: Colour coded map of the Environmental Effects and Population Composite Index result for each Census dissemination area across Canada. The following values are represented:

- Very dark purple – 11-16

- Dark purple – 8-10.7
- Purple – 5-7.3
- Light purple – 3-3.3
- Light grey – 2-2.7
- Off white – 1-1.7
- Grey – 0-0.7
- Dark grey – data unavailable

Provincial and territorial boundaries are indicated by white colouring. The most common index values across Canada are 2-2.7 and 3-3.3. Some data was presented over very large dissemination areas, while others are very small.

Figure 4: EEPCI Values Across Canada, by Hexagon



Long description: Colour coded map of the Environmental Effects and Population Composite Index result for equally sized hexagonal areas across Canada. The following values are represented:

- Very dark purple – 11-14.7

- Dark purple – 8-10.7
- Purple – 5-7.3
- Light purple – 4-4.7
- Light grey – 3-3.7
- Off white – 2-2.7
- Grey – 0-0.7

Provincial and territorial boundaries are indicated by white colouring. The most common index values across Canada are 8-10.7, 5-7.3 and 0-0.7. Data was not available for many parts of the country.

Discussion and conclusions

Identifying patterns and disproportionality

There is no single, universally acknowledged tool or approach to measure environmental justice or injustice. To reflect this, a variety of approaches were used to provide more depth in how relationships are understood.

The analysis demonstrated that there can be linkages between certain population groups and environmental hazards, with some communities disproportionately more likely than others to be near environmental hazards. For instance, visible minority populations would appear to be less likely than non-visible minority populations to be in DAs co-located or nearby to hazards. Indigenous communities would be more likely than non-Indigenous communities to be near hazards in the same scenario, while lower socioeconomic status communities are more moderate in their relationships. These results, though, invert with spatial scales that extend outward using hybrid co-location to identify potential hazards. Finally, when considering more regional-focused hexagons, areas with these groups are all more likely to be associated with hazards. However, the underlying relationships, with the expectation of correlation, are quite varied.

These patterns demonstrate variance depending on population groups, geographic scale, and methods used. In particular, results vary according to the assumed spatial relationship. These understandings of “where” the relationships occur are important in being able to compare scenarios and outcomes. This reflects that there is no single pattern of disproportionality in Canada to speak of. There are, though, relationships that reflect underlying population dynamics. There are also likely more localized experiences that will not be demonstrable in a broad, national scale investigation.

At a national level, results reveal patterns, not causes, and should be interpreted with recognition of what aggregate data do not capture: local histories, contexts, and experience. Combining community experiences of ER across Canada with national-scale data can better inform best practices in addressing EJ. Greater emphasis on localized and community-specific patterns allows a more accurate depiction of ER.

Where potential environmental inequity is highest

As outlined above, ECCC developed an index to combine information on populations of concern and potential environmental hazards. The "Environmental Effects and Population Composite Index" (EEPCI) presents data in a single mappable measure, illustrating broader associations and enabling comparison across the country.

The initial method (Figure 3) used DAs to group data. However, variation in DA size made visual comparison difficult, and limited visibility at the national scale. As a stand-alone map, this makes it difficult to incorporate as a study "result", but is likely to be a priority for interested communities and stakeholders as a provided tool to access analytical results.

As an alternative, the data were transferred into a grid of equal-sized (500 square kilometre) hexagons (Figure 4), improving consistency in mapping. This approach supports analysis of regional patterns rather than specific communities. The resulting map highlights areas where EJ considerations may be more pronounced, particularly regions with higher industrial activity and population density.

However, neither map should be used alone to determine which communities experience ER or where inequity is most pronounced. Results are influenced by underlying patterns and analytical assumptions. While there is, as with statistical analysis, as desire for additional layers and content, these may be more focused on localized or specific concerns that may be better addressed by specialized analysis.

Considerations and lessons learned

ER has various interpretations and is deeply tied to places, experiences, and perspectives. While statistics can support understanding, lived experience remains central to reflect the context, history and perspectives in affected communities. Similarly, weak statistical relationships do not necessarily indicate an absence of issues.

Since ER and EJ have various interpretations, measuring these concepts can lead to:

- Results that can vary by method used, debate around which methods to use, and the need to apply the most reasonable and practical method for each question
- National-scale results that reveal patterns, but cannot capture the full complexity of ER, and shift with data, assumptions, and geography
- Proximity-based analysis without defined parameters and context that risks misrepresenting the communities it aims to describe
- The unit of measurement shaping results significantly. Larger units offer consistency but miss local experience, while smaller units capture specificity but complicate
- visualization; both scales are needed to better capture community experiences of ER and EJ

This highlights the importance of transparency in analytical methods and their limitations to support appropriate interpretation. Transparency supports credibility and relevance. This analysis can be considered as one of many inputs to inform federal decisions at a national scale and how community perspectives are understood. Although feedback from communities and stakeholders seeking more tailored, specified data resources is understood, even modified approaches will suffer the same challenges outlined above. No single measure or map can reflect the variety of perspectives across Canada.

With that in mind, when the Act was developed, there was frequent discussion of data shortages for measuring relationships or challenges. Discussions often raised the need for more data collection. Preparation for this analysis did not confirm a universal lack of data. If anything, there is not necessarily an overarching shortage of data for all locations and media of concern. Rather, there may be more difficulties in:

- awareness of the data resources
- practical ability to use different data sets to bring together different variables
- capability to organize and use the data in ways that meet user needs.

Actual data gaps may still exist due to specificity, cost, or privacy constraints. Before further data collection, analysts should reflect deeper consideration of existing data, and the context and policy intent of the analysis.

There is also considerable interest in understanding health outcomes. However, health data are often limited or aggregated due to privacy considerations. Assessing unique, community-level health risks requires detailed, context-specific information and is better suited to targeted analyses rather than national-level studies.

As noted above, many people have also expressed interest in including more variables that reflect broader socioeconomic conditions and intersectionality. However, adding more variables can make it harder to identify specific relationships, like those related to race or Indigeneity. Expanding the set of variables requires a clear understanding of the purpose of the analysis and the questions it aims to answer.

If the goal is examining broader social conditions, then existing tools such as the Canadian Index of Multiple Deprivation or the Canadian Social Environment Typology may be more appropriate for assessing socioeconomic status. These tools, however, measure different factors than those outlined in the Act.

This leads to broader considerations regarding analytical approaches. There may be opportunities to establish a baseline and shared methodology to support others in their analysis. Focusing on clear and precise use of terms like “risk” and “disproportionate” can help place concerns in context. All of the above reflect the importance of balancing national comparability with local relevance.

The results show that relationships between communities and environmental hazards vary across the country. However, the specific findings depend on the data used and the assumptions built into the analysis. Patterns may reflect inequality, spatial distribution, or both. Because of this, it can be misleading to use simple national level results to draw broad conclusions or to 'label' communities. At these large scales, it is difficult to determine what would count as 'typical', 'proportionate', or 'equitable' outcomes.

Using proximity could be problematic without carefully defined logic models, parameters and variables. Impacts vary depending on pollutant type, dispersion, and exposure. It could also be more difficult to identify a specific population to compare against to estimate disproportionality. A strong emphasis on proximity to pollution, or neighbourhood-specific concerns, may be more relevant to a community. However, it may also be driven by other underlying differences that are unique in context.

Emphasis on proximity-based statistics alone could even result in misleading conclusions. As an example, multicultural populations are a defining feature of Canada, and there are likely to be clusters of specific populations in certain neighbourhoods. However, if EJ is assessed solely based on proximity of a unique community without appropriate context, these patterns could be misinterpreted.

All of the above points reaffirm that metrics alone cannot fully capture community experience. These measures do not reflect people, context, or history and are sensitive to analytical choices. They require context from community narratives and histories. Using statistics alone misses several key factors, such as:

- how people in "affected" communities actually feel, and their perspectives
- how their perception is influenced by the perspectives of external players (e.g., Governments, industry, ENGOs, academia, etc.)

As noted, results are also influenced by the unit of measurement used (i.e., the size of the area being studied). Selected units may not align with specific community contexts. There is a balance between consistency (larger units) and specificity (smaller units). Both are needed to understand relationships and derive value from analytical outcomes. Larger scales may address some concerns around proximity but may miss local experiences. This also reflects the challenge of defining what constitutes a "community" for analysis.

This is particularly evident in mapping and comparing the differences between DAs and standardized hexagons across the country. There are also challenges in visualizing results at national scales. Increasing detail (e.g., percentiles) can make visualization more difficult, while aggregation helps preserve meaningful differences.

Additional practical lessons learned became apparent during analysis. Firstly, despite the intent and emphasis on public accessibility and repeatability, the analysis completed required access to GIS software. It also required access to trained officials that can join data and plot information for visualization. While the data itself may be accessible, the software

(and ability to use that software) may be a limitation. This is particularly the case if data "cleaning" or adjustments are required.

Secondly, the results are based on selected variables aligned with the text of the Act and practical decisions of analysts. Results will change when variables are adjusted, reflecting the complexity of ER and EJ that cannot be captured in a single definition or approach universally understood and agreed-upon across all communities' experiences. Emphasis can be placed on developing methodologies that can be used, assessed, and refined over time through more specific analyses. This can support broad-scale policy dialogue about environmental equity and informing policy decisions.

This work provides a national-level foundation and points towards areas for further consideration, which will need to consider their own specific context and logic models (e.g., examining specific, logical relationships). The work completed here contributes to national-level, policy-focused knowledge, and recognizes that community-level experience may require different scales and approaches that build from national considerations. This community perspective often falls outside the role of the federal government, pointing to a potential role for governments as providers of information and tools (like methodologies). Community-level analysis is most powerful when community-led.

Those seeking more detailed information about the approaches and results outlined above are encouraged to contact ej-je@ec.gc.ca to continue the discussion and gain access to more detailed materials as they become available.

Further opportunities

A central objective of the study was to develop methods that can be applied to analyses of specific communities, places or environmental hazards. They use the same principles as the national analysis while recognizing data limits.

Although there has been public interest in more detailed analyses, the federal government's objective is to support informed dialogue rather than identify or categorize specific communities. Detailed case studies are more effective when shaped by the communities involved, which are best positioned to provide context and identify relevant factors.

The analysis also highlights the importance of understanding what data may already exist. It is important to understand how best to use it before considering collecting new data. For example, focus on opportunities for existing data resources to make specific, targeted improvements where appropriate and improve linkages between datasets (e.g., common identifiers for facilities, inventories of federal monitoring sites) to improve integration and reduce duplication.

Further opportunities remain an ongoing area for input and discussion. Advancing the work requires participation from partners to increase efforts and provide on-the-ground perspectives. It is not solely the responsibility of the federal government. Partners' involvement strengthens the work, reflecting the lived experience of a specific situation. To

achieve the best results, it may be useful to develop mechanisms to receive feedback and discuss methodologies, including data access, use and measurement.

Additional analyses

The text of the Act included a series of possible broad-scope measures in section 3 (3) (b) that could be envisioned for a Strategy. The broad scoping reflected a need to better understand the current context and relationship between impacted communities, industry/polluters and the environment before suggesting strategic approaches. This motivated inward-looking analysis in several areas that could support Strategy development.

The focus of **federal regulatory intersects** was on analysis with respect to public perspectives' suggestions that the federal legislative and regulatory system may be responsible for environmental inequities, but also offer potential opportunity to address environmental inequities. Analysis found that:

EJ can help to inform and understand environmental decision-making processes and outcomes and how they are considered to cause ER

Regulatory outcomes seek to balance many factors impacting people in Canada, but are not experienced or perceived/accepted the same by everyone – there is not always a clear "good" or "bad" outcome

- complex regulatory spaces involving shared jurisdiction make it difficult to understand how environmental protection decisions, including assessment outcomes and compliance decisions, are made. Communications on processes and outcomes could improve understanding
- federal regulatory approaches have the "levers" to support environmentally just outcomes, but there is potential for challenges in understanding practical implementation and coordination, particularly for cumulative impacts and regulatory approaches
- environmental jurisdiction is complex across orders of government, and can change how EJ issues are perceived and addressed by communities
- more explicit consideration of ER may exist in the context of regulatory "gaps" associated with First Nation reserves

The focus of **representation in policy making** was on "the involvement of community groups in environmental policy-making". Analysis considered practice and representation in federal environmental decision-making approaches from existing program/initiative/policy audit and evaluation processes. The results showed:

- more active approaches to engagement (e.g., community focused) are often seen as providing better outcomes and better opportunities for monitoring. However, these approaches may not be appropriate for all scenarios, with mixed perspectives on their success and more substantial capacity and resource requirements better aligned with longer-term representation and participation. Using those approaches needs to be considered in terms of clear objectives
- there is no universally accepted or practical approach to engagement and consultation that yields environmentally-just representation, reflecting challenges in:
    - identifying who could or should be engaged to participate, which will be further affected by
    - the timing and scale of the potential outcomes of the decision or approach, relative to the timing of the engagement or consultation process, which can drive
    - differing levels of interest in participating, trust in process, or burden on participants, which can often impact
    - the actual "representativeness" of those who come forward, in terms of if or how they are able to speak on behalf of their communities (or themselves)
- efforts to develop clear and consistent guidance may help to improve overall understanding of needs and tools. However, there will be an ongoing need for flexibility to design approaches that best suit operational considerations, although early emphasis could consider:
    - guidance around how to identify partners for engagement to clarify representation in action
    - guidance to improve timing of engagement to align with obtaining necessary perspectives and laying out intended outcomes

Annex B: Navigating the federal space

Environmental justice has long been advanced by grassroots organizations. It is a concept that has been used by different interest groups over time and applied in different contexts. This has been reflected throughout engagement and consultation on the National Strategy. Canadians have raised diverse perspectives that range across issues, mainly:

- access to safe and adequate housing
- equitable approaches to climate change adaptation including urban green space
- access to clean drinking water for First Nations
- working conditions for temporary foreign workers

These areas are not within the scope of the *National Strategy Respecting Environmental Racism and Environmental Justice Act*. However, there are existing federal initiatives related to these areas.

Procedural justice, a principle of EJ, is related to the inclusion of affected people in decisions that impact their lives with meaningful opportunities to participate. It also requires removing barriers to participation so decisions reflect lived experience and community needs. This includes elevating the voices of Indigenous, racialized, and marginalized communities and improving access to clear, reliable, and timely information. The ability of Canadians to navigate federal initiatives reflects procedural justice.

In the areas mentioned above, there has been a demonstrated knowledge gap of existing and ongoing federal initiatives.

Acknowledging that housing, climate change adaptation, access to clean drinking water and working conditions for temporary foreign workers have been a focus of Canadians throughout engagement and consultation, the following seeks to briefly outline where more information can be found on federal initiatives related to these issues. Details related to these initiatives have been highlighted based on input throughout consultation and engagement on environmental justice.

This is not an exhaustive list, and readers are encouraged to refer to Canada.ca for more information.

Housing

In November 2017, the federal government launched Canada's first ever National Housing Strategy (NHS). The goal of the NHS is to ensure everyone in Canada has access to housing that meets their needs and that they can afford.

In 2019, Parliament passed the *National Housing Strategy Act* (the *NHS Act*). The *NHS Act* sets out the Government of Canada's housing policy, which "recognize(s) that the right to adequate housing is a fundamental human right affirmed in international law." It also commits Canada to further the progressive realization of the right to adequate housing. This right is recognized in the *International Covenant on Economic, Social and Cultural Rights (ICESCR)*.

The *NHS Act* requires the Government to develop and maintain a national housing strategy. The strategy needs to take into account key principles of a human rights-based approach to housing. This includes the principles of non-discrimination, inclusion, participation and accountability.

The *NHS Act* requires the national housing strategy to, among other things:

- set out a long-term vision for housing in Canada that recognizes the importance of housing in achieving social, economic, health and environmental goals
- establish national goals relating to housing and homelessness and identify related priorities, initiatives, timelines and desired outcomes
- focus on improving housing outcomes for persons in greatest need
- provide for participatory processes to ensure the ongoing inclusion and engagement of civil society, stakeholders, vulnerable groups and persons with lived experience of housing need, as well as those with lived experience of homelessness

The strategy sets out a long-term vision for housing and focuses on improving housing outcomes for those in greatest need. The *NHS Act* outlines the need for a diverse National Housing Council and ensures ongoing inclusion and participation. This includes the input of civil society, stakeholders, vulnerable groups, and persons with lived experience of housing need and homelessness in housing policy discussions. The role of the National Housing Council is to provide advice to the Minister, including on the effectiveness of the National Housing Strategy.

The *NHS Act* also creates a Federal Housing Advocate position. The Federal Housing Advocate's mandate is to monitor the implementation of Canada's housing policy and the National Housing Strategy, and provide advice to the Minister on ways to further the progressive realization of the right to adequate housing in Canada. The Advocate's work includes consulting with members of vulnerable groups and receiving submissions to hear from communities affected by systemic housing issues. The Advocate may both undertake a review of a broad systemic housing issue or request that the National Housing Council establish a review panel to hold a hearing to review any systemic housing issue within federal jurisdiction.

The Federal Housing Advocate also monitors and reports annually on their findings related to systemic housing issues that they hear about and associated recommendations. As

an additional accountability mechanism, the responsible Minister must table and respond to the Advocate's report in Parliament.

Climate change adaptation and urban greenspace

A significant number of submissions throughout engagement and consultation on the National Strategy have made connections to equity concerns related to climate-change impacts. Some have focused more specifically on urban issues, such as heat domes, or more broadly on issues around displacement during natural disasters. The perspectives shared have often reflected "climate justice". Born from the concept of EJ, climate justice involves advancing climate solutions that link human rights and development in a human-centred approach, placing the needs, voices and leadership of those who are most impacted at the forefront. Input has also spoken to access to environmental benefits, including factors such as access to green space or tree coverage in urban areas.

While these areas of concern are not within the scope of the National Strategy, they do signal a strong area of interest for the public. Existing, related initiatives include:

Canada's National Adaptation Action Plan - Canada.ca

- Canada's National Adaptation Strategy (NAS) and the Government of Canada Adaptation Action Plan (GOCAAP) outline the federal government's overarching framework on climate adaptation. The GOCAAP and NAS emphasize both climate justice and environmental justice as principles.
- Action 32: National Urban Parks Program - The program will help cities adapt to climate change, while contributing to national and global biodiversity targets with innovative solutions that benefit residents, businesses, and local wildlife. National urban parks will help to mitigate threats to infrastructure from extreme weather events, support storm water management and soil quality, and help sequester carbon.

HealthADAPT - Canada.ca

- Following the conclusion of program funding in March 2022, Health Canada had invested approximately $3.5 million in partnership with 10 health authorities across 5 provinces and territories. The funding supported their climate change and health efforts. Many of the funded health authorities have continued to lead regionally relevant climate efforts.
- Announced in 2026, Health Canada has invested over $17 million through the Climate Change and Health Capacity Building program to support climate action in Canada's health sector.
- Federal investments to build resilience in the health sector include:
    - expanding Health Canada's Protecting the Health of Canadians from Extreme Heat program by investing up to $30 million over five years to provide the best available guidance and resources to Canadians in addressing extreme heat

    - renewing and expanding the HealthADAPT program by investing up to $13 million over five years to support partners across Canada in creating climate-resilient health systems
    - investing up to $12 million over five years to enhance the Climate Change and Health Adaptation program for First Nations North of 60 and Inuit across Inuit Nunangat, and provide support to Indigenous organizations to engage First Nations and Inuit on climate change related needs and vulnerabilities in health services

Natural Infrastructure Fund - Housing, Infrastructure and Communities Canada

- The Natural Infrastructure Fund supports projects that use natural or hybrid approaches to protect the natural environment, support healthy and resilient communities, and contribute to economic growth and jobs.
- Examples of natural infrastructure include urban forests, street trees, wetlands, living dykes, bioswales, and naturalized coastal restoration.

A Force of Nature: Canada's Strategy to Protect Nature - Canada.ca:

- A Force of Nature: Canada's Strategy to Protect Nature outlines a plan for how the Government of Canada will deliver Canada's 2030 Nature Strategy. It is built on three key pillars:
    - Pillar 1 – Protecting Nature in Canada: By protecting and conserving more lands and waters and connecting habitats so species can move more safely
    - Pillar 2 – Building Canada Well: By designing infrastructure projects that work with nature rather than against it
    - Pillar 3 – Valuing Nature and Mobilizing Capital: By using finance tools to fund conservation in a sustainable, long-term way
    - As a part of this Strategy the Government has committed to 15 new national urban parks

Canada's 2030 Nature Strategy: Halting and Reversing Biodiversity Loss in Canada - Canada.ca:

- Canada's 2030 Agenda National Strategy seeks to create a shared vision of how Canada will implement the United Nations 2030 Agenda for Sustainable Development and identify actions to accelerate the achievement of the 17 Sustainable Development Goals (SDGs) at home and abroad
- "Target 12: Urban green and blue spaces" aims to significantly increase the area and quality, and connectivity of, access to, and benefits from green and blue spaces in urban and densely populated areas sustainably, by mainstreaming the conservation and sustainable use of biodiversity, and ensure biodiversity-inclusive urban planning, enhancing native biodiversity, ecological connectivity and integrity, and improving human health and well-being and connection to nature, and contributing to inclusive and sustainable urbanization and to the provision of ecosystem functions and services

- Through commitments in the National Adaptation Strategy and Government of Canada Adaptation Action Plan, ECCC is deploying NBS and natural infrastructure to help mitigate the impacts of a changing climate, increase access to urban green and blue spaces, and enhance urban biodiversity
- As part of the Natural Climate Solutions Fund, NRCan's 2 Billion Trees program funds tree planting projects and expands urban forests and urban green spaces through its Urban Lands stream. By 2031, the Urban Lands stream will support the planting of approximately five million trees
- To further advance action on Target 12, the federal government will work with PTs to explore opportunities to address barriers that limit the establishment of green and blue spaces, and urban park areas, through various options, including future Nature Agreements

Census of Environment

- The goal of the Census of the Environment is to deliver a full picture of the complex relationships between ecosystems, the economy, society, and human well-being in one easily accessible location. Statistics Canada currently provides access to vast array of economic and socio-economic information

Environmental sustainability indicators - Canada.ca

- The Canadian Environmental Sustainability Indicators (CESI) program was created in 2004. It reports on the state of the environment by providing information and data to track Canada's performance on key environmental issues on air, biodiversity, climate, water, and waste and contaminants
- Using graphics, explanatory text, interactive maps and figures, and downloadable data, CESI's environmental indicators are a reliable source of information and data showing the latest national, and some regional and international, environmental trends

Access to clean drinking water for First Nations communities

- Indigenous Services Canada continues to address long-term drinking water advisories
- Recently Bill C-37, the proposed First Nations Clean Water Act, was introduced. The Bill:
    - Affirms that the inherent right to self-government, recognized and affirmed by s. 35, includes the jurisdiction of First Nations in relation to water, source water, drinking water, wastewater and related infrastructure on, in and under First Nation lands
    - Provides for minimum standards for water quality, quantity, and wastewater effluent. It also provides pathways to facilitate source water protection.
    - Sets out principles, such as substantive equality, which states (among other things) that First Nations' access to reliable water services must be comparable to that in non-Indigenous communities

- Establishes that it is the policy of the Government of Canada to further the progressive realization, for individuals on First Nation lands, of the human right to safe drinking water
- Sets out that the Minister must consult and cooperate with First Nation governing bodies in respect of the development of terms of reference for the establishment of a corporation under the Canada Not-for-profit Corporations Act that is to be led by First Nations

Working Conditions for Temporary Foreign Workers

- More information on temporary foreign worker rights and labour standards can be found here: Temporary foreign worker rights and labour standards - Canada.ca
- Temporary foreign workers are protected by Canada's labour laws. Employers must:
  - pay workers for their work
  - must make sure that the workplace is safe
  - can't take workers' passport or work permit away
- Each province and territory has an employment or labour standards office that deals with labour and employment laws
- All workers in Canada have the right to a safe and healthy workplace, so laws protect workers from danger
- Provincial, territorial and federal governments each have their own laws and ways of managing health and safety matters