



THE FUTURE IS NOW

The environment and
children's well-being
in Canada

Canadian Companion to UNICEF Report Card 17

THE FUTURE IS NOW

This Canadian Companion distills and interprets data from UNICEF Report Card 17, *Places and Spaces: Environments and child well-being*. The UNICEF Report Card series monitors and compares economically advanced countries' performance in securing children's rights and advancing their well-being.

Visit [unicef.ca/irc17](https://www.unicef.ca/irc17) for these reports, infographics and background papers. Data sources and full references are cited in: UNICEF Office of Research. (2022). UNICEF Report Card: UNICEF Innocenti, Places and Spaces: Environments and child well-being, *Innocenti Report Card 17*. UNICEF Office of Research – Innocenti, Florence.

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ONE
EARTH
ONE
CHANCE

WILL THERE BE
HAPPY ENDING?

FOR
CHANGE
BILLY
CHANGE

THE FUTURE IS NOW

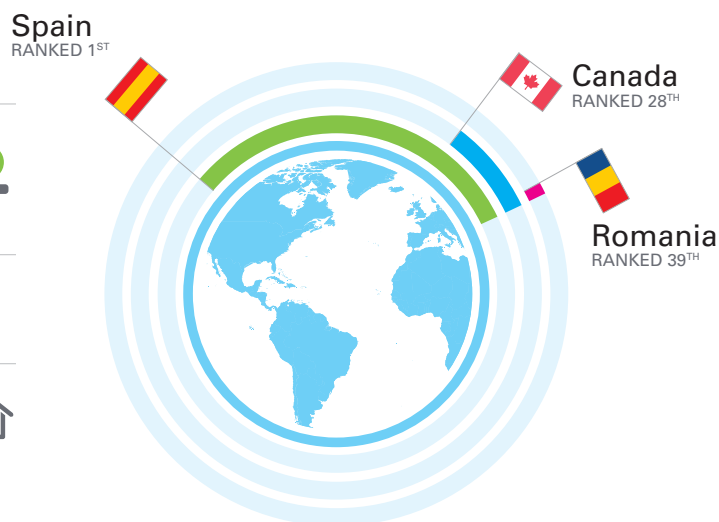
The environment and children's well-being in Canada

Executive Summary: UNICEF Report Card 17 Canadian Companion


UNICEF Report Card 17 measures the impacts of environmental damage on the well-being of children and youth under age 18 in the world's richest countries. Some countries are doing better than others at protecting and creating environments that sustain children's well-being. How does Canada compare to its peer countries, and what will it take for Canada to get to the top of the UNICEF rankings?

Canada ranks 28th among 39 rich countries in the overall environmental well-being of children and youth.

- Canada has an even distribution of good, fair and poor rankings across the indicators measured in the Report Card. 
- About half of the indicators are better than the rich-country median and half are worse. 
- Canada achieves the best ranking in one indicator (households in overcrowded housing) and the bottom ranking in one indicator (production of municipal solid waste). 



A League Table of children's environmental conditions and well-being

Overall rank	Country	World of the child	World around the child	World at large
1	Spain	8	13	13
2	Ireland	6	4	20
3	Portugal	25	9	9
4	Cyprus	15	17	10
5	Finland	1	2	30
6	Italy	7	16	14
7	Iceland	3	1	32
8	Slovenia	19	14	16
9	Germany	13	6	22
10	Sweden	4	10	26
11	United Kingdom	11	12	23
12	Netherlands	12	8	27
13	Japan	2	21	25
14	Norway	5	5	35
15	New Zealand	24	15	17
16	France	14	27	18
17	Switzerland	21	3	33
18	Hungary	34	22	6
19	Austria	9	19	29
20	Czech Republic	26	23	21
21	Estonia	27	11	28
22	Lithuania	32	24	15
23	Croatia	29	33	5
24	Denmark	18	26	34
25	Slovakia	31	29	11
26	Greece	22	35	8
27	Poland	30	31	7
 28	Canada	17	7	38
29	Malta	33	18	24
30	Australia	10	20	37
31	Latvia	36	30	12
32	Republic of Korea	16	32	31
33	Chile	35	37	3
34	Israel	23	36	19
35	Bulgaria	37	34	4
36	Belgium	28	25	36
37	United States	20	28	39
38	Costa Rica	38	38	1
39	Romania	39	39	2

NOTES:

- The ranking is calculated as follows:
 1. A z-score for each indicator was calculated (reversed where necessary so that a higher score represents a more positive condition);
 2. The mean of the two z-scores within each dimension was calculated;
 3. The z-score for each mean was calculated and served as a basis for ranking a given dimension;
 4. The mean of the four ranks was calculated and served as a basis for the final ranking. If two countries had the same average of four ranks, the average of four z-scores was used to determine their position.
- Countries are ranked on a dimension if they have data for at least two of the three indicators.
- Four OECD/EU country are not included in the ranking: Colombia is excluded due to missing data on the 'world around the child' dimension, while Turkey, Mexico and Luxembourg are excluded as they are extreme outliers (z-scores below -4.0)

RANKING:

TOP THIRD

MIDDLE THIRD

BOTTOM THIRD

It's getting hot

Environmental damage is affecting our children and youth. Despite Canada's abundant natural and economic wealth, it has not succeeded in guaranteeing every child a healthy environment. Even the basics, like clean water, are still out of reach for some. And some risks such as air pollution affect many young people, costing them healthy years of life.

Children are uniquely vulnerable to the risks of environmental degradation, from the widespread and insidious impacts of pollution to localized extreme weather events, yet they have the least responsibility for it. The impacts can start in the prenatal period and continue throughout their lives, and may include infections, asthma, heat stress, poor mental health, diminished academic performance, cancers, injury and death. For children, the future is not just getting closer; their future is now.

Worlds apart

Children in Canada are more exposed to some environmental risks, such as pesticide pollution and traffic injury, than many of their rich-country peers:

- Canada ranks 29th for the percentage of children living in areas with high pesticide pollution risk: 6.3%.
- Canada ranks 23rd for the rate of child traffic injuries and deaths: 119.9 DALY¹ per 1,000.

Despite progress to limit children's exposure to certain toxicants, they are still exposed to unsafe levels of lead and air pollution:

- Canada ranks 8th in children's exposure to ambient air pollution: 7.1 µg/m³.
- Canada ranks 29th in the rate of child illness from air pollution: 0.644 DALY per 1,000.
- Canada ranks 11th in children's exposure to lead poisoning: 1.6%.

Exposure to Pesticide Pollution



Child Traffic Injuries and Deaths



Exposure to Air Pollution



Exposure to Lead Poisoning



Canada has the third-largest freshwater reserve in the world, but water insecurity causes child sickness and death at rates higher than in many rich countries. Although the absolute risk is low, any child death due to water quality in a rich country is unacceptable:

- Canada ranks 24th in the rate of child illness from unsafe water: 0.135 DALY per 1,000.
- Canada ranks 20th in the rate of child death from unsafe water: almost two deaths per 100,000.

Child Illness from Unsafe Water



Child Deaths from Unsafe Water



Canada is a rich country but a poor global citizen.

Canada's lowest rankings are for its levels of resource consumption and related emissions and waste production.

Of the countries in the Report Card, Canada has the worst rate of waste production, the second-worst rate of resource consumption and the third-worst rate of greenhouse gas emissions. The environmental impacts not only affect children in Canada today, but also spread to children beyond our borders and to future generations:

- Exploiting its land of plenty and the planet far beyond its borders, Canada would require five Earths to sustain its current resource consumption, ranking 40th.
- Canada is the highest generator of municipal waste, ranking last among 36 rich countries: 695.4 kg per person every year.
- Canada ranks 41st in CO₂ emissions: 15.4 tonnes per person every year.
- Children's access to local green space in Canada ranks 15th on the Urban Green Space Index.

Resource Consumption



Municipal Waste



CO₂ Emissions



Access to Green Space



¹ One DALY represents the loss of one year of full health. Disability-adjusted life years or DALY is a time-based measure that combines years of life lost due to premature mortality, and years of life lost due to time lived in states of less than full health or years of healthy life lost due to disability. Retrieved from: <https://www.who.int/data/gho/indicator-metadata-registry/indicator/158>.

Environmental risks are unequal

Children’s exposure to environmental risks and impacts are substantially unequal, within and between countries. These risks are difficult for children to avoid or escape, particularly those children most marginalized by income, race and disability:

- Children in neighbourhoods composed mostly of low-income, immigrant and racialized populations typically have higher exposure to traffic injury and death, yet they tend to have fewer traffic safety measures.
- Despite progress to end long-term water advisories in First Nations communities, 37 advisories remained in early 2022.
- Predominantly Indigenous communities accounted for 48% of the communities evacuated due to wildfires between 1980 and 2021.

“[Climate change] affects the way I think about what I eat, what I wear and buy, my transportation, my future career and family and housing, and how I spend my leisure time. I think about it at least once a day.”

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Spending to protect the environment and children

Government spending to protect the environment indicates how committed countries are to ensuring a healthy, safe and sustainable world for all children, today and tomorrow. Failure to protect the environment today defers the rising costs of environmental damage to future generations.

Canada’s spending on environmental protection does not match its environmental impact:

- Canada ranks 15th in spending on environmental protection: 0.7% of GDP.

Canada is a leader in providing environmental education. Young people have knowledge capital, but they are rarely provided the opportunity to use it:

- Canada ranks 2nd in the percentage of young people with environmental knowledge: 87%.



AN ENVIRONMENT FIT FOR CHILDREN

Rich countries including Canada must take more responsibility for the world they give to children today and the world they leave for future generations. This Report Card points to the need for urgent progress in a range of environmental policies that limit waste and greenhouse gas emissions leading to climate change, reduce exposure to pollution, ensure universal clean drinking water and decent housing, and provide every child with safe mobility and access to quality green spaces in their communities. To ensure policy fairness, governments at all levels must:

- 1 Apply a distinct child and youth impact lens to environmental policies, giving them priority consideration and including child-specific targets and accountability.
- 2 Improve the protection of children and youth afforded by the *Canadian Environmental Protection Act*, ensuring their right to a healthy environment and requiring impacts on diverse young people to be considered in every risk assessment.
- 3 Review every sustainable development strategy, disaster risk reduction plan and disaster mitigation and emergency management strategy from a child impact and equity perspective.



The future is now:

A message from President and CEO David Morley

Canada's economic and environmental resources – air, water and land – are among the most abundant in the world. The national expectation should be that Canada's children and youth share in the dividends and enjoy one of the highest levels of well-being in one of the cleanest environments in the world. Along with steady economic growth, there should be steady improvement in children's well-being. Instead, their well-being is a canary in the coal mine of rising income inequality and deteriorating environmental integrity.

The pandemic has heaped new challenges on children's health, development and protection but, through it all, they have not been spared the impacts of environmental change including heat domes, wildfires and floods. Rising temperatures, higher sea levels, dirty air and water, polluted soil, excess waste and extreme weather events affect not only the world we leave for future generations but also the children of today. **These impacts are already clear and present in children's bodies and minds, as well as in the environments around them.** Their future is now – not just a distant environmental crisis that today's children will have to deal with tomorrow. The choices we make today will decide if children will face a lifetime in perpetual crisis or a greener, safer, healthier future.

If Canada's relative abundance of economic and environmental wealth could be imagined to buffer children from some of the worst excesses of pollution and environmental degradation, UNICEF Report Card 17 shows that our children have not escaped the impacts. Canada ranks 28th among 39 rich countries in the environmental well-being of children and youth.


Children and youth are the most susceptible to environmental degradation and climate change – and the least responsible for it. They are especially vulnerable because their bodies and immune systems are still developing, they are at greater risk during sudden crises

and evacuations, and they will live longest with the impacts. Although some environmental risks are widespread, many including pollution, water and housing insecurity, loss of green space, road casualties and extreme weather-related events are borne most heavily by children who are Indigenous or racialized, have disabilities or are in the lowest income level. Those children who benefit the least from the production and consumption that create waste, pollution and climate change are the most affected.

Canada also spreads its environmental impacts to children beyond our borders and to future generations. Canada would require five Earths to sustain its current consumption and waste – the second-worst ranking among rich countries. But we only have one Earth, and we have to share it with other countries and future generations.

Children and youth are the most aware of this challenge. Canada achieves the second-highest ranking for the level of environmental understanding among young people. Their voices are loud, and their messages are clear. We hear them in marches, polls, conferences, songs and courts across this land. This report shares their words, telling us how they experience their environments and the actions they need us to take to assure their right to a childhood and a just future. This Report Card asks you to consider: Is Canada's progress to protect the environment and our children enough? What kind of world will we leave for future generations? The answers are up to us, because the future is now.

Sincerely,



David Morley,
President and Chief Executive Officer
UNICEF Canada

Uprising:

Messages from young people

"It's [climate change] been making it harder to go through summer. I'm poor, so buying an AC unit is impossible, not mentioning how much installation would cost. The summers are getting hotter and hotter, and I feel like one day it'll be unlivable, but people like me will never be able to afford to live. I can't even think straight or go outside too much, it's so hot."

"I live in the North, and we've had a really warm and wet year. Climate change might've also influenced the water crisis in Iqaluit. I feel anxious about the future of the planet and the preservation of the North, and it's frustrating that some people don't take climate change seriously."

"Being from BC, my family is significantly impacted by the mudslides, flooding and forest fires that happened this year. It has ruined homes, lives and put a hold on our lives, as we need to figure out how to survive first."

Spotlight: U-Report Canada

U-Report is a polling platform developed by UNICEF for youth ages 13 to 24. It is a unique way to get a quick, real-time pulse check of young people's views about issues they care about; to understand how different groups of youth are affected by decisions, policies, services and events; and to involve youth in decisions that affect them. More than 1,000 U-Reporters live in Canada in every province and territory.

UNICEF Canada asked young U-Reporters for their perspectives on the environment and their well-being. Look for the U-Report icon to see what young people in Canada had to say.

Visit ureportcanada.ca for more information and to sign up for U-Report Canada.

Introduction

Most Canadians are familiar with Greta Thunberg, an iconic voice of children’s concern about climate change and their call for action. Not only are young people everywhere troubled by current environmental damage and the existential threat to their future, they are growing discontent with a society in which their voices are frequently ignored, minimized or mocked. No longer satisfied with being excluded, many young people in Canada are lending their voices to policy debates and becoming activists calling for strong political action to protect the environment. Movements such as Climate Strike Canada, inspired by Greta Thunberg, have fostered school strikes and petitions to draw attention to their concerns.

The evidence justifies them.

Children are uniquely vulnerable to the risks of environmental degradation climate change – from the insidious and persistent impacts of pollution, to the mounting loss of forest and ice cover, to dramatic and extreme weather events.² Risks are local, regional, national and global in scope. The impacts on children start in the prenatal period and continue throughout their lives.³ Because of their small body size compared to adults, children have a proportionately higher intake of air, food and water, which, if polluted, amplifies the possibility of negative effects.⁴ They

are also particularly vulnerable to the disruptive impacts of sudden-onset environmental crises, like flooding and wildfire, and the displacement that follows. The integrity of the environment is intricately connected to young people’s well-being and life opportunities, related to conditions from infections, asthma, allergies, heat stress, cancers, injury and mortality to poor mental health and diminished academic performance.^{5 6 7} Children’s rights to life, development, health, food, water, education, culture, play and protection are at risk when governments fail to protect the natural environment.⁸ Each passing day brings a new reminder of the complexity and intensity of environmental challenges that today’s children will face long into their future. **Their future is not just getting closer; their future is now.**

UNICEF Report Card 17 measures environmental impacts on the state of children and youth under age 18 in the world’s richest countries.⁹ It draws on the most current data from 43 countries, including Canada, to compare how well our countries are protecting and creating children’s environments and how that is shaping their well-being¹⁰. This Canadian Companion to the Report Card gives Canadians a clear understanding of how environmental conditions are affecting our children and youth, how Canada ranks compared to its peer countries and what it will take to join the best-performing countries at the top of UNICEF League Tables.

2 Bush, E. and Lemmen, D.S., eds. (2019). *Canada’s Changing Climate Report*. Government of Canada, Ottawa, ON.

3 U.S. Global Change Research Project. (2016). *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. U.S. Global Change Research Program, Washington, DC.

4 Shannon, M.W., Best, D., Binns, H.J., Forman, J.A., Johnson, C.L., Karr, C.J., Kim, J.J., Mazur, L.J., Roberts, J.R. and Shea, K.M. (2007). Global climate change and children’s health. *Pediatrics*, 120, 1149–1152.

5 Buka, I. and Shea, M. (2019). Global climate change and health in Canadian children. *Paediatrics and Child Health*, 8, 557.

6 Sheffield, P.E. and Landrigan, P.J. (2011). Global climate change and children’s health: threats and strategies for prevention. *Environmental Health Perspectives*, 119, 291–298.

7 Bernstein, A.S. and Myers, S.S. (2011). Climate change and children’s health. *Current Opinion in Pediatrics*, 23, 221–226.

8 Committee on the Rights of the Child. (2016). *Children’s Rights and the Environment: Report of the 2016 Day of Discussion*. United Nations. Geneva.

9 This report covers the 43 countries who are members of the Organisation for Economic Co-operation and Development (OECD) and/or the European Union

10 The Report Card compares 43 countries in indicators for which comprehensive data is available; for some of these indicators, data is only available for fewer countries. The core League Table includes 39 countries.

Where does Canada stand?

The UNICEF League Table of children’s environmental well-being

The indicators in the core UNICEF League Table in Report Card 17 quantify and compare national performance by measuring children’s experiences of their environment today and the world they will have in the future (Figure 1). These indicators point to the urgency of reducing environmental risks for children.

If all rich countries created good environmental conditions and achieved the same good outcomes for children, they would all be clustered together at the top of the UNICEF League Table. But the headline rankings tell a familiar story. Many of the Nordic countries are in or near the top ten, with Spain at the top of the League Table and Finland, Sweden and the Netherlands in the top third. These countries are typically among the best performers in UNICEF Report Cards, with high wealth and good child and youth well-being indicators. This Report Card shows that they also create relatively good environments for children.

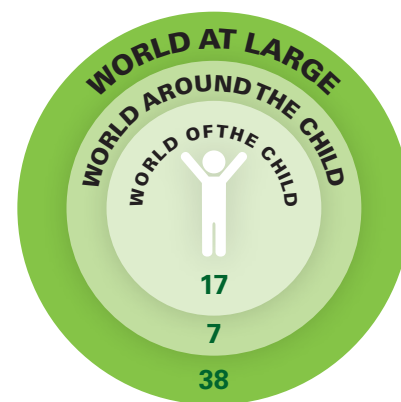
Romania is at the bottom of the rankings, along with Costa Rica, the United States and Belgium. It is not surprising that newly minted “high-income” countries struggle to achieve the best conditions and outcomes for children. But these countries also tend to have less wealth, consumption and waste, and are currently less responsible for the global impacts including climate change. The presence of some relatively rich countries at the bottom of the rankings also shows that national prosperity is no guarantee that children will grow up in healthy environments.

Canada’s ranking in the League Table is another familiar story. Relative to other rich countries, **Canada is a low performer in children’s environmental well-being, ranking 28th among 39 rich countries.** Canada’s position in UNICEF’s League Table is consistent with previous UNICEF Report Cards measuring different aspects of children’s well-being in high-income countries.¹¹

The League Table is organized into three levels that describe children’s environmental conditions and experiences. The first level measures children’s most direct and intimate exposure to the environment: air, water and hazardous substances. The second describes critical conditions of the physical environment surrounding them, including housing, green space and traffic. The third examines the world at large, in which indicators of environmental integrity include

consumption, waste, emissions and spending on environmental protection. Together, the indicators establish a framework to reflect on a country’s environmental performance from the perspective of children: the world it has given to the children of today and the world it is leaving to future generations.


Breaking down the headline rankings, Canada ranks:



In this UNICEF Report Card, “environment” means the physical aspects of the natural and built environments that children and youth experience and that affect their well-being. This definition and the conceptual framework used to measure children’s environmental well-being were developed considering perspectives of young people in Canada and across rich countries. These young people highlighted the connections between all living things and the need for a balance between humans and our environment.

11 UNICEF Canada. (2020). UNICEF Report Card 16: Canadian Companion, *Worlds Apart*. UNICEF Canada, Toronto, ON.

Figure 1: A League Table of children's environmental conditions and well-being

Overall rank	Country	World of the child	World around the child	World at large
1	Spain	8	13	13
2	Ireland	6	4	20
3	Portugal	25	9	9
4	Cyprus	15	17	10
5	Finland	1	2	30
6	Italy	7	16	14
7	Iceland	3	1	32
8	Slovenia	19	14	16
9	Germany	13	6	22
10	Sweden	4	10	26
11	United Kingdom	11	12	23
12	Netherlands	12	8	27
13	Japan	2	21	25
14	Norway	5	5	35
15	New Zealand	24	15	17
16	France	14	27	18
17	Switzerland	21	3	33
18	Hungary	34	22	6
19	Austria	9	19	29
20	Czech Republic	26	23	21
21	Estonia	27	11	28
22	Lithuania	32	24	15
23	Croatia	29	33	5
24	Denmark	18	26	34
25	Slovakia	31	29	11
26	Greece	22	35	8
27	Poland	30	31	7
 28	Canada	17	7	38
29	Malta	33	18	24
30	Australia	10	20	37
31	Latvia	36	30	12
32	Republic of Korea	16	32	31
33	Chile	35	37	3
34	Israel	23	36	19
35	Bulgaria	37	34	4
36	Belgium	28	25	36
37	United States	20	28	39
38	Costa Rica	38	38	1
39	Romania	39	39	2

RANKING:

TOP THIRD

MIDDLE THIRD

BOTTOM THIRD

NOTES:

- The ranking is calculated as follows:
 - A z-score for each indicator was calculated (reversed where necessary so that a higher score represents a more positive condition);
 - The mean of the two z-scores within each dimension was calculated;
 - The z-score for each mean was calculated and served as a basis for ranking a given dimension;
 - The mean of the four ranks was calculated and served as a basis for the final ranking. If two countries had the same average of four ranks, the average of four z-scores was used to determine their position.
- Countries are ranked on a dimension if they have data for at least two of the three indicators.
- Four OECD/EU country are not included in the ranking: Colombia is excluded due to missing data on the 'world around the child' dimension, while Turkey, Mexico and Luxembourg are excluded as they are extreme outliers (z-scores below -4.0)

Many countries fare in substantially different ways across the three dimensions of the League Table. Overall, no country performs well across the board. Even those at the top have substantial room for improvement. This Report Card complements the indicators used to compile the core League Table with additional related indicators and rankings of children's environmental well-being (Figure 2).¹² Canada has an even distribution of good, fair and poor environmental conditions and outcomes for children (at the top, middle and bottom of the core League Table). About half of the indicators are better than the rich-country median, and half are worse. Canada achieves the best ranking in one indicator (households living in overcrowded housing) and the worst ranking in one indicator (production of municipal solid waste).

¹² Throughout this report, core League Table indicators are shaded in green and complementary indicators are shaded in orange.

Canada, Finland, Iceland, Austria and Norway are ranked comparatively much lower for their environmental impacts on the “world at large.” These countries might be characterized as doing better to protect the children within their borders, while doing more to spread their environmental impacts to children beyond their borders and to future generations. When it comes to environmental well-being, higher wealth can be a weapon, fueling higher levels of consumption and waste compared to many emerging economies. Canada ranks at the bottom of the League Table in this broader environmental dimension, at 38th of 39 countries. Exploiting its land of plenty and the planet far beyond its borders, Canada would need five Earths to sustain its current consumption, waste and environmental degradation – the second-worst ranking among rich countries. Children in Canada are experiencing the impacts of resulting climate change through heat domes, wildfires, floods and many other ways. On the other hand, countries such as Chile, Romania and Turkey demonstrate this pattern in reverse – the environmental impacts they generate, such as air pollution, are currently borne more by the children within their borders. These countries are beginning a journey that wealthier countries like Canada initiated decades ago to regulate air and water pollution and urban development.

Canada’s overall ranking at 28th place is not fully explained by its outsized impact on the world at large through consumption and the attendant greenhouse gas emissions and waste. Children in Canada – despite

Figure 2: Canadian indicators in the UNICEF League Table

Dimension	Indicator	Canada rank	Canada value
Housing	Overcrowded housing*	1	0.7%
Capital Investments	Children's environmental capital (awareness of climate change)*	2	87%
Air	Ambient air pollution exposure*	8	7.1 µg/m ³
Resource Consumption	Water stress	8	3.70%
Toxins	Child lead poisoning	11	1.6% > 5 µg/dL
Community	Urban Green Space Index*	15	4.96
Capital Investments	Government expenditure on environmental protection	15	0.7% GDP
Community	Child road traffic casualties*	23	119.9 DALY per 1,000
Water	Child morbidity due to unsafe water	24	0.135 DALY per 1,000
Toxins	Child pesticide pollution exposure	29	6.3%
Air	Child morbidity due to air pollution	29	0.644 DALY per 1,000
Housing	Housing space for children	32	82%
Waste	Electronic waste	32	20.2 kg per capita/yr
Waste	Municipal waste	36	695.4 kg per capita/yr
Resource Consumption	Ecological Consumption Footprint	40	5 Earths
Emissions	CO₂ emissions*	41	15.4 t per capita/yr

RANKING:

TOP THIRD

MIDDLE THIRD

BOTTOM THIRD

Note: Indicators in bold text are included in the core League Table (Figure 1)

*Indicators correspond to the Canadian Index of Child and Youth Wellbeing

living in a large country abundant with air, water and land – are also more exposed to certain localized environmental risks, such as pesticide pollution and traffic injury, than many of their rich-country peers. Canada ranks 29th of 43 countries in children’s exposure to pesticides. Child traffic casualties in Canada are unacceptably high, ranking 23rd of 43 countries. Children in Canada are still exposed to unsafe levels of lead and air pollution, and the rate of resulting illness is extraordinarily high compared to peer countries, ranking 29th of 43 countries. Lack of safe water still

causes sickness and death at rates considerably higher than in many rich countries, ranking 24th and 20th, respectively. While Canada’s policies and practices have improved some environmental conditions for some children, such as reducing air and lead pollution and lifting many long-term boil water advisories in First Nations communities, all levels of government have much more to do to protect children’s air, water and land and the constructed environment of housing, roads and communities.

The fault lines of environmental inequality

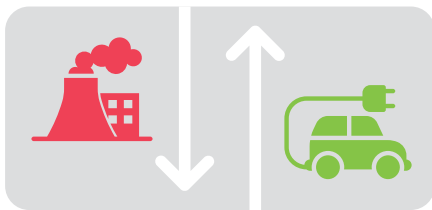


Are we in this together? All of us share a planet and must all breathe, eat, drink and shelter. Environmental degradation most certainly poses risks to us all. Yet how these risks are distributed and experienced is less about togetherness and more about difference – in exposure, vulnerability, adaptability and consequence.^{13 14 15}

In Canada, children in neighbourhoods composed mostly of low-income, immigrant and/or racialized populations typically have higher exposure to air pollution, such as particulate matter generated by traffic, and greater risk of traffic injury and death. They tend to have less access to adequate housing and green space. Studies also point to a strong relationship between urban heat risk and social vulnerability, which has been called “thermal inequity.”^{16 17} Indigenous communities disproportionately bear exposure to

and consequences of environment-related crises, both chronic and sudden.^{18 19} Intersecting these inequalities is a fault line based on age. Children are disproportionately exposed to environmental risk due to their physiological vulnerability and limited capacity to adapt. They also bear the intergenerational injustice of environmental costs while having the least say about environmental decisions.

The paradox of wealth



Many rich countries experience the paradox of falling behind while moving forward in environmental protection. Many advancements have been made over time in Canada through legislation

and regulation to prevent or recover from environmental damage such as air pollution and to limit greenhouse gas emissions. But toxicant exposure requires constant vigilance, and regulatory progress has not kept pace with accelerating production, consumption and waste. Despite an increase in renewable energy and the recovery of municipal and electronic waste, Canada’s rate of consumption

creates ever more energy use and waste and still fuels greenhouse gas emissions. The fact that some of the countries that rank highest in overall child well-being also rank lowest for excessive resource consumption and weaker environmental policies suggests the paradox of wealth is also an outcome of policy choices.

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- 13 Islam, S.N. and Winkel, J. (2017). *Climate Change and Social Inequality*. DESA Working Paper 152. UN/Department of Economic and Social Affairs, New York.
- 14 Chakraborty, J., Collins, T.W. and Grineski, S.E. (2016). Environmental justice research: Contemporary issues and emerging topics. *International Journal of Environmental Research and Public Health*, 13, 1072.
- 15 Gamble, J.L. et al. (2016). Chapter 9, Populations of Concern. *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. U.S. Global Change Research Program, Washington DC, 247–286.
- 16 Mitchell, B.C. and Chakraborty, J. (2015). Landscapes of thermal inequity: disproportionate exposure to urban heat in the three largest U.S. cities. *Environmental Research Letters*, 10.
- 17 Mitchell, B.C. and Chakraborty, J. (2018). Exploring the relationship between residential segregation and thermal inequity in 20 U.S. cities. *Local Environment*, 23, 796–813.
- 18 Council of Canadian Academies. (2022). *Building a Resilient Canada: The Expert Panel on Disaster Resilience in a Changing Climate*. Council of Canadian Academies, Ottawa, ON.
- 19 Chakraborty, L. et al. (2021). Leveraging hazard, exposure, and social vulnerability data to assess flood risk to Indigenous communities in Canada. *International Journal of Disaster Risk Science*, 12, 821–838.

The power inversion



A principle of environmental economics – “polluter pays” – is that those who create the pollution should be responsible for its mitigation or

elimination. Those who benefit the most should deal with the costs and consequences. This principle is inverted when children bear the greatest burden of environmental degradation while bearing the least responsibility for it and having the least power to prevent it. Environmental citizenship embraces both rights (e.g., to clean air and safe

water) and duties (e.g., not to pollute). Canada is a leader in children’s environmental education, ranking second on this League Table indicator. This offers hope for the future, but it has not led to opportunities for young people to participate in political decisions affecting them and their environment. They are informed but excluded, nonetheless.

Spotlight: Children’s rights to environmental protection

Children’s environmental well-being and the fulfillment of children’s rights under the Convention on the Rights of the Child are strongly connected. Firmly embedding these rights as a priority consideration in Canadian legislation, including the *Canadian Environmental Protection Act*, will help secure their rights to a good childhood and a fair future:

1. Article 6 of the Convention (life, survival and development) has clear, direct links with article 24 (health), which references “a clean environment.”
2. In a broader sense, article 3 of the Convention requires all actions “concerning children” to consider their best interests. Article 4 requires governments to invest in children to the maximum of their budgets and to put in place child-sensitive accountability measures.
3. The non-discrimination principle embedded in article 2 calls on governments to avoid or rectify the unequal distribution of environmental risks, which typically weigh most heavily on children living in poverty, Indigenous children and other already disadvantaged groups.
4. Article 12 requires that a child “who is capable of forming his or her own views” has the right to express them and that they are afforded due weight “in all matters affecting the child.” Children have demonstrated their ability to form and express their views on environmental issues, and these matters certainly affect them.
5. In October 2021, the Human Rights Council recognized the right to a clean, healthy and sustainable environment, while the United Nations Committee on the Rights of the Child decided that a country can be held responsible for the impact of its greenhouse gas emissions on children both within and outside its territory.

All Canadians have environmental stewardship obligations in respect of inherent Indigenous rights and treaty rights guaranteed under Section 35 of the Constitution. In 2020, Canada passed a law to enshrine the United Nations Declaration on the Rights of Indigenous Peoples. It recognizes the rights of Indigenous peoples to care for their lands, territories, waters and other natural resources for the benefit of current and future generations. The recognition of the environmental rights of future generations should extend to all children in Canada.

CONVENTION ON THE RIGHTS OF THE CHILD
In child-friendly language

unicef CANADA | ONE YOUTH

Monitoring childhood in rich countries

UNICEF released the first Report Card on the state of children and youth in high-income countries more than 20 years ago. The UNICEF Report Card series has helped answer these questions:

- 1 How well are children in the world's richest countries experiencing their childhoods?**
- 2 Are childhoods getting better?**
- 3 What will help countries with similar resources achieve similar great outcomes for every child?**

UNICEF compares the world's wealthiest countries because countries with similar resources and capacities should achieve similar results for children.

Some UNICEF Report Cards have measured the overall state of children and youth, bringing together many aspects of their material, physical, educational, social and mental well-

being in a multi-dimensional index. The most recent was UNICEF Report Card 16, released in 2020. Others, like this Report Card, have focused on one dimension of children's lives, such as poverty, child care or education.

The Report Cards measure aspects of child and youth well-being in "absolute" terms (for instance, children's exposure to air pollution in Canada) and absolute change (for instance, whether exposure to air pollution is falling in Canada). The Report Cards also measure childhood in "relative" terms, with rankings of countries (for instance, whether children's exposure to air pollution is higher in Canada than in other countries or falling faster than in other countries). Both absolute and relative measures in this Report Card provide important information about our greatest challenges: what is better or worse for

children, how good our progress is, and how high we can aim considering what is achievable in practice.

This year's UNICEF Report Card may be the first to give many of the world's richest countries a failing grade compared to low-income countries, considering the failure of their policies to curb their outsized impacts on our global ecosystem. The top-performing countries in the UNICEF rankings nevertheless set the bar for what is achievable and help countries understand how to get there. Comparing countries reveals that differences in child well-being exist mainly because they have different policies. Therefore, better public policies will achieve better outcomes for children.

Spotlight: About the data in the Report Card

Many possible indicators can measure children's environmental well-being. However, data for international comparison is limited. UNICEF Report Card 17 indicators are drawn from the most recent high-quality administrative data sets and international surveys available. UNICEF Report Card 17 includes discussion of data parameters and gaps, the rationale behind including and constructing each indicator, and details of the construction of the League Tables.

UNICEF Report Cards use national averages to compare the overall state of children in rich countries. National averages help reveal patterns that may not be visible in smaller areas (such as provinces, territories or communities) or with smaller data sets. They are also necessary for international comparisons. National averages can mask inequalities between children in a country; however, they can tell us how many children are deprived of things like adequate housing and how many are excluded from policies and programs like environmental education. It is beyond the UNICEF Report Card's scope to provide within-country comparisons for all countries, but this Canadian Companion refers to complementary data and examples to illustrate some of the inequalities experienced by children and youth in Canada.

The environment is "a safe place that people can grow physically and emotionally."

Youth participant, UNICEF Canada Focus Group



THE WORLD OF THE CHILD

- Air
- Toxicants
- Water

The world of the child

The UNICEF League Table begins with a focus on children’s direct exposures to (or protection from) pollution and other environmental hazards. These exposures are experienced in the context of daily life, including through consuming air, water and food. The very basics of life can present potent risks to the well-being of children today and impair their development over their lifetimes. When children breathe air compromised with pollution, their risk of developing chronic asthma is significantly increased. When they consume food and water polluted with pesticides, their chance of developing cancer is amplified. When they are exposed to lead, the possibility of intellectual challenges affecting their ability to learn is increased. These risks are difficult for children to avoid or escape, particularly for the most marginalized by income, race or disability. The impacts are present in the bodies of many children today and will persist throughout their lives.

Environmental conditions have also begun to affect children’s mental health. Evidence is increasing that exposure to environmental toxicants early in life may play a role in the origins of childhood mental health problems and cognitive impairments. Environmental education, measured in this Report Card, equips young people with the knowledge to be part of the solution, but it can simply heighten anxiety without offering meaningful opportunities to participate. In recent years, terms like “climate anxiety”

and “eco-anxiety” have been added to the dictionary. A survey covering six high-income countries reported that nearly half of young people feel distressed about the environment to an extent that affects their daily functioning. Six in ten believe that their governments have failed to protect the environment. Two in five have doubts about becoming a parent in the future due to the climate crisis.²⁰

AIR

Ambient air pollution exposure

AMBIENT AIR POLLUTION EXPOSURE

Canada ranks:

8th (7.1 µg/m³)

Top performer:

Finland (5.6 µg/m³)

Better than country average:

(13.5 µg/m³)

What kind of air are children in Canada breathing? The quality of the air can be assessed in a variety of ways. The most common indicator is ambient air pollution, measured as mean population exposure to fine particulate matter (PM_{2.5}) in micrograms per cubic metre (µg/m³). It is generated by the release of airborne chemicals and gases from road traffic, energy use, production and wildfires. The small

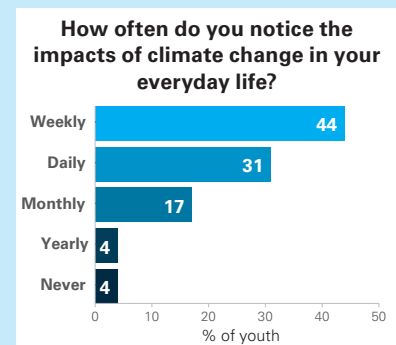
diameter of fine particulate air pollution allows it to penetrate deeply into the respiratory tract and blood stream.

Children are more vulnerable to air pollution than are adults because they



U-REPORT: U-Reporters

in Canada are experiencing both the physical effects of climate change and substantial anxiety about the impacts of climate change on their futures. Many U-Reporters have been directly affected by climate change, including experiencing extreme weather, floods and wildfires. The most commonly experienced impact among U-Reporters is concern about the future. They report that climate change is affecting their mental health, decision-making and plans for the future, including whether to have children. Nine in ten say it is at least somewhat common for young people in Canada to experience eco-anxiety. Similar to youth in other countries, six in ten said they do not feel optimistic about what governments in Canada are doing to address climate change.

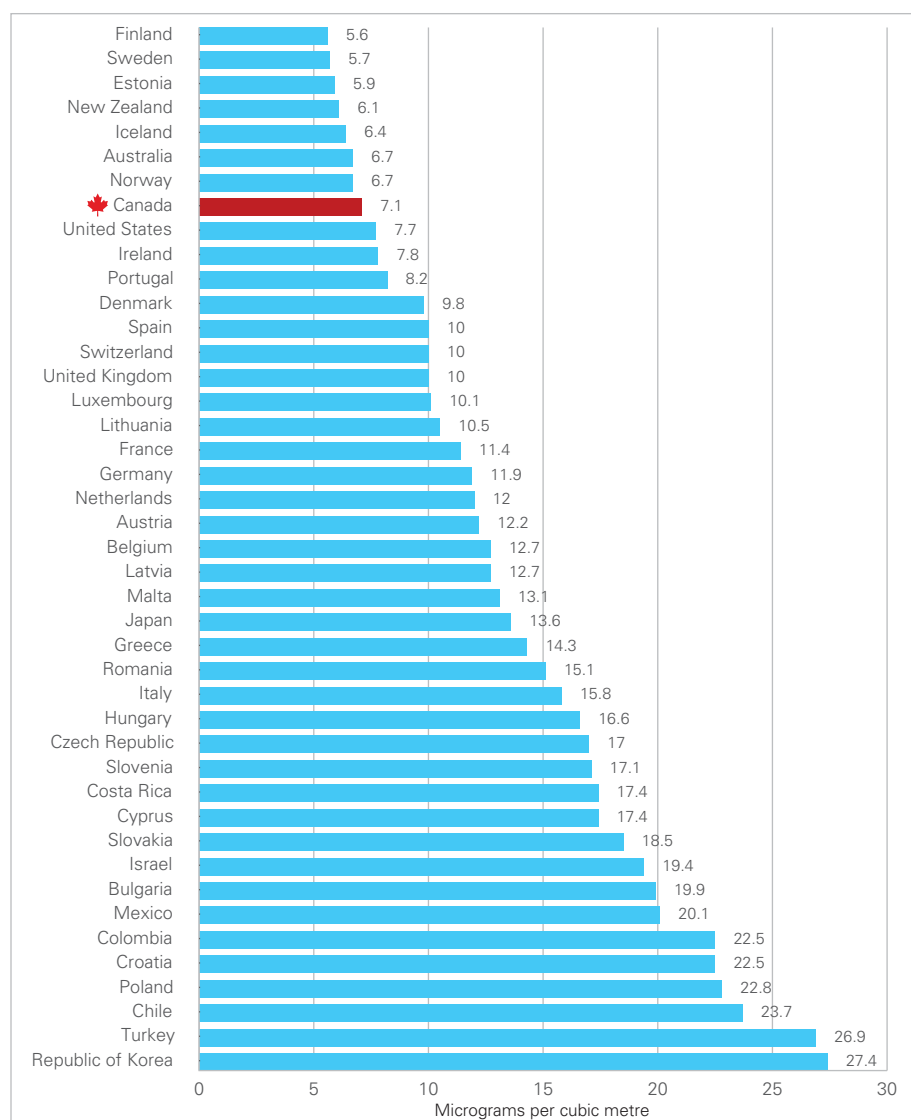


20 Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C. and van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. *The Lancet Planetary Health*, 5(12), e863–e873, < [https://doi.org/10.1016/S2542-5196\(21\)00278-3](https://doi.org/10.1016/S2542-5196(21)00278-3)>, accessed 10 February 2022.

have smaller lung capacity and a less well-developed immune system. They are also closer to the ground, where pollution typically accumulates. Air pollution starts to harm children even before they are born. Toxic air inhaled by a pregnant woman can lead to faster cell aging of the fetus.²¹ Prenatal exposure increases the likelihood of lower birthweight and respiratory infections in early childhood.^{22 23} Research has explored the impact of exposure on children's neurological and cognitive development, including possible links with attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder.^{24 25} The deepest body of evidence explores the connection between ambient air pollution and asthma and other respiratory ailments.^{26 27 28 29}

Canada places in the top third of rich countries in protecting its population from exposure to fine particulate matter (PM_{2.5}), ranking 8th among 43 countries (Figure 3). In 2019, Canada's ambient air pollution was 7.1 µg/m³, which is considerably better than the rich-country average of 13.5 µg/m³. Ambient air pollution ranges widely across rich countries, from 5.6 µg/m³ in Finland to 27.4 µg/m³ in the Republic of Korea.

Figure 3: Mean population exposure to ambient air pollution (PM_{2.5} µg/m³) (2019)



Source: OECD, <https://stats.oecd.org/viewhtml.aspx?datasetcode=EXP_PM2_5&lang=en>, accessed 16 February 2022.

- 21 Harnung Scholten, R., Möller, P., Jovanovic Andersen, Z., Dehlendorff, C., Khan, J., Brandt, J., Ketzel, M., Knudsen, L. E. and Mathiesen, L. (2021). Telomere length in newborns is associated with exposure to low levels of air pollution during pregnancy. *Environment International*, 146, 106202, <<https://doi.org/10.1016/j.envint.2020.106202>>, accessed 10 February 2022.
- 22 Stieb, D. et al. (2012). Ambient air pollution, birth weight and preterm birth: a systematic review and meta-analysis. *Environmental Research*, 117, 100–111.
- 23 Jedrychowski, W.M. et al. (2013). Intrauterine exposure to fine particulate matter as a risk factor for increased susceptibility to acute broncho-pulmonary infections in early childhood. *International Journal of Hygiene and Environmental Health*, 216, 395–401.
- 24 Suades-González E. et al. (2015). Air pollution and neuropsychological development: a review of the latest evidence. *Endocrinology*, 156, 3473–348.
- 25 Lam J., Sutton P. et al. (2016). A systematic review and meta-analysis of multiple airborne pollutants and autism spectrum disorder. *PLoS One*, 11.
- 26 Lavigne, É., et al (2021). Fine particulate matter concentration and composition and the incidence of childhood asthma. *Environment international*, 152.
- 27 Achakulwisut, P. et al. (2019). Global, national, and urban burdens of paediatric asthma incidence attributable to ambient NO₂ pollution: estimates from global datasets. *The Lancet Planetary Health*, 3, 166–178.
- 28 Health Effects Institute Panel on the Health Effects of Traffic-Related Air Pollution. (2010). *Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects*. Health Effects Institute, Boston, MA.
- 29 Karr C.J. et al (2019). Influence of ambient air pollutant sources on clinical encounters for infant bronchiolitis. *American Journal of Respiratory Critical Care Medicine*, 180, 995–1001.

Like most rich countries, Canada has made progress to reduce particulate air pollution with the introduction of pollution regulation and the 1971 *Clean Air Act*. From these roots emerged an increasingly comprehensive array of provincial and federal legislation and policies. Despite more than 50 years of action and lower exposure to air pollution than children in most peer countries, the risk of ambient air pollution remains hazardous for many children in Canada. Canada's rate of air pollution at 7.1 $\mu\text{g}/\text{m}^3$ exceeds the World Health Organization (WHO) air quality guidelines (updated September 2021), which recommend that the annual average concentration of particulate matter ($\text{PM}_{2.5}$) not exceed 5 $\mu\text{g}/\text{m}^3$. No rich country achieves that level on average. The Canadian Urban Health and Environmental Health Consortium (CANUE) estimated that 86% of Canadians live in areas where air pollution exceeds the new WHO standards for particulate air pollution levels.³⁰

Some indicators in this Report Card use disability-adjusted life years (DALY) to account for the number of years of 'healthy' life lost due to different environmental conditions. For example, air pollution is responsible for a substantial loss of years of healthy life among children under the age of 15. One DALY represents the loss of one year of full health.

Child health impact of air pollution

CHILD MORBIDITY DUE TO AIR POLLUTION

Canada ranks:

29th (0.644 DALY per 1,000)

Top performer:

Finland

(0.156 DALY per 1,000)

Better than country average

(0.847 DALY per 1,000)

Exposure to ambient air pollution has a heavy impact on children's health. One indicator of this is the morbidity (illness or disease burden) of children under age 15 caused by air pollution, measured as disability-adjusted life years (DALY) per 1,000 children. In Canada, an average of 0.644 years are lost among every 1,000 children. Although Canada ranks 8th among 43 rich countries in the level of ambient air pollution, it ranks 29th in child morbidity attributed to air pollution (Figure 4). Despite being a country of vast land and low population density, Canada ranks far lower in this measure of air quality than small countries like Finland and Norway or a more geographically comparable jurisdiction such as Australia. Children in Canada are disproportionately vulnerable to the health impacts of air pollution compared to children in many peer countries. One explanation is that Canada has more cars per capita and a relatively

high proportion of people who live in urban areas (more than a third of Canadians live near a major roadway). Canada also has a higher rate of poverty than many of the higher-ranking countries, which may help explain the disproportionate health impacts of exposure to air pollution, given the relationship between low income and with poor health.

In particular, traffic pollution still harms children, despite improved vehicle emission standards over the past 30 years. Although air pollution is worse in many other countries, young people in Canada appear to be more vulnerable to the development of asthma. One study reported that Canada ranks third-worst among rich countries studied in the rate of childhood asthma attributed to traffic pollution.³¹ Asthma is generally a disease of high-income countries. Canadians are likely more susceptible to the impacts of air pollution on asthma development because of other factors associated with being a wealthy country, such as heavier antibiotic use, hygienic lifestyles and high rates of C-sections.

The geography of air pollution is aligned with the geography of social inequality. Canadian evidence demonstrates that exposure to ambient air pollution is conditioned by disadvantage. Neighbourhoods with the highest social disadvantage tend to experience the greatest exposure to traffic-related pollution.^{32 33} Although the relationship is varied and complex,

30 Lozano, M. (2021). 86% of Canadians live in areas where air pollution exceeds WHO guidelines. *Verve Times*. Retrieved from <https://eminetracanada.com/86-of-canadians-live-in-areas-with-air-pollution-that-exceed-who-guidelines-researchers-national/301270/>

31 Vancouver Coastal Health Research Institute. (2019). *1 in 5 new cases of childhood asthma in Canada are caused by traffic pollution*. Retrieved from: <https://www.vchri.ca/2019/07/03/1-5-new-cases-childhood-asthma-canada-are-caused-traffic-pollution>.

32 Pinault, L. et al. (2016). Socioeconomic differences in nitrogen dioxide ambient air pollution exposure among children in the three largest Canadian cities. *Health Reports*, 27, 3–9.

33 Pinault, L. et al. (2016). Spatial associations between socioeconomic groups and NO2 air pollution exposure within three large Canadian cities. *Environmental Research*, 147, 373–382.

these neighbourhoods tend to be composed of low-income, immigrant and/or racialized populations.³⁴ Higher exposure to air pollution has been linked to respiratory disease such as asthma, and children from socio-economically marginalized households suffer more severe symptoms and hospitalizations.³⁵ The principle of “polluter pays” is inverted – those experiencing the greatest exposure and the greatest consequences are the least responsible for producing the air pollution or benefitting from the production that creates it.³⁶

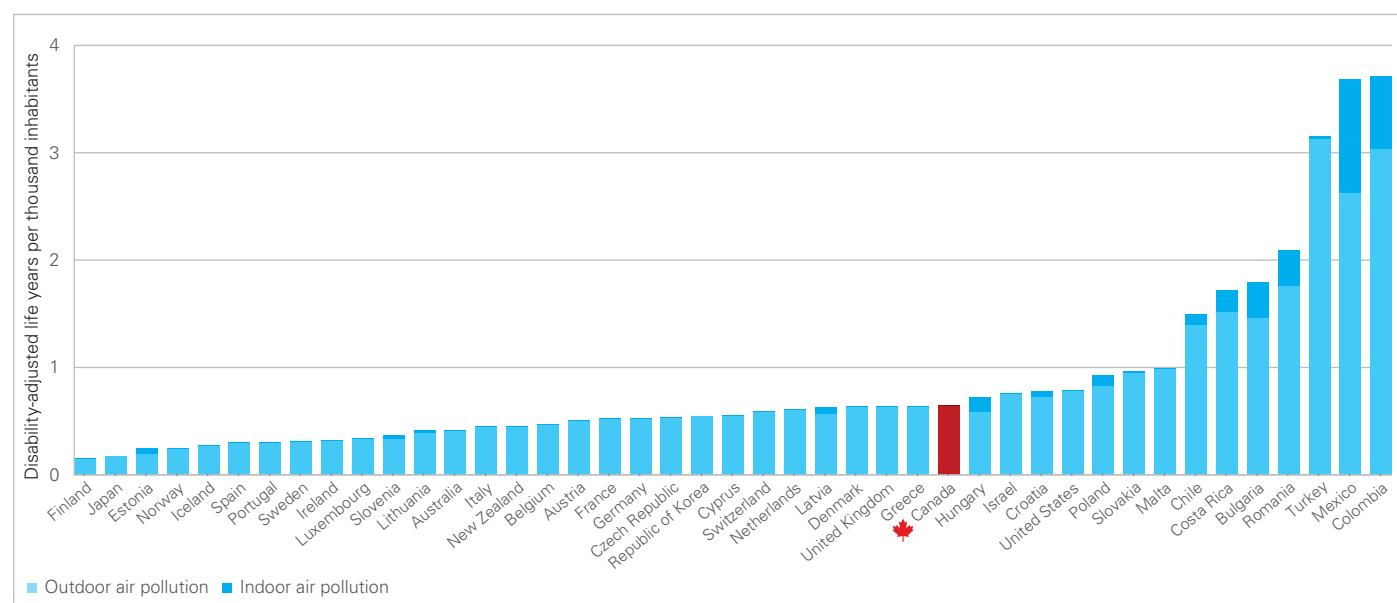
Despite substantial progress to reduce ambient air pollution in Canada, there is still much to do. Cleaner modes of transportation, including transit, cycling, walking and electric vehicles,

could reduce vehicle emissions and improve air quality to the extent that new asthma cases are reduced by up to 20 per cent.³⁷ Zoning also plays a role: some jurisdictions such as California have enacted laws to mandate that schools be built further away from highways to reduce children’s exposure to air pollution. The spike in Canada’s ambient air pollution in 2021, driven by wildfires, underlines the importance of combatting climate change.

Many children do not escape air pollution indoors. Most rich countries have substantially limited household air pollution from solid fuels (used for heating or cooking), and exposure to indoor air pollution varies little across most of these countries. The countries

in the League Table with the most child exposure to indoor air pollution are the newest along the industrial development spectrum. However, exposure to indoor air pollution still contributes to poor child health, and child death can also occur from indoor air pollution. Canada ranks 14th among 41 rich countries, having almost two child deaths under age 15 per 100,000 due to indoor air pollution (Figure 5). In wealthier countries like Canada, second-hand smoke is responsible for most indoor air quality–related premature deaths. But some First Nations and Inuit communities are heavily reliant on solid fuels for heating and cooking and lack adequate housing to ensure good air quality.

Figure 4: Air-related morbidity of children under age 15 (2019)



Source: OECD Environment Database, ‘Mortality, morbidity and welfare cost from exposure to environment-related risks’ OECD Environmental Mortality Database.

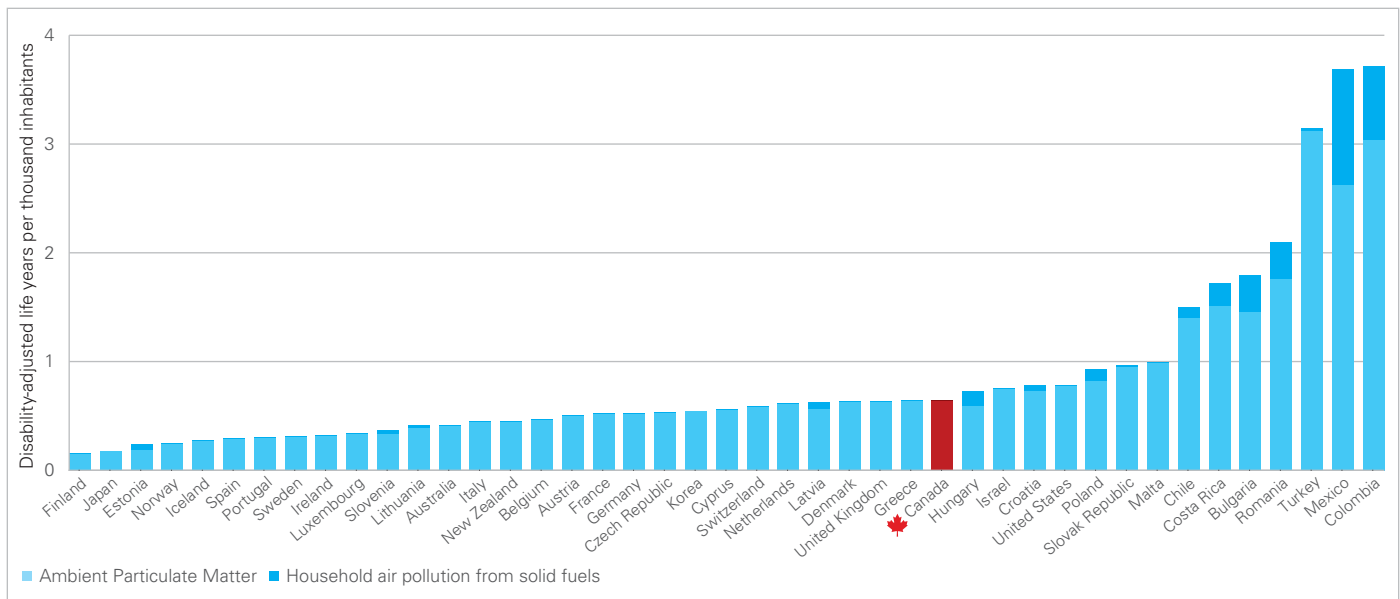
34 Pinault, L., van Donkelaar, A. and Martin, R. V. (2016). Exposure to fine particulate matter air pollution in Canada. *Health Reports*, 28, 9–16.

35 Camak, S., Hebborn, C., Cakmak, J. D. and Vanos, J. (2016). The modifying effect of socioeconomic status on the relationship between traffic, air pollution and respiratory health in elementary schoolchildren. *Journal of Environmental Management*, 177, 1–8.

36 Sider, T., Hatzopoulou, M., Eluru, N., Goulet-Langlois, G. and Manaugh, K. (2015). Smog and socioeconomics: an evaluation of equity in traffic-related air pollution generation and exposure. *Environment and Planning B: Planning and Design*, 42, 870–887.

37 Vancouver Coastal Health Research Institute. (2019). *1 in 5 new cases of childhood asthma in Canada are caused by traffic pollution*. Retrieved from: <https://www.vchri.ca/2019/07/03/1-5-new-cases-childhood-asthma-canada-are-caused-traffic-pollution>.

Figure 5: Child mortality under age 15 due to indoor air pollution (2019)



Source: OECD Environmental Mortality Database.

Spotlight: Is growing neighbourhood segregation an environmental hazard in Canada?

Conversations about inequities focus most often on unfair differences in income, education, employment, justice and life opportunities. Environmental justice is included less often, yet social inequality is firmly linked to environmental inequality. Living in a poor or racialized community increases exposure to air pollution, traffic hazards, extreme heat and other dangerous environmental conditions.

Past studies of social justice and well-being have found differences between Canada and the United States. Canadian urban environments were less economically segregated, with lower rates of concentrated poverty. People of different socio-economic backgrounds were more likely to live in relative proximity and access the same parks, libraries and recreation centres. Socio-economic distance by geography was less evident and, seemingly, of less consequence in Canada than in our southern neighbour.

Unfortunately, Canadian studies are discovering more evidence of greater social differentiation in contemporary cities. Research suggests that low-income populations are becoming increasingly concentrated within urban neighborhoods. They are less likely to reside in neighbourhoods with higher-income populations today than a generation ago.^{38 39 40 41} Simply stated, economic segregation is increasing in Canadian urban environments and for the current generation of children. As economic segregation increases in Canada, will environmental inequality grow in parallel?

38 Ades, J., Apparicio, P. and Seguin, A-M. (2012). Are new patterns of low-income distribution emerging in Canadian metropolitan areas? *The Canadian Geographer*, 56, 339–361.
 39 Fong, E. and Shibuya, K. (2000). The spatial separation of the poor in Canadian cities. *Demography*, 37, 449–459.
 40 Ross, N. A. et al. (2004). Dimensions and dynamics of residential segregation by income in urban Canada, 1991–1996. *The Canadian Geographer*, 48, 433–445.
 41 Walks, A. R. and Bourne, L. S. (2006). Ghettos in Canada’s cities? Racial segregation, ethnic enclaves and poverty concentration in Canadian urban areas. *The Canadian Geographer*, 50, 273–297.

TOXICANTS

Child lead poisoning

CHILD LEAD POISONING

Canada ranks:

11th

(1.6% lead blood level > 5 µg/dL)

Top performer:

Finland

(1.0% lead blood level > 5 µg/dL)

Better than country average

(4.0% lead blood level > 5 µg/dL)

Lead is a hazardous substance that children can encounter in various environments and sources. Cosmetics, paints and pigments, clothing, jewelry, dishes and cookware, water pipes and fixtures, and even toys and play equipment may contain lead. Lead can enter food through the soil or water. Historical pollution from leaded gasoline still can be found in soils around the world.

A neurological and cardiovascular toxicant, lead has well-established effects on children's health and development.⁴² It can negatively affect their physical health, learning (including intelligence, memory, attention span and language development) and behaviour.^{43 44 45} Studies have linked lead exposure to aggression and criminal activity, particularly to incidents involving violence.^{46 47}

As with particulate air pollution, Canada has made meaningful progress to limit children's exposure to lead. Because of legislation and regulation, such as restricting lead paint (1976) and banning leaded gasoline (1990), children today are less likely to inhale, touch or consume lead, and these measures have lowered blood lead levels in Canadian children. The story of lead is a lesson in environmental protection: policies can achieve measurable success in reducing risks, but ongoing vigilance and policy progress are necessary to address evolving risks and eliminate inequalities.

The outcome of regulation is visible in Canada's ranking of 11th among 43 rich countries based on the percentage of children with blood lead levels higher than 5 µg/dL (Figure 6), which is considered a threshold for lead poisoning. In Canada, 1.6 per cent of children exceed this level of lead in their bloodstream. However, there are no safe levels of lead exposure, with harmful effects even at very low levels in the bloodstream. Fourteen countries are closely positioned, with less than 2 per cent of children experiencing high blood lead levels. Canada's performance compares well with recently industrialized countries, such as Mexico (31.1 per cent) or Romania (10.1 per cent), but lags behind Finland's top performance at 1.0 per cent. In all Report Card countries, at least one in 100 children (1.0 per cent) has elevated lead blood levels.

In 2014, an alarming incident in the U.S. provided a tragic reminder of the constant need for vigilance in environmental protection. The municipality of Flint, Michigan, experienced an outbreak of legionnaires' disease that claimed the lives of at least 12 people, with dozens more sickened. It was discovered that Flint residents were being exposed to dangerous levels of lead and other toxicants in the water supply as a result of cost-cutting measures. Testing eventually found that lead levels in the water system were far beyond the Environmental Protection Agency criteria for classifying water as hazardous waste (including one home where the lead concentration was 25 times higher).

Less sensational, but no less important, research indicates that lead is a persistent risk in Canada. A recent study of local governments in Quebec discovered connections between the affluence of a municipality, water treatment and lead exposure.⁴⁸ Low-income communities were less likely to apply water treatment (26 per cent) or to use only basic treatment (51 per cent), while more affluent communities were more likely to use advanced treatments (41 per cent). The water in poorer communities was more likely to have high levels of lead, including higher tap water levels. The study mirrors other environmental equity research that has found housing in older, frequently low-

42 Agency for Toxic Substances and Disease Registry. (2017). *What Are Possible Health Effects from Lead Exposure?* Atlanta.

43 Canfield, R. L., Gendle, M. H. and Cory-Slechta, D. A. (2004). Impaired neuropsychological functioning in lead-exposed children. *Developmental Neuropsychology*, 26, 513–540.

44 Canfield, R. L. et al. (2003). Low-level lead exposure, executive functioning, and learning in early childhood. *Child Neuropsychology*, 9, 35–53.

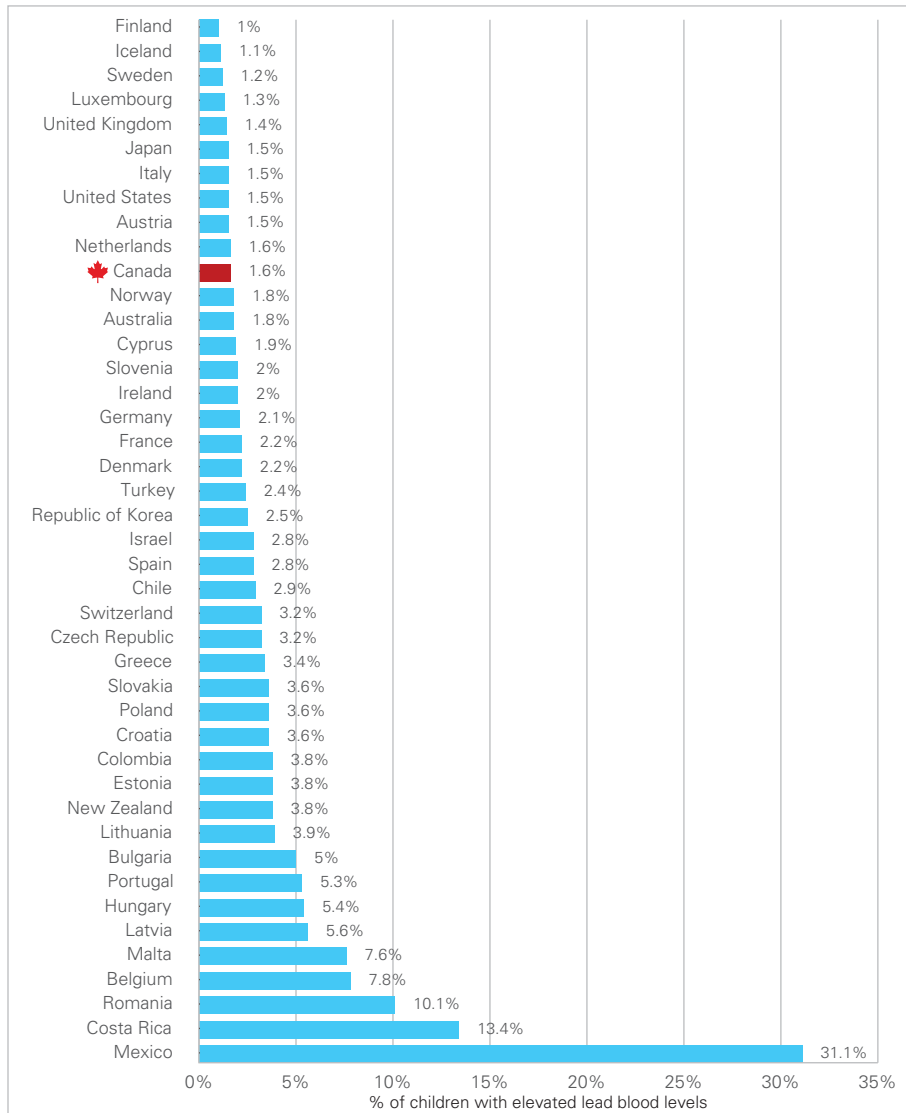
45 Nkomo, P. et al. (2018). The association between environmental lead exposure with aggressive behavior, and dimensionality of direct and indirect aggression during mid-adolescence: birth to twenty plus cohort. *Science of the Total Environment*, 612, 472–479.

46 Wright J. P. et al. (2008). Association of prenatal and childhood blood lead concentrations with criminal arrests in early adulthood. *PLoS Med*, 5.

47 Needleman, H. L. et al. (1996). Bone lead levels and delinquent behavior. *Journal of American Medical Association*, 275, 363–369.

48 Delpla, I. et al. (2015). Investigating social inequalities in exposure to drinking water contaminants in rural areas. *Environmental Pollution*, 207, 88–96.

Figure 6: Percentage of children ages 0-19 with lead blood levels higher than 5 µg/dL (2020)



Source: Own calculations based on number of children with elevated levels of lead in the blood from Rees & Fuller (2021) and United Nations Department of Economic and Social Affairs (2021) population projections.

income urban neighbourhoods often has lead piping and elevated rates of lead exposure for occupants.

Although blood lead levels in most Canadian children are lower than in previous decades and continuing to decline, some newcomer children have elevated levels of lead exposure.

Globally, 90 per cent of children with significantly elevated lead levels live in low-income countries, and these countries are frequently the source of refugees and internationally adopted children. These children often arrive in Canadian neighbourhoods where lead exposure is higher, exacerbating their lead risk. Canadian research is still in

its infancy, but one Toronto study confirmed elevated blood lead levels among immigrant and refugee children under six years old. Canada’s progress in protecting children from lead is not complete.

Child pesticide pollution exposure

CHILD PESTICIDE POLLUTION EXPOSURE

Canada ranks:
29th (6.3%)

Top performer:
9 countries (0%)

Worse than country average
(3.9%)

The risks of pesticides and herbicides to children’s health are well known to science. Children’s developmental stage amplifies their sensitivity to these toxicants. Children tend to spend more time close to the ground while playing and are more likely to put their fingers in their mouths. They also eat and drink more relative to their body weight compared to adults, and their immature livers and kidneys are less effective at removing toxins from their systems.⁴⁹ With heightened exposure and vulnerability, physiological development can intensify consequences. An infant’s brain, nervous system and organs are particularly sensitive to toxic elements like pesticides and herbicides.⁵⁰ Studies of non-Hodgkin’s lymphoma and childhood leukemia have demonstrated positive associations with pesticide exposure.⁵¹

49 Liu, J., and Schelar, E. (2012). Pesticide exposure and child neurodevelopment: summary and implications. *Workplace Health & Safety*, 60, 235–243.

50 Liu, J., and Schelar, E. (2012). Pesticide exposure and child neurodevelopment: summary and implications. *Workplace Health & Safety*, 60, 235–243.

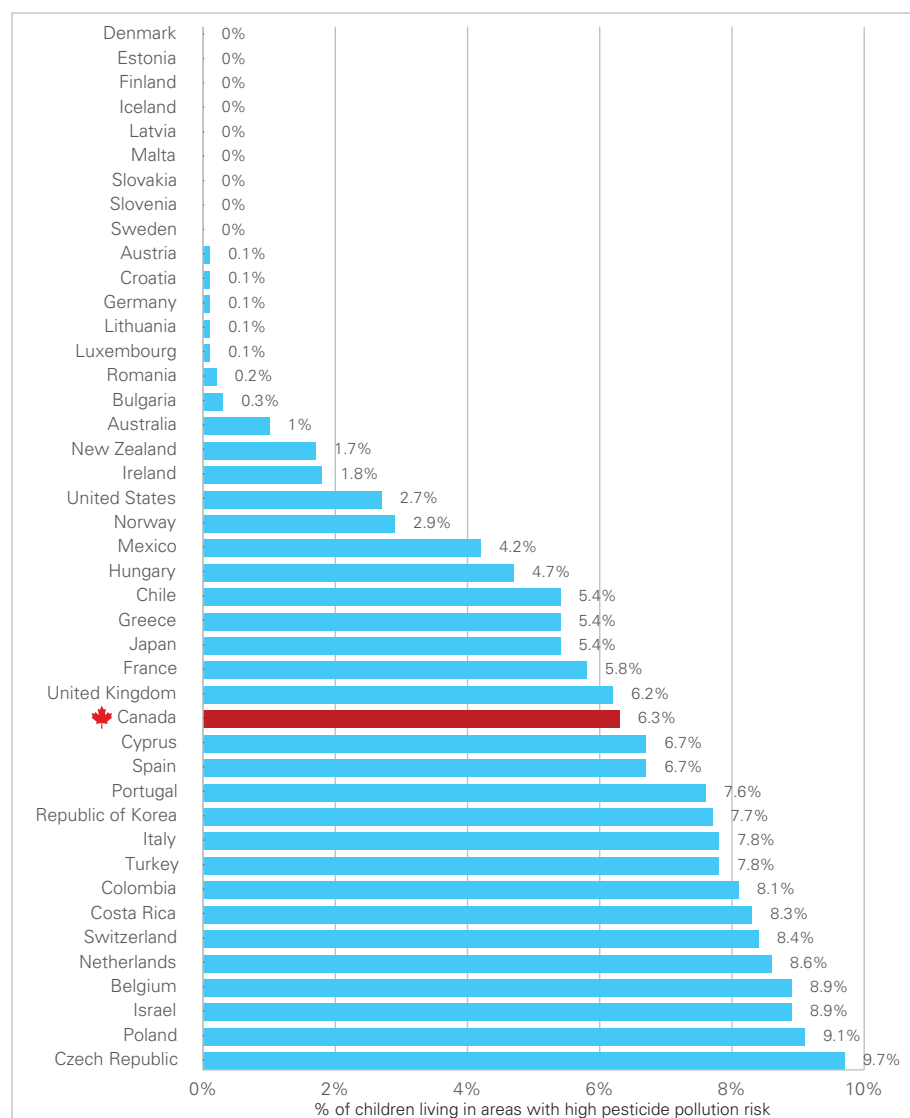
51 Bassil, K. L. et al. (2007). Cancer health effects of pesticides: systematic review. *Canadian Family Physician*, 53, 1704–1711.

With the release of *Silent Spring* by Rachel Carson in 1962, the gap between scientific and popular awareness of environmental degradation was dramatically narrowed. Exposing the dangers of pesticides, the book rapidly climbed the bestseller lists. Not only did *Silent Spring* lead to the eventual banning of the pesticide DDT, it also helped launch the grassroots environmental movement of the 1960s. The integrity of the environment moved from scientific inquiry to popular advocacy and action. Sixty years later, the social footprint of *Silent Spring* remains. But so does the threat of pesticides for many children and youth in Canada.

Canada's regulatory approach to limit air pollution and lead poisoning has not achieved similar success for pesticide pollution. Regulation governing what pesticides can be used and how they are applied, stored and disposed of has been introduced over the years. However, Canada ranks near the bottom third, 29th of 43 rich countries, in the percentage of children living in areas with high pesticide pollution risk (Figure 7). The percentage of Canadian children exposed to this risk, 6.3 per cent, compares unfavourably with the rich-country average of 3.9 per cent of children (including nine countries where exposure is 0 per cent).

Protecting agricultural crops seems to carry more importance than protecting the environment's health and children's well-being. Pesticides leach into wetlands, ponds, waterways and water wells. One Canadian study found pesticides at levels well

Figure 7: Percentage of children under age 18 living in areas with high pesticide pollution risk (2019)



Source: UNICEF (2021)

above guidelines in the St. Lawrence River and its tributaries.⁵² Overall, 99 per cent of the water samples were positive for at least one of the targeted pesticides. A related study found low but chronic levels of the herbicide atrazine in all 450 samples of Quebec drinking water it tested.⁵³ Pesticide pollution can be caused by over-application, excessive rainfall

and irrigation, spills and improper disposal. With the emergence of organic farming and other agricultural techniques that minimize the use of pesticides and other toxic materials, solutions to better protect children from pesticide exposure are available.

⁵² Montiel-León, J. M. (2019). Widespread occurrence and spatial distribution of glyphosate, atrazine, and neonicotinoids pesticides in the St. Lawrence and tributary rivers. *Environmental Pollution*, 250, 29–39.

⁵³ Montiel-León, J. M. (2019). Quality survey and spatiotemporal variations of atrazine and desethyl atrazine in drinking water in Quebec, Canada. *Science of the Total Environment*, 671, 578–585.

WATER

Child health impact of unsafe water

CHILD MORBIDITY DUE TO UNSAFE WATER

Canada ranks:
24th (0.135 DALY per 1,000)

Top performer:
Republic of Korea
(0.058 DALY per 1,000)

Better than country average
(0.600 DALY per 1,000)

Water is essential to life, but universal access to safe and clean water is not yet achieved in rich countries. This affects the health and survival of children, which is reflected in child morbidity attributable to an unsafe water source, unsafe sanitation or no handwashing facilities in the home,

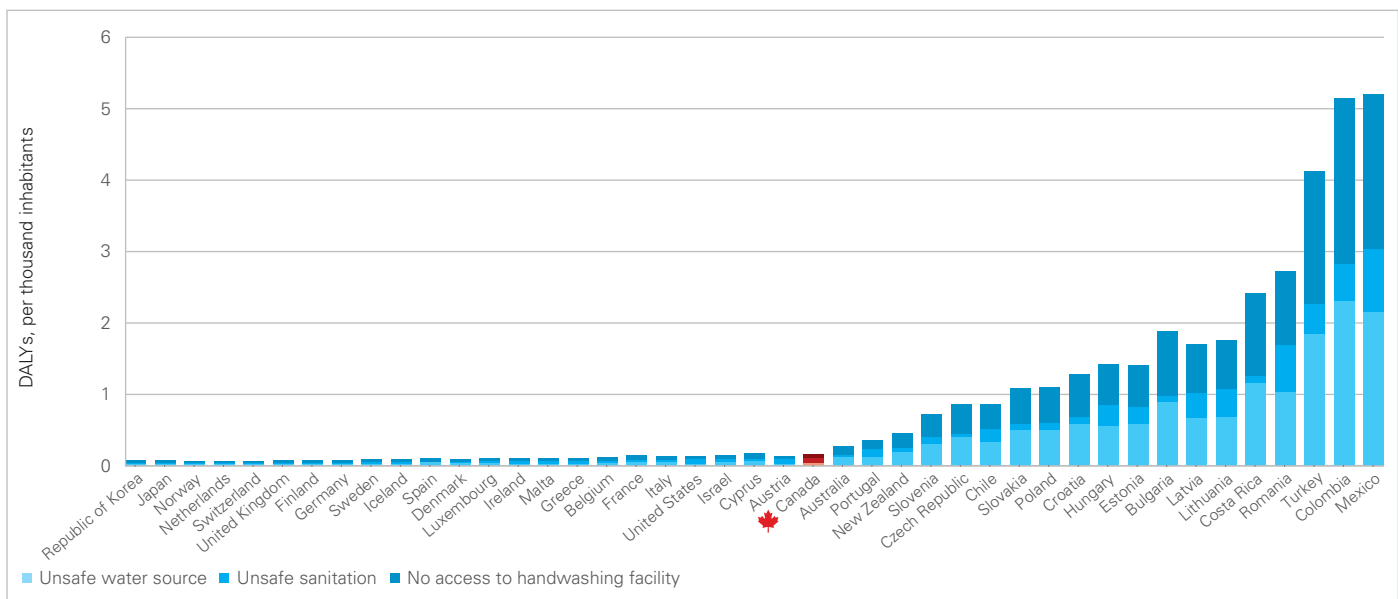
measured as disability-adjusted life years (DALY) per 1,000 people (Figure 8). Overall, unsafe water sources appear to be the largest of the three risk factors in rich countries. The quality of such essential services in these countries remains an important factor in children’s health and survival.

Canada has the third-largest reserve of freshwater in the world, covering almost 10 per cent of the country’s surface. About one-quarter of the world’s freshwater supply is located in Canada. But rather than topping the UNICEF League Table in safe water supply, Canada ranks 24th among 43 countries in child morbidity due to unsafe water. For every million children under age 15, 135 were affected because they did not have access to clean and safe water. This compares to 58 in the Republic of Korea, the best performer. In fact, mainly eastern European countries as well as the newly high-income countries

of Mexico, Colombia and Turkey fall behind Canada. The pattern for child death related to unsafe water is similar, with Canada ranking 20th (Figure 9). Although the absolute risk of morbidity and mortality is low, any child death due to water quality in a rich country is unacceptable. Canada – the country of plenty – lags behind peers such as the Netherlands and the U.K. in protecting children from unsafe water.

The Canadian Index of Child and Youth Well-being reported that 12.5 per cent of homes with children under age 18 had experienced a boil water advisory in 2015.⁵⁴

Figure 8: Water-related morbidity of children under age 15 (2019)



Source: OECD Environment Database, ‘Mortality, morbidity and welfare cost from exposure to environment-related risks’.

54 UNICEF Canada. (2019). *Canadian Index of Child and Youth Well-being*. UNICEF Canada, Toronto, ON.

Spotlight: Water insecurity in Indigenous communities

First Nations and Inuit communities in Canada are particularly at risk of a lack of reliable, sufficient and clean water. Many Indigenous communities have endured long-term and short-term water advisories.⁵⁵ Drinking water advisories are 2.5 times more frequent in First Nations communities compared to non-First Nations communities.⁵⁶ More than 70 per cent of First Nations' water systems are estimated to be at high or medium risk of contamination.⁵⁷ In 2015, there were 126 long-term water advisories. In early 2022, 37 long-term water advisories remained, despite a political promise in 2015 to end them by 2021.⁵⁸ Neskantaga First Nation in northern Ontario has endured 27 years of continuous water advisories, spanning generations of children with no access to clean water running through their taps.

Although climate change plays a role in the higher risk of water insecurity in Indigenous communities, systemic water supply issues are typically resolved with adequate investment in well-constructed and maintained water treatment infrastructure, as for any community. In the words of Canada's Auditor General: "I am very concerned and honestly disheartened that this long-standing issue is still not resolved. Access to safe drinking water is a basic human necessity. I don't believe anyone would say that this is in any way an acceptable situation in Canada in 2021."⁵⁹

One of the most dramatic examples of water policy failure is the environmental legacy of the Grassy Narrows First Nation, located in northern Ontario close to the border of Manitoba. Between 1962 and 1970, Dryden Chemicals Limited dumped an estimated 10 tonnes of mercury into the river feeding the community's water supply, and drums of mercury buried underground affected the groundwater. It has since become known that industry and Canadian governments were aware of this contamination and the danger it posed long before the affected communities were informed of the risk. Even today, mercury is detectable in the English-Wabigoon River and leaches into the groundwater. In the mid-1970s, the local fishery was closed because of the mercury risk, devastating the community's economy and employment. Health impacts include cognitive impairments, neurological issues (e.g., numbness, seizures), hearing loss and emotional instability. The elders of the community are not the only ones affected through mercury bioaccumulation. Mercury also passes from mother to child through the placenta. For even young children in Grassy Narrows, the environmental impact of mercury poisoning is a present harm and one they will carry throughout their lives, with an estimated 90 per cent of the community experiencing the effects of mercury poisoning. Little remediation has been done, and enduring social and economic impacts still afflict the community.

55 A long-term water advisory is when a warning about using the local water supply has been in place for more than a year; a short-time advisory refers to a temporary water quality system issue.

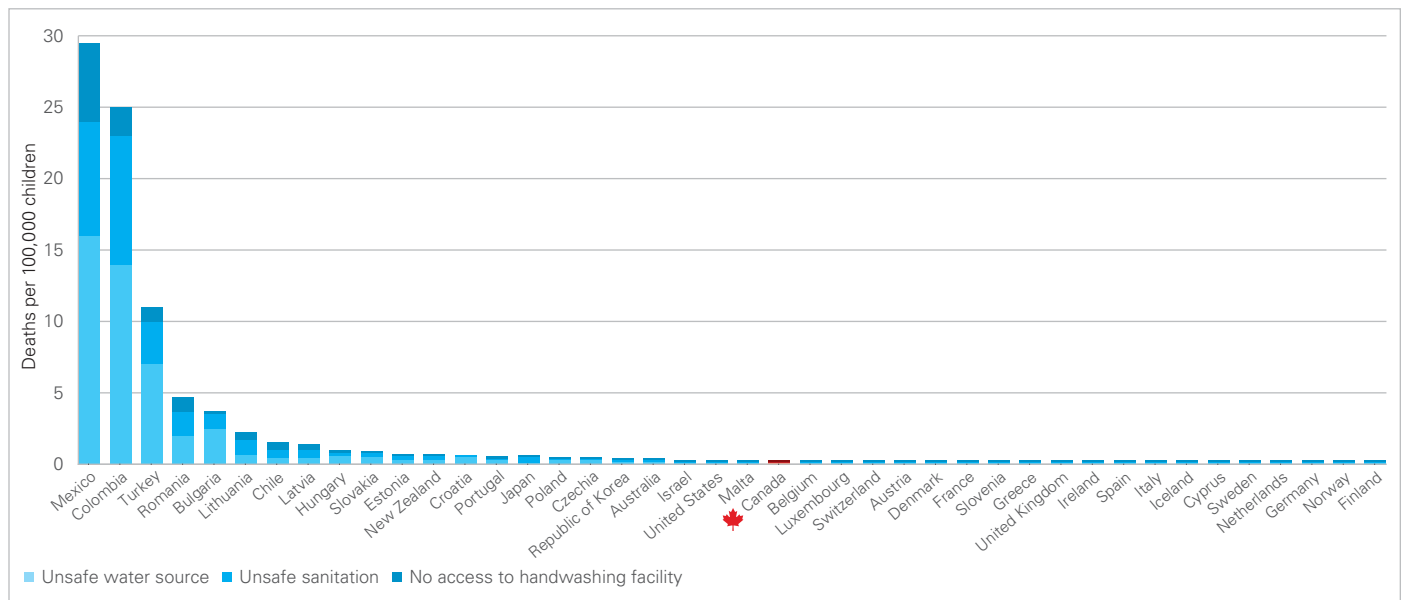
56 Patrick, R. J. (2011). Uneven access to safe drinking water for First Nations in Canada: connecting health and place through source water protection. *Health & Place*, 17, 386–389.

57 Canadian Centre for Policy Alternatives. (2019). *Alternative Federal Budget*. Retrieved from: <https://policyalternatives.ca/afb2019>.

58 Government of Canada. (2022). *Ending Long-Term Water Advisories*. Retrieved from <https://sac-isc.gc.ca/eng/1506514143353/1533317130660>

59 Evidence given to the House of Commons Standing Committee on Public Accounts, Thursday, March 11, 2021 (Number 022, 2nd session, 43rd Parliament). (Accessed 15 March 2022).

Figure 9: Mortality of children under age 15 due to inadequate water and sanitation (2019)



Source: OECD Environmental Mortality Database.

The environment is "mountains, bodies of water, parks, our houses, schools, our friends."

Youth participant, UNICEF Canada Focus Group

THE WORLD AROUND THE CHILD

- Housing
- Green Space
- Traffic

The world around the child

The physical environment around children and youth, natural and built, not only influences the quality of the air they breathe and the water they consume, but also affects how they sleep, eat, play, learn and socialize. This environment “encompasses all the buildings, spaces and products that are created or significantly modified by people.”⁶⁰ The constructed environment includes land zoning and use, transportation systems, building characteristics (e.g., homes and schools), parks and green space.⁶¹ This world around children and youth has significant implications for their cognitive, emotional, social and physical development. It shapes every aspect of their well-being.

HOUSING

Overcrowded housing

OVERCROWDED HOUSING

Canada ranks:

1st (0.7%)

Top performer:

Canada (0.7%)

Better than country average:

(10.6%)

Children’s homes are the worlds they experience most intimately, particularly in their earliest years.⁶² Failure to provide adequate housing conditions is a recipe for poor child health, low life satisfaction and unfair variations in life opportunities. Housing mitigates conditions such as water and air quality, dampness and mould, heat and cold, and light and noise (indoor and outdoor) that affect healthy child development. Poor-quality housing can have impacts on children, including

respiratory ailments, skin infections, cancers, cognitive impairment, mental health problems and lower educational achievement.⁶³ Home is not just “where the heart is” – home is where the health is.

Overcrowding is a significant characteristic of housing quality. Overcrowding and poor-quality housing do not always go hand-in-hand, but for young people these conditions are strongly associated with respiratory infection and asthma, injuries and behavioural challenges including aggression, conflict, social withdrawal, psychological distress and poor social competence.^{64 65 66 67 68 69 70} Studies have discovered a significant relationship between overcrowding and school performance. One study found that each additional person per room decreases young people’s math and reading test scores by 2.1 and 2.0 percentiles, respectively. Another study estimated that 60 per cent of children living in a home with two or more children per bedroom are more likely to be held back in primary or

60 Schulz, A. J. and Northridge, M. E. (2004). Social determinants of health: implications for environmental health promotion. *Health Education & Behavior*, 31, 455–471.

61 Schulz, A. J. and Northridge, M. E. (2004). Social determinants of health: implications for environmental health promotion. *Health Education & Behavior*, 31, 455–471.

62 Franz, N. (2020). *Impact of Noise and Light Pollution on Sleep in Preschoolers, A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Public Health*. University of Washington, Seattle, WA.

63 World Health Organization. (2011). *Environmental Burden of Disease Associated with Inadequate Housing*. World Health Organization, Copenhagen.

64 Sharfstein J. et al. (2001). Is child health at risk while families wait for housing vouchers? *American Journal of Public Health*, 91, 1191–1193.

65 Evans, G. W., Saltzman, H. and Cooperman, J. L. (2001). Housing quality and children’s socioemotional health. *Environment and Behavior*, 33, 389–99.

66 Moloughney, B. (2004). *Housing and Population Health – The State of Current Research Knowledge*. Canadian Institute for Health Information, Ottawa, ON.

67 Canada Mortgage and Housing Corporation. (2003). *Housing Quality and Children’s Socioemotional Health: Research Highlights*. Canada Mortgage and Housing Corporation, Ottawa, ON.

68 Evans, G. W. (2006). Child development and the physical environment. *Annual Review of Psychology*, 57, 401–424.

69 Hwang, S. et al. (1999). *Housing and Population Health: A Review of Literature*. Canada Mortgage and Housing Corporation, Ottawa, ON.

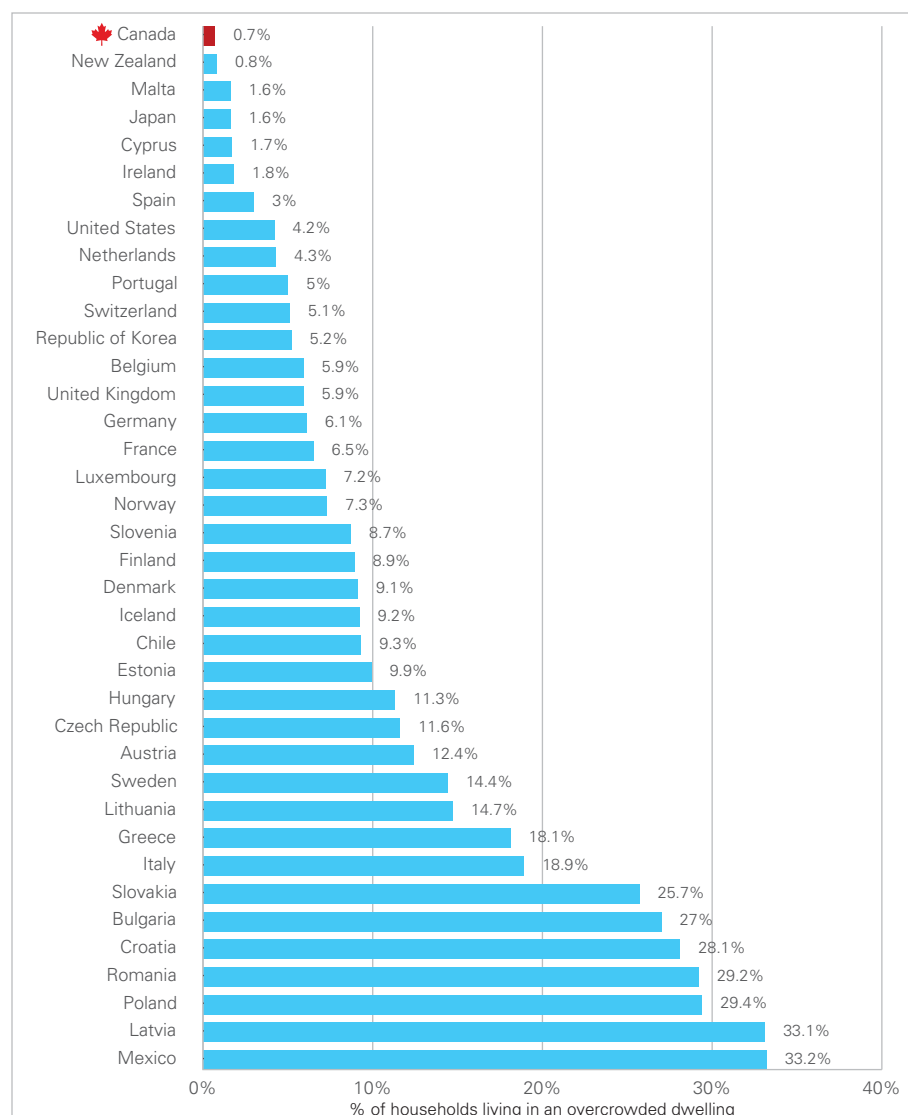
70 Solari, C. D. and Mare, R. D. (2012). Housing crowding effects on children’s well-being. *Social Science Research*, 41, 464–476.

middle school compared to those with their own personal space.⁷¹

This report relies on OECD data for overcrowded housing, which measures adequate living space based on the number, age and gender of people in the household⁷². Compared to other countries, children in Canada are less likely to live in overcrowded housing, with fewer than 1 per cent of families with children experiencing this condition, according to data from the Organisation for Economic Co-operation and Development (OECD), giving Canada a first-place ranking in the League Table (Figure 10). This compares favourably to countries like the U.S. (4.2 per cent), U.K. (5.9 per cent), Norway (7.3 per cent) and Mexico (33.2 per cent). Countries range widely, but on average more than 10 per cent of households in rich countries are overcrowded. Some of the variation might be explained by the geographic context. Canada has traditionally developed its urban environments with larger, low-density housing. The average Canadian home contains 2.6 rooms per person, compared to 2.4 in the U.S., 1.9 in Finland, 1.2 in Greece and 1.0 in Mexico.⁷³

Another way to understand children's experience of housing in Canada is through core housing need. A household in core housing need is one whose "dwelling is considered unsuitable, inadequate or unaffordable and whose income levels are such that they could not afford alternative suitable and adequate housing in their

Figure 10: Percentage of households living in an overcrowded dwelling (2019 or latest)



Source: OECD Affordable Housing Database <https://www.oecd.org/housing/data/affordable-housing-database/housing-conditions.htm>

community." In Canada, 11.6 per cent of households have a "core housing need." The rate rises to 22 per cent for lone-parent households.⁷⁴ To achieve the Sustainable Development Goals

and the right to housing in Canada, every child must have adequate, safe and affordable housing.

71 Goux, D. and Maurin, E. (2005). The effect of overcrowded housing on children's performance at school. *Journal of Public Economics*, 89, 797–819.

72 See definition retrieved from: <https://data.oecd.org/inequality/housing-overcrowding.htm>.

73 OECD. (n.d.) Housing. *OECD Better Life Index*. Retrieved from: <https://www.oecdbetterlifeindex.org/topics/housing/>.

74 Statistics Canada. (2020). *Households Living with Housing Problems, by Selected Housing-Vulnerable Populations and Core Housing Need Including Adequacy, Affordability and Suitability Standards*. Retrieved from: <https://www150.statcan.gc.ca/t1/tb1/en/cv.action?pid=4610004601>.

Housing space for children

CHILDREN WITH THEIR OWN QUIET SPACE TO STUDY

Canada ranks:

32nd (82%)

Top performer:

Switzerland (93%)

Worse than country average

(86%)

Having a quiet space of one's own provides children and youth with both privacy and the opportunity to study. Children who have a quiet place to study at home tend to have higher science test scores than children who do not. However, the socio-economic position of the family could affect both student performance and the space available in the home; in other words, some of the relationship between test scores and privacy could be explained by household socio-economic status. Educational inequalities related to the home learning environment have come to the fore during the lockdowns triggered by the COVID-19 pandemic. Children have been educated at a distance for lengthy periods of time, and many households, particularly poorer ones, lacked the space and facilities for effective home-based learning.

Despite Canada ranking at the top

of the League Table with the fewest overcrowded households, young people in Canada are considerably less likely to report having a quiet place with their own desk to study: Canada ranks 32nd, with 82 per cent of young people at age 15 having a desk and quite space to study (Figure 11). By comparison, Norway has a higher percentage of overcrowded housing, yet 92 per cent of children say they have a desk and quiet study space. Canada also compares unfavourably to the rich-country average of 86 per cent. In 13 rich countries, more than 90 per cent of young people have a quiet space of their own.

Personal living space and housing conditions not only describe the inside world of children, but are markers of the outside policy environment shaping income, inclusion and housing. In Canada and most rich countries, inequality in housing conditions and overcrowding is tied to social and economic inequality. While Canada has far fewer overcrowded households compared to many rich countries, children in low-income and tenant households, racialized populations, and First Nations and Inuit communities are more likely to live in them. For example, a Toronto study found that 33 per cent of tenant households live in overcrowded housing.^{75 76} Racial status amplifies the risks considerably, with 45 per cent of racialized tenant

What makes a good place to live?

According to UNICEF Canada's youth focus group participants:

"Space to be alone, reflect, develop, grow, exercise autonomy and express yourself."

"Affordability, having basic needs met but not just scraping by; feeling secure and comfortable can make it a good place to live."

households living in overcrowded housing, compared to 16 per cent of non-racialized tenant households. One quarter of First Nations households – 36.8 per cent on reserve and 18.5 per cent off reserve – report living in overcrowded housing.⁷⁷ The gap between the national average and Inuit people is even wider, with about 40.6 per cent residing in overcrowded conditions. The overcrowding and poor housing quality of many Indigenous communities is mirrored in the poor health of many Indigenous children.^{78 79}

The housing of children in Canada is rapidly changing. Many Canadian urban environments are becoming denser, with an increase in high-rise condominiums that are no longer the preserve of singles, young couples and empty nesters.⁸⁰ The

75 Wilson, B., Lightman, N. and Gingrich, L. S. (2020). *Space and Places of Exclusion: Mapping Rental Housing Disparities for Toronto's Racialized and Immigrant Communities*. Social Planning Toronto, Toronto, ON.

76 Overcrowded and unsuitable households are defined as households with unsuitable housing lacking an adequate number of bedrooms for the size and composition of the household, according to the National Occupancy Standard.

77 Statistics Canada. (2017). *The Housing Conditions of Aboriginal People in Canada: The Census in Brief*. Statistics Canada, Ottawa, ON.

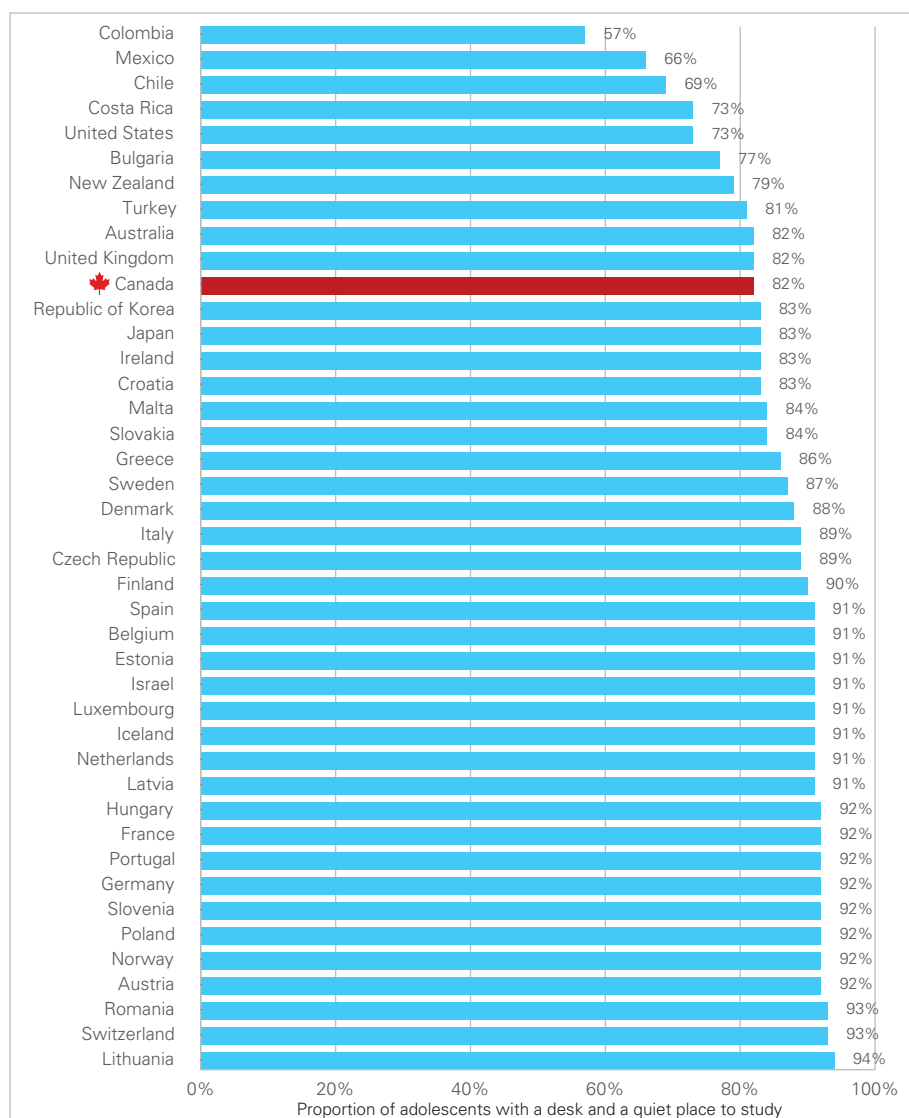
78 Kohen, D. E., Bougie, E. and Guèvremont, A. (2015). Housing and health among Inuit children. *Health Reports*, 26, 21–27.

79 Kovesi, T. (2022). Housing conditions and respiratory morbidity in Indigenous children in remote communities in northwestern Ontario, Canada. *Canadian Medical Association Journal*, 194, E80–E88.

80 Perkins, T. (2012). Paying more for less: Canada's shrinking living room. *The Globe and Mail*. Retrieved from: <https://www.theglobeandmail.com/real-estate/the-market/paying-more-for-less-canadas-shrinking-living-room/article4555561/#:~:text=%22As%20the%20average%20size%20of%20apartments%20is%20usually,for%20Natural%20Resources%20Canada%2C%20wrote%20in%20an%20e-mail>

high-rise is increasingly the home of children. In fact, a new elementary school to be built in a high-rise on Toronto’s waterfront was recently announced.⁸¹ Globally, families with children living in multiple-household dwellings is nothing new, yet it is a new trend in the Canadian context and poses questions about how a high-rise community can be child-friendly. Will high-rise living increase overcrowding for children in the future? Will it increase the equity gap in overcrowding based on household income or race? What is the neighbourhood design of such a community from the children’s perspective related to schools, traffic and urban green space?

Figure 11: Percentage of schoolchildren age 15 with their own desk and quiet place to study (2018)



Source: PISA 2018

81 Rushowy, K. (2022). In a first for Ontario, a school in a condo is coming to Toronto. *Toronto Star*. Retrieved from: <https://www.thestar.com/politics/provincial/2022/01/21/in-a-first-for-ontario-a-school-in-a-condo-is-coming-to-torontos-waterfront.html>.

Spotlight: Indoor air pollution and overcrowding are devastating for Indigenous young people in Canada

The right to housing is guaranteed as an international human right and in Canadian law. Yet First Nations and Inuit children are disproportionately exposed to the related conditions of indoor air pollution and overcrowding due to inadequate housing. A recent study of indoor air quality and housing characteristics in isolated First Nations communities found that 85 per cent of houses lacked controlled ventilation, more than 50 per cent had damaged windows, 44 per cent showed water penetration in exterior walls and 6 per cent had immediate safety issues.⁸²

The study found that housing inadequacies were linked to high rates of respiratory illness in children – 21 per cent of children had been admitted to hospital during the first two years of life and 25 per cent needed to be medically evacuated because of a respiratory illness. Wheezing with colds, a symptom of asthma, was seen in nearly 40 per cent of children, although only 4 per cent were diagnosed with the condition. Rates of respiratory syncytial virus (RSV) were also high in the Sioux Lookout region in northwestern Ontario, which had roughly 44 RSV hospitalizations for every 1,000 babies born per year, compared to a rate of 10 in 1,000 in Toronto. Rates of RSV hospitalizations in some areas of Nunavut have been as high as 300 in 1,000 babies.

Respiratory conditions are associated with poor air quality conditions in children's homes, often due to high levels of mould and contaminants from wood smoke.⁸³ Overcrowding exacerbates children's health risks. Houses analyzed in the study were one third smaller than the average small house in Canada but had an average occupancy of 6.6 people per house, compared to the Canadian average of 2.5. Overcrowding and reduced ventilation have been a factor in COVID-19 outbreaks, which have disproportionately spread through First Nations communities throughout the pandemic.

Inadequate housing also elevates the risk of fires and child death in First Nations communities. First Nations children under the age of 10 are 86 times more likely to die in a fire than non-Indigenous children. This is due to inequities in housing conditions and basic community infrastructure that can include a lack of proper water lines, working fire hydrants, water and fire trucks, and even oxygen masks for firefighters. First Nations communities do not fall under provincial or national fire and building safety code standards, so fire drills are not always conducted in First Nations schools as they are in others. Communities must be provided the proper resources for safe housing for every child and for adequate fire protection services.⁸⁴

82 Kovesi, T. (2022). Housing conditions and respiratory morbidity in Indigenous children in remote communities in northwestern Ontario, Canada. *Canadian Medical Association Journal*, 194, E80–E88.

83 Couto Zuber, M. (2022). Study: First Nations children's health impacted by poor housing conditions. *Toronto Star*. Retrieved from: https://www.thestar.com/life/health_wellness/2022/01/24/study-first-nations-childrens-health-impacted-by-poor-housing-conditions.html.

84 Ministry of the Solicitor General. (2021). Ontario Chief Coroner's Table on Understanding Fire Deaths in First Nations. Retrieved from: <https://www.ontario.ca/document/ontario-chief-coroners-table-understanding-fire-deaths-first-nations>.

GREEN SPACE

Urban green space

URBAN GREEN SPACE INDEX

Canada ranks:

15th (4.96)

Top performer:

Finland (5.73)

Better than country average

(4.46)

For many adults, playing in a park or other green space is a prominent and poignant childhood memory. Running, roaming, biking, hiding, sliding and playing freely outside constitute the essence of childhood for many. Urban greenness consists of often-intentionally protected or cultivated public spaces, such as parks,

tree canopies, undeveloped spaces and privately owned green spaces. Studies have confirmed that having a green space for play is necessary for children's health, development and well-being, and the WHO lists green space among the social determinants of health. Why is green space particularly important to child and youth well-being? Spending time in or even simply being able to see green space has been linked to improvements in a long list of outcomes:

- Early child development⁸⁵
- Self-esteem⁸⁶
- Academic performance⁸⁷
- Mental health^{88 89 90}
- Behaviour⁹¹
- Stress⁹²
- Attention deficit hyperactivity disorder (ADHD)^{93 94 95 96}

Life satisfaction or "happiness" among young people is higher in countries

with more urban green space. Children who report that their local area has enough quality accessible places to play and spend time also report higher levels of happiness. Physical activity in nature improves emotional well-being.⁹⁷ Better mood, enhanced resilience to daily stressors⁹⁸ and lower prevalence of depression and anxiety are some of the established mental health benefits of green space. Experimental evidence has found that the proximity to green spaces and experience of being in a natural area can reduce the symptoms of ADHD and increase self-discipline in

"The places, spaces, people, and landforms you see when you look out your window, or see every day, influence who you are."

Youth participant, UNICEF Canada Focus Group

- 85 Jarvis, I. et al. (2021). Assessing the association between lifetime exposure to greenspace and early childhood development and the mediation effects of air pollution and noise in Canada: a population-based birth cohort study. *Planetary Health*, 5, 709–717.
- 86 Chawla, L., Keena, K., Pevec, I. and Stanley, E. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health & Place*, 28, 1–13.
- 87 Li, D. and Sullivan, W. C., (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape and Urban Planning*, 148, 149–158.
- 88 World Health Organization. (2016). *Urban Green Spaces and Health*. WHO Regional Office for Europe, Copenhagen.
- 89 Song, C, Ikei, H. and Miyazaki, Y. (2016). Physiological effects of nature therapy: a review of the research in Japan. *International Journal of Environmental Research and Public Health*, 13, 781.
- 90 Maas, J. et al. (2009). Morbidity is related to a green living environment. *Journal of Epidemiology & Community Health*, 63, 967–973.
- 91 Amoly, E. et al. (2014). Green and blue spaces and behavioural development in Barcelona schoolchildren: the BREATHE Project. *Environmental Health Perspective*, 122, 1351–1358.
- 92 Wells, N. M., and Evans, G. W. (2003). Nearby nature: a buffer of life stress among rural children. *Environment and Behaviour*, 35, 311–330; Markevych, I. et al. (2014). A cross-sectional analysis of the effects of residential greenness on blood pressure in 10-year-old children: results from the GINIplus and LISAPlus studies. *BMC Public Health*, 201, 414.
- 93 Faber Taylor, A., and Kuo, F. E. (2009). Children with attention deficits concentrate better after walking in the park. *Journal of Attention Disorders*, 12, 402–409.
- 94 Kuo, F. E., and Faber Taylor, A. (2004). A potential natural treatment for attention-deficit/hyperactivity disorder: evidence from a national study. *American Journal of Public Health*, 94, 1580–1586.
- 95 Taylor, A. F., Kuo, F. E. and Sullivan, W. C. (2001). Coping with ADD: The surprising connection to green play settings. *Environment and Behavior*, 33, 54–77.
- 96 Yuchi, W., Brauer, M., Czekajlo, A., Davies, H. W., Davis, Z., Guhn, M., Jarvis, I., Jerrett, M., Nesbitt, L., Oberlander, T. F., Sbihi, H., Su, J. and van den Bosch, M. (2022). Neighborhood environmental exposures and incidence of attention deficit/hyperactivity disorder: a population-based cohort study. *Environment International*, 161.
- 97 Louv, R. (2008). *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. Chapel Hill, NC: Algonquin Books.
- 98 Chawla, L., Keena, K., Pevec, I. and Stanley, E. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health & Place*, 28, 1–13, <<https://doi.org/10.1016/j.healthplace.2014.03.001>>, accessed 10 February 2022.

affected children.⁹⁹ Research from the University of British Columbia suggests that living in and around green space has a positive effect on early child development.¹⁰⁰ Children who were exposed to more green space and vegetation within a 250-metre zone around their postal codes had a stronger likelihood of doing better in kindergarten. Researchers speculate that these results may be due to the role of green space in reducing exposure to traffic-related air and noise pollution, which have been linked to stress, sleep disturbances and damage to children's central nervous systems.

For Canada, is the grass greener on the other side of the fence – or in this case, the border? In many cases, the answer is yes. Despite being a large country with vast amounts of

"I think that there will eventually be less nature and more factories, residential areas and other things. That is bad because of the negative impact on the environment."

Youth participant, UNICEF Canada Focus Group

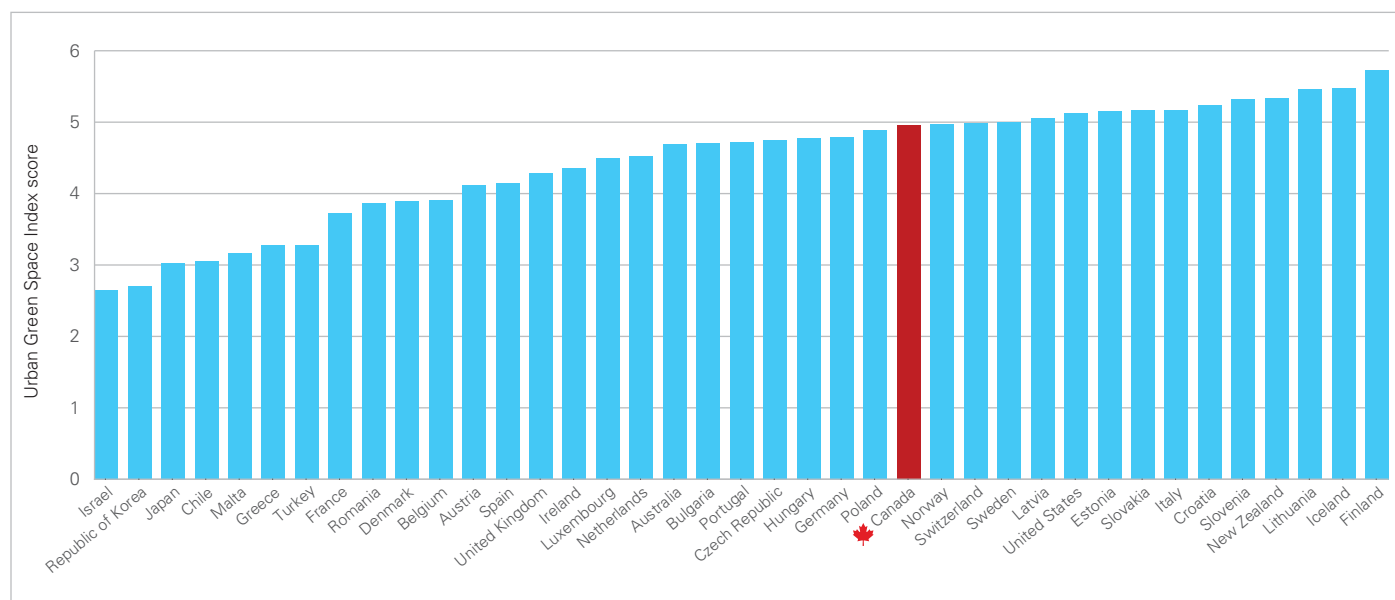
uninhabited land, Canada ranks 15th of 40 countries on the Urban Green Space Index, lagging behind Finland at the top and even (modestly) behind the U.S. (Figure 12). The development of urban areas, including densification and urban sprawl, often results in a "growth trap" – the diminishment of green areas in favour of "grey" spaces, including buildings and pavement (e.g., roadways and parking lots). Between 2001 and 2009, about three quarters of Canada's large and medium population-size urban centres experienced a decline in greenness, much of it due to urban growth.¹⁰¹ The City of Toronto estimates that over the next 15 years, parkland will decline from 28 m² per person to 21 m² per person due to population growth.¹⁰² While urban development will inevitably lead to some loss of greenness, the amount of green space displaced depends on planning and political decisions. No less critical than protecting green space is the need to create green space within brownfield developments in the urban core.

The geography of environmental inequality is again visible in the greenness of children's neighbourhoods relative to socio-economic status. Access to nature

and to public green space maps to income and racial inequalities. Statistics Canada research points to an uneven distribution of urban greenness, with less greenness in neighbourhoods inhabited by people with lower incomes, including tenants, recent immigrants and racialized populations.¹⁰³ Wealthier neighbourhoods are often greener than those with denser housing. They also tend to have less air and noise pollution and can be cooler and less prone to flooding. In some communities, apartments and dense housing have been used as a "buffer" between higher-income neighbourhoods and the noise and air pollution of roads and industrial areas. Access to neighbourhood green spaces can offset some of the adverse effects of inadequate housing.¹⁰⁴ For example, it can mitigate the negative impacts of overcrowding by providing outdoor play space.¹⁰⁵

Both the presence of green space and young people's perceptions of its quality, appeal and safety influence whether they will benefit from it. Among youth respondents to UNICEF Canada's 2021 Community Survey of Child and Youth Well-being, only 7.6 per cent said no parks were

- 99 Faber Taylor, A. and Kuo, F. E. (2009). Children with attention deficits concentrate better after walk in the park. *Journal of Attention Disorders*, 12(5), 402–409, <<https://doi.org/10.1177/1087054708323000>>; Kuo, F. E. and Faber Taylor, A. (2004). A potential natural treatment for attention-deficit/hyperactivity disorder: Evidence from a national study. *American Journal of Public Health*, 94(9), 1580–1586, <<https://doi.org/10.2105/ajph.94.9.1580>>; Taylor, A. F., Kuo, F. E. and Sullivan, W. C. (2001). Coping with ADD: The surprising connection to green play settings. *Environment and Behavior*, 33(1), 54–77, <<https://doi.org/10.1177/00139160121972864>>, all accessed 10 February 2022.
- 100 Jarvis, I. et al. (2021). Assessing the association between lifetime exposure to greenspace and early childhood development and the mediation effects of air pollution and noise in Canada: a population-based birth cohort study. *Lancet Planet Health*, 5, e709–717.
- 101 Statistics Canada. (2022). Accounting for ecosystem change in Canada. *Human Activity and the Environment 2021*, Catalogue no. 16-201-X. Statistics Canada, Ottawa, ON.
- 102 City of Toronto. (2018). *2018 Pressure on Toronto's Green Spaces & Ecosystems*. Retrieved from: <https://www.toronto.ca/city-government/council/2018-council-issue-notes/pressure-on-torontos-green-spaces-and-ecosystems/>.
- 103 Pinault, L. et al. (2021). Ethnocultural and socioeconomic disparities in exposure to residential greenness within urban Canada. *Health Reports*, 32.
- 104 Jones-Rounds, M. L., Evans, G. W. and Braubach, M. (2014). The interactive effects of housing and neighbourhood quality on psychological well-being. *Journal of Epidemiology and Community Health* (1979-), 68(2), 171–175, <<https://www.jstor.org/stable/43281707>>, accessed 10 February 2022.
- 105 Bartlett, S. (1999). Children's experience of the physical environment in poor urban settlements and the implications for policy, planning and practice. *Environment and Urbanization*, 11(2), 63–74, <<https://doi.org/10.1177/095624789901100207>>, accessed 10 February 2022.

Figure 12: Urban Green Space Index (Normalized Difference Vegetation Index per capita) (2021)

Note: Urban green spaces index is calculated based on the Normalized Vegetation Index per capita in urban areas. Satellite imagery was collected during the summer: June to September 2018 for the Northern Hemisphere and December 2017 to February 2018 for the Southern Hemisphere.

Source: Kwon et al. (2021). Urban green space and happiness in developed countries. *EPJ Data Science* 2021(10).

nearby, but these public spaces do not always equate to high-quality natural environments. Of the survey respondents, only 74.2 per cent agreed that they had plenty of opportunities to enjoy nature, and 72.3 per cent agreed that the quality of the natural environment in their neighbourhood is very high. Similarly, the Canadian Index of Child and Youth Well-being reported that, on average, 74.2 per cent of young people in Canada ages 11 to 15 say their communities have good spaces to spend free time.¹⁰⁶

In the Community Survey, higher agreement that young people have plenty of opportunities to enjoy

nature in their neighbourhoods is strongly related to higher levels of life satisfaction. The quality of neighbourhood environments shapes the agency, mobility and social participation of all children, but especially of children with disabilities.¹⁰⁷ Yet access to green space is inequitable. Children with functional limitations, older children and children experiencing higher levels of material deprivation are less likely to report that their neighbourhoods have adequate and accessible public spaces. Despite policy concerns with the planning of accessible and walkable neighbourhoods, few studies include people with different abilities and of different ages.¹⁰⁸

Canada has work to do to achieve Sustainable Development Goal target 11.7, which is to provide universal access to safe, inclusive and accessible green public spaces for children and youth. Child-friendly communities have created specific policies and approaches to provide children with the opportunity to have a say in urban planning, including how to facilitate free play and safe outdoor mobility. Strategies to increase green space include preserving or planting a larger tree canopy, building and increasing access to more parks and creating more community gardens. UNICEF calls for prioritizing schools and child care centres for greening. Every child, no matter where they live,

106 UNICEF Canada. (2019). *Where Does Canada Stand? The Canadian Index of Child and Youth Well-Being: 2019 Baseline Report*. UNICEF Canada, Toronto, ON.

107 Stafford, L., Adkins, B. and Franz, J. (2020). Bounded at the driveway's edge: Body-space tensions encountered by children with mobility impairments in moving about the neighbourhood street. *Children's Geographies*, 18(3), 298–311, <<https://doi.org/10.1080/14733285.2019.1635992>>, accessed 10 February 2022.

108 Stafford, L. and Baldwin, C. (2018). Planning walkable neighborhoods: Are we overlooking diversity in abilities and ages? *Journal of Planning Literature*, 33(1), 17–30, <<https://doi.org/10.1177/0885412217704649>>, accessed 10 February 2022.

should be within easy and safe walking distance to a welcoming public green space.¹⁰⁹ As with other choices in the environmental balance, there is a trade-off that requires socially and intergenerationally equitable solutions that put children and their well-being into the equation.

Spotlight: Reimagining where children play: Creating playground standards for thermal comfort

Over the last several decades, studies have been done and efforts have been made to improve the fun and safety of children's playgrounds. Some of this research is finding its way into the reconstruction of playgrounds in Canada and around the world. More recently, research has focused on protecting "risky play" so that children's play spaces and mobility support their exploration and healthy development. However, exposure to intense heat is not a welcome element of risk. Researchers have become interested in the implications of climate change and how it affects children's outdoor play.¹¹⁰ Climate change is intensifying the risk of heat stress and direct sun exposure, leading to dehydration and serious sunburns and increasing the longer-term risk of skin cancer. Communities have begun to reimagine playgrounds using specific environmental standards for factors such as air flow, water access and shade.

The community of Windsor, Ontario, with funding support from Health Canada, used satellite imagery, infrared cameras and other sophisticated techniques to investigate the thermal factors in its playgrounds. This study discovered that the rubber mats installed for fall protection were reaching temperatures hot enough to cause first- or second-degree burns. It recommended safety measures including shade, water fountains, vegetation, lighter-coloured rubber mats or alternate surface material and other adaptations.

The story does not stop in Windsor. The Standards Council of Canada, Canadian Standards Association (CSA) and Health Canada developed guidelines for the design of thermally comfortable playgrounds (for heat or cold) that could be integrated in the CSA-Z614 playground equipment and surfacing standard. The process has led to the creation of innovative playground standards. The risk of climate change to children playing outdoors has been acknowledged, and the new standards are slowly being adopted across Canada.

109 Sugar, S. (2021). *The Necessity of Urban Green Space for Children's Optimal Development*. UNICEF Discussion Paper. UNICEF, New York.

110 Kennedy, E. et al. (2021). Reimagining spaces where children play: developing guidance for thermally comfortable playgrounds in Canada. *Canadian Journal of Public Health*, 112, 706–713.

TRAFFIC

Road traffic

CHILD ROAD TRAFFIC CASUALTIES (INJURY AND DEATH)

Canada ranks:

23rd

(119.9 DALY per 1,000 children)

Top performer:

Sweden

(61.3 DALY per 1,000 children)

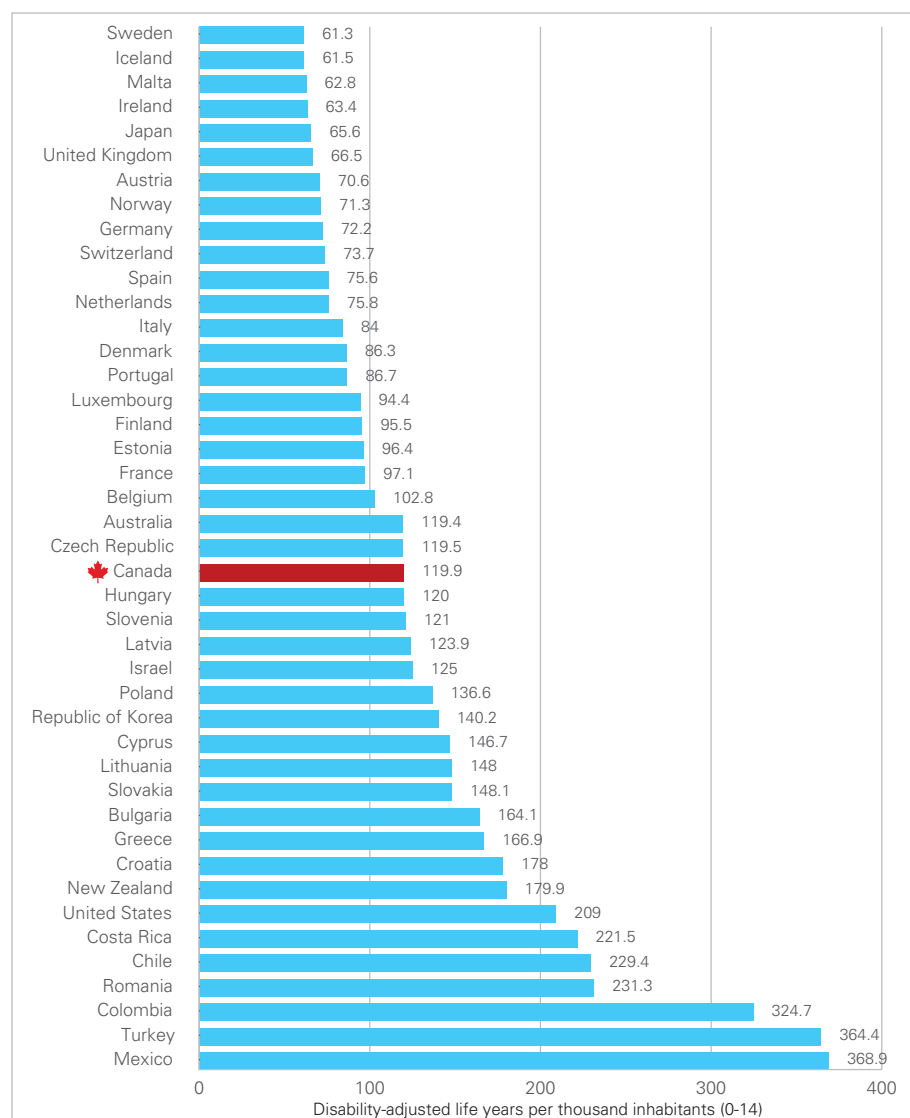
Better than country average

(134.2 DALY per 1,000 children)

Vision Zero first emerged as a policy idea in Sweden in 1997 and quickly spread to other countries. The vision was clear and simple: to eliminate serious injury or death due to road traffic. Norway was the first to demonstrate the possibility of zero, and is one of several countries that achieved zero pedestrian and cyclist deaths in 2019. What was once improbable has now become possible by designing roads with safety prioritized over speed and convenience, through a blend of low speed limits, barriers, pedestrian zones and other techniques.

In the UNICEF League Table, Sweden ranks 1st (Figure 13). The child traffic casualty rate varies widely across rich countries, and many countries are closer to achieving Vision Zero for children than Canada, which ranks 23rd among 43 countries. Many Canadian cities have adopted various approaches to Vision Zero, but it is not widespread in ambition, implementation or outcome. This is

Figure 13: Road accident casualties (injuries and deaths) per 100,000 children ages 0-14 (2019/2020)



Source: Global Burden of Disease Study 2019

evident in the unacceptably high rate of child traffic injuries and deaths, 119.9 DALY per 1,000.

Policy ideas like Vision Zero are based on targets that can be effective in protecting the environmental well-being of children and youth, whether applied to pollution, green space, housing or traffic. Children frequently play close to roadways or need to cross them to get to parks, schools

and other places. Children’s active play and mobility have been declining in Canada and many other countries over recent decades. This is not a desirable protective response to traffic-related air pollution or injury, since safe mobility and free outdoor play fosters children’s physical, cognitive and social development, sense of belonging and growing autonomy. They also need to get to school, visit friends and access services. Although explanations for

the decline in free outdoor play and mobility are many and complex, one is the perceived and real risks of walking and cycling. Road traffic mortality is one of the leading causes of child injury and death in rich countries. Road traffic also exposes children to air pollution and takes up space that could be used for other purposes. If active independent play is a goal to increase child well-being, reducing the risks of traffic is one of the solutions.

As with the other environmental risks in the UNICEF League Table, traffic risk to children is unevenly distributed.

Substantial research has found higher traffic risks for low-income children and in low-income neighbourhoods.¹¹¹ ¹¹² ¹¹³ These risks result from inequities in the built environment, including traffic design. Less affluent and racialized communities often experience inferior quality and safety built into housing, roadways, amenities and park locations that negatively affect pedestrian safety.¹¹⁴ Despite these higher-risk neighbourhood environments, traffic safety features (e.g., calming measures) and initiatives are often not as frequently available and implemented as in lower-risk but

higher-income neighbourhoods.¹¹⁵ One Toronto study discovered fewer speed humps and local roads located in low-income neighbourhoods compared to high-income neighbourhoods, despite the fact that child pedestrian motor vehicle collisions were 5.4 times higher in the low-income areas.¹¹⁶ Failing to apply a child-sensitive, place-based equity lens to traffic design will perpetuate faltering progress to reduce child traffic injury and death in Canada.

Spotlight: Reconstructing the world around children: UNICEF Child Friendly Cities

Every child has a right to grow up in an environment where they are safe and secure and can play, learn and develop to their potential. They also have the right to have their voices heard. UNICEF's Child Friendly Cities Initiative supports municipal governments in realizing the rights of children at the local level.

In 1996, UNICEF launched the Child Friendly Cities Initiative to inspire, guide and recognize local governments that not only create spaces and programs that are good for children, but also develop approaches within their governance to listen to children and elevate them as a priority. These include having an advocate for children and youth, approaches for youth participation in decision-making, and child impact assessments of proposed policies and budgets. Over the last 25 years, the Child Friendly Cities Initiative has flourished, with more than 3,000 municipalities in more than 30 countries joining the movement.

The Child Friendly Cities footprint is visible in Canada through Municipalités amies des enfants (MAE) in Quebec, a partnership between Espace MUNI and UNICEF Canada for more than a decade. To be granted MAE status, municipalities must establish a coordinating committee, create a plan for child-friendly local design including indicators to monitor and evaluate action, submit an evaluation report and support National Child Day in their community. Close to 80 municipalities, including Quebec City and Montreal, have MAE recognition. Around half of Quebec children and youth live in a child-friendly municipal environment.

111 Rothman, L. et al. (2019). Recent trends in child and youth emergency department visits because of pedestrian motor vehicle collisions by socioeconomic status in Ontario, Canada. *Injury Prevention*, 25, 570–573.

112 Choiniere, R. et al. (1997). *For the Safety of Canadian Children and Youth: From Injury Data to Preventive Measures*. Health Canada, Ottawa, ON.

113 Dougherty, G., Pless, I. B. and Wilkins, R. (1990). Social class and the occurrence of traffic injuries and deaths in urban children. *Canadian Journal of Public Health*, 81, 204–209.

114 Klingbaum, Alissa. (2021). *Pedestrian Safety and Neighbourhood Equity*. The Wellesley Institute, Toronto, ON.

115 Battista, G. A. and Manaugh, K. (2019). Examining social inclusion among pedestrian plans in Canada. *The Canadian Geographer*, 63, 663–675.

116 Rothman, L. et al. (2019). Spatial distribution of roadway environment features related to child pedestrian safety by census tract income in Toronto, Canada. *Injury Prevention*, 26, 1–5.

"It's already December, and it isn't snowing that much here. I'm a nature person, and my heart breaks to see nature in so much pain."

Youth participant, UNICEF Canada Focus Group

THE WORLD AT LARGE

- Consumption
- Waste
- Capital

The world at large

The broadest context for children’s environmental well-being is the global ecosystem. The global environment is not shared equally in terms of what is consumed from it or the consequences of consumption. UNICEF estimates that globally 1.7 million children under the age of five lose their lives every year due to environmental harm, and most of these deaths occur in low-income countries.¹¹⁷ Much of this environmental harm originates outside these countries. Their children benefit least from consumption and pay the greatest price.¹¹⁸ The inequitable distribution of environmental risks that is present in Canada is also evident globally.

Current levels of resource consumption in many countries are unsustainable, and some countries have a particularly large impact on the Earth relative to their population size. Overall, rich countries consume more resources and produce more consumption-related damage, but levels vary. With high levels of both natural and economic wealth, Canada is suffering a deficit in global citizenship. Canada has the worst per capita rate of municipal waste, the second-worst rate of resource consumption and the third-worst rate of greenhouse gas emissions. Canada’s spending on environmental protection does not match its environmental impact, ranking 15th at 0.7 per cent of GDP. On the other hand, Canada ranks second in children’s environmental

education. Young people have the knowledge capital to contribute to a better environmental record, but they are rarely provided the opportunity to use it.

CONSUMPTION

Resource consumption

ECOLOGICAL CONSUMPTION FOOTPRINT

Canada ranks:

40th (5 Earths)

Top performer:

Colombia (1.2 Earths)

Worse than country average

(3.2 Earths)

The global volume of resource consumption and waste exceeds Earth’s capacity to sustain a balanced and healthy ecosystem. Simply put, too much is taken out of the ground and put back into the air, ground or water. Earth Overshoot Day marks the annual point when the resources consumed around the world exceed what our planet can renew that year. In 2021, that day was July 29. This year, Canadians and Americans overshoot the planet’s capacity on March 13.¹¹⁹ Overconsumption is unsustainable over the long term and is already disrupting the ecological balance of

the planet, contributing to climate change, species loss and other forms of environmental degradation that have impacts on current and future generations of children.

An ecological footprint is a measure developed to compare the environmental impacts produced by different countries. Through a sophisticated calculation, an ecological footprint accounts for the ecological assets needed to produce the natural resources a country consumes and the ability of that country to absorb the waste it generates. Though far from perfect, an ecological footprint is a useful tool for estimating national consumption patterns.

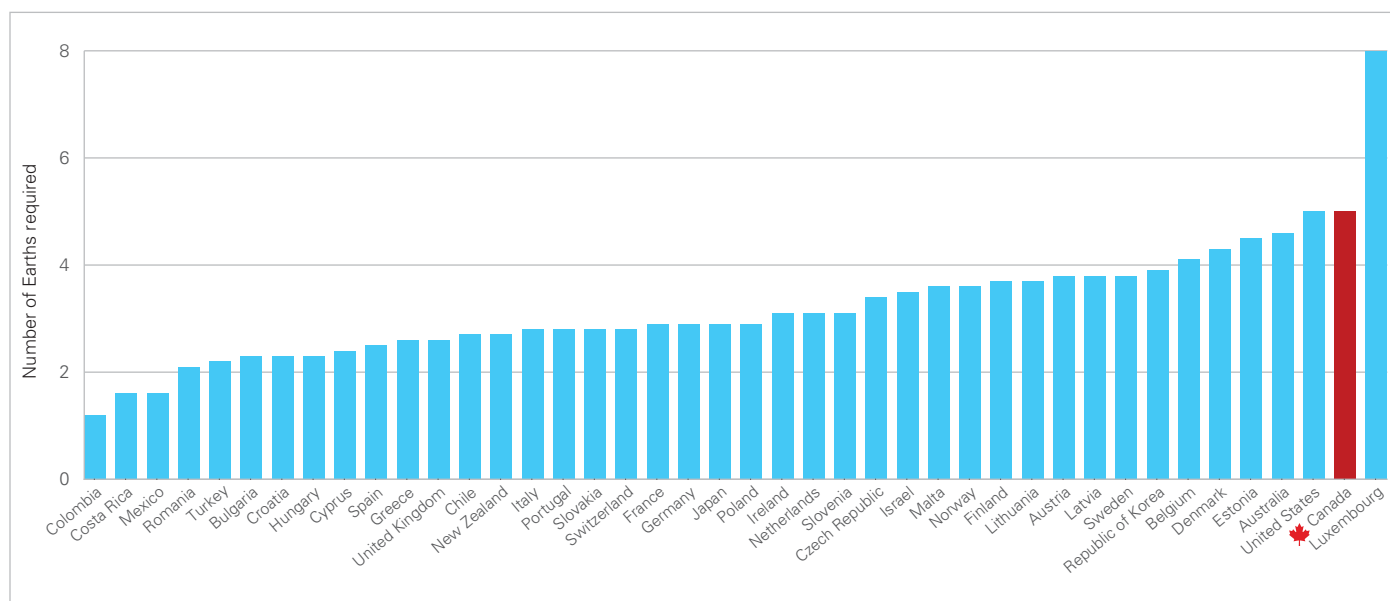
The League Table in Figure 14 measures the number of Earths that would be required to sustain current consumption levels in each of the Report Card countries. Currently, rich countries consume at an unsustainable pace: an average of 3.2 Earths would be needed to sustain that consumption. Canada is a global resource glutton, with a consumption rate that exceeds almost every other rich country, including the U.S. Canada would require 5 Earths to sustain its production and consumption every year, earning Canada the second-worst ranking at 40th of 41 countries. Germany consumes 2.9 Earths and Finland consumes 3.7, both significant overshoots of biological capacity, yet at significantly less destructive rates.

117 World Health Organization. (2017). *Don’t Pollute My Future! The Impact of the Environment on Children’s Health*. World Health Organization, Geneva.

118 Committee on the Rights of the Child. (2016). *Children’s Rights and the Environment: Report of the 2016 Day of Discussion*. United Nations. Geneva.

119 Earth Overshoot Day. (2022). *How Many Earths? How Many Countries?* Retrieved from: <https://www.overshootday.org/how-many-earths-or-countries-do-we-need/>.

Figure 14: Ecological footprint of consumption (global hectares per person) (2017 and 2018)



It would take 5 Earths to sustain Canada's current level of resource consumption and waste.

Notes: The ratio of a country's economic footprint of consumption to its biocapacity in global hectares per person. Data not available for Iceland. Data for 2018 (2017 for Canada).

Source: Global Footprint Network



The production and waste associated with Canada's consumption contribute to localized air and water pollution, as well as greenhouse gas emissions that contribute to global climate change. Canada's consumption is not "cushioned" by the exceptional abundance of resources within its borders and those it can afford to extract from others. The environmental damage is affecting children today and borrowing from future generations, here and around the globe.

Water stress

WATER STRESS

Canada ranks:

8th (3.70%)

Top performer:

Iceland (0.40%)

Better than country average

(46.08%)

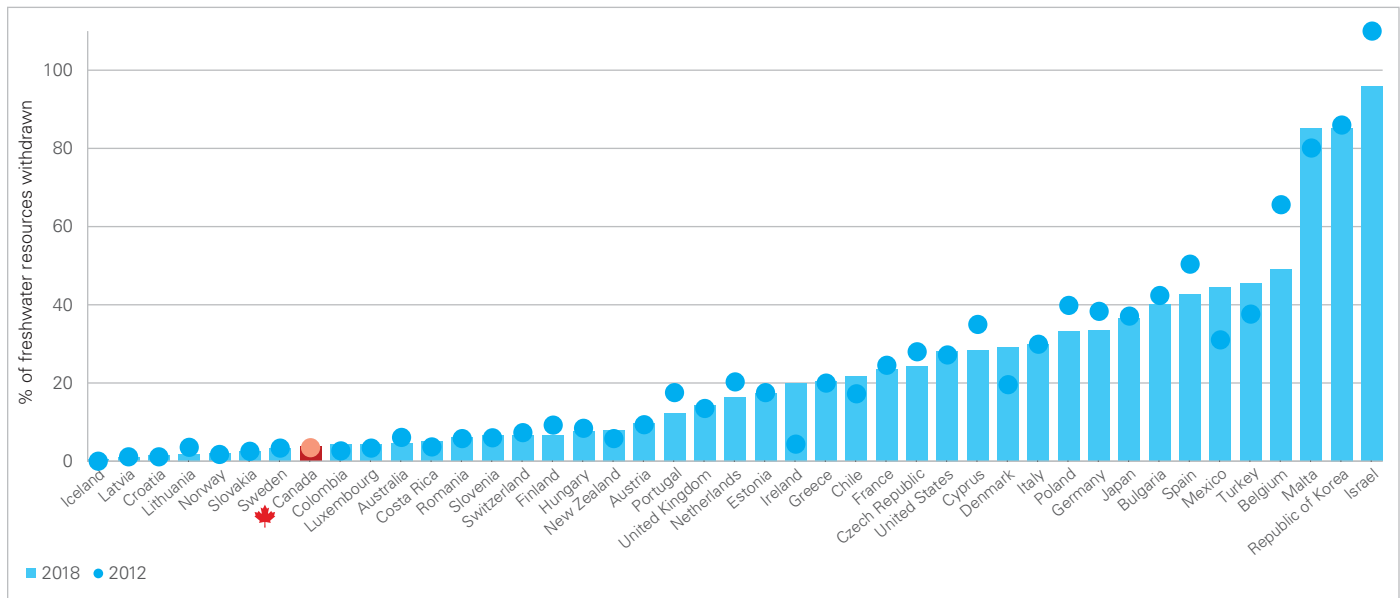
"Water stress" is a specific dimension of ecological consumption. It measures the pressure exerted on a country's freshwater resources, calculated as the amount of freshwater withdrawn as a share of total renewable freshwater resources. High levels of water stress indicate a risk of water insecurity resulting from unsustainable resource use.

Report Card countries vary widely in their levels of water stress, ranging

from 0.4 per cent in Iceland to 95.9 per cent in Israel (Figure 15). Canada's level of water stress is relatively low, ranking 8th among 43 rich countries at 3.7 per cent. This is vastly more favourable than the average 46.08 per cent.

Water stress is typically lower in countries gifted with abundant freshwater like Canada. This abundance literally absorbs some of their water usage, waste and pollution and "subsidizes" their higher ranking in the League Table. But the efficiency, equity and sustainability of water management is no less critical. Canada's actual consumption of water – 1,025 cubic metres per person per year – is much higher than almost every other rich country, including the U.K. (129 m³/person/year), Germany (404 m³/person/year) and Australia (629 m³/person/year). Only the U.S. consumes more water, at 1,583 cubic metres per person per

Figure 15: Water stress levels (2012 and 2018)



Note: Water stress is freshwater withdrawal as a proportion of available freshwater resources. It is the ratio between total freshwater withdrawn by all major sectors and total renewable freshwater resources, after taking into account environmental flow requirements.

Source: FAO Aquastat

year.¹²⁰ While Canada, like most rich countries, has marginally improved its rate of renewable water consumption since 2012, it has a long way to the top among responsible water consumers.

WASTE

Municipal waste

MUNICIPAL WASTE

Canada ranks:

36th

(695.4 kg per person per year)

Top performer:

Republic of Korea

(141.9 kg per person per year)

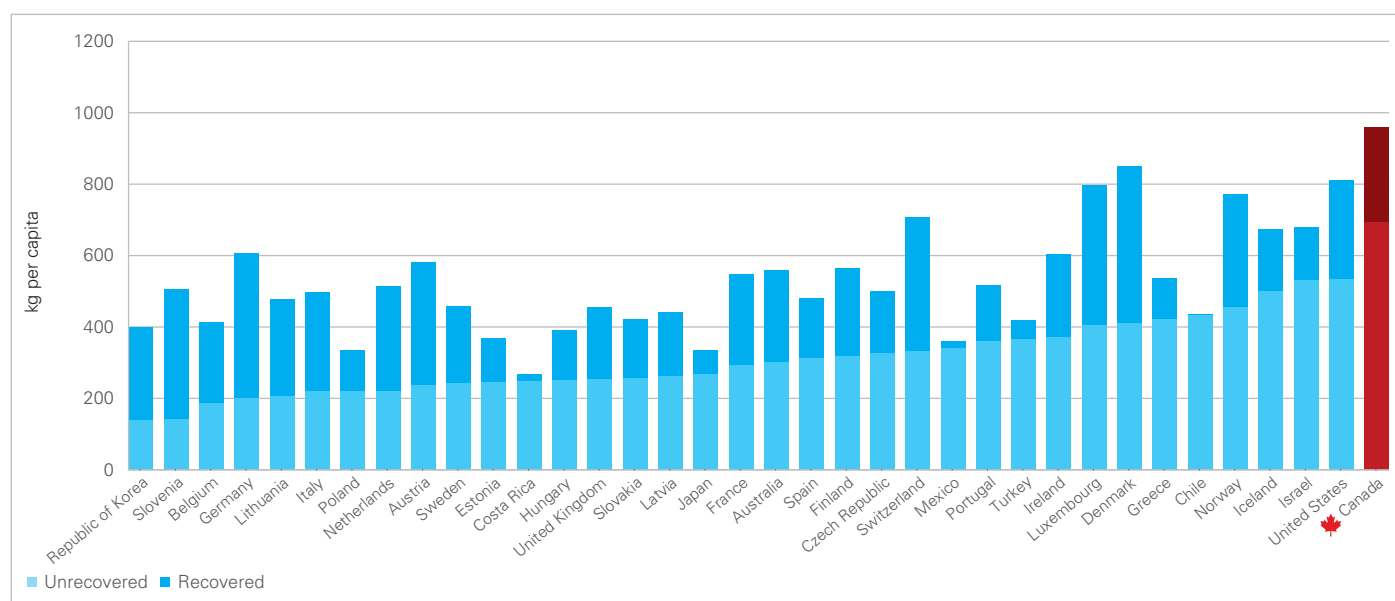
Worse than country average

(322.9 kg per person per year)

Globally, humans generate a wide variety of waste, including food, plastic and electronics. The total ranges from around 336 kg of waste per person per year in Japan to 960 kg in

Canada. Across rich countries, waste production increased from an average of 484 kg per person in 2010 to 529 kg per person in 2019. The ratio of recovered waste also varies. Slovenia has the highest ratio, recovering 72 per cent of total waste. Although Chile recovers very little waste, it still generates less unrecovered waste per capita than Norway, Iceland, Israel or the U.S. Canada has one of the worst ratios, recovering less than 30 per cent of total waste generated. Most other countries also outperform Canada on the diversion of waste, including Republic of Korea (65 per cent), the Netherlands (57 per cent), Australia (45 per cent), the U.K. (44 per cent), Norway (41 per cent) and the U.S. (35 per cent). About 40 per cent of waste in Canada originates from residential sources and 60 per cent from non-

¹²⁰ Government of Canada. (2016). *Canada's Water Use in a Global Context*. Retrieved from: <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/water-use-global-context.html>.

Figure 16: Municipal solid waste produced (kg/person/yr) (2019)

Note: Chart refers to 2019, except Canada, Chile, Colombia, Ireland, Japan, Republic of Korea, New Zealand, United States (2018); Australia, Iceland (2017); Mexico (2012). Figures for Canada are own calculations, based on 'amount designated for recovery operations' and 'disposal operations' from OECD, and population statistics from Statistics Canada.

Source: OECD stats.

residential sources, led by agricultural and industrial waste generation.

Municipal solid waste (MSW) includes food and other waste discarded by households and businesses and is measured in this Report Card because internationally comparable data are widely available. Among types of waste, food waste stands out for at least three reasons. First, enough food is produced globally to deliver a sufficient quantity and quality of food for everyone; however, it is not distributed equitably, with some countries generating substantial amounts of food waste, while people face food insecurity within their own countries and food scarcity in others. Globally, food waste totals 931 million tonnes each year – almost a fifth of all food that is produced. An average person living in a rich country

wastes about 118 kg of food each year. Second, food waste is a key contributor to climate change. If food waste were a country, it would be the third-largest source of greenhouse gas emissions.¹²¹ Third, wasted food contributes to the unnecessary loss of natural environments and biodiversity, as well as to excess pollution.

The richest countries tend to generate the most MSW, but there are variations. Canada is among the highest per capita generators of MSW in the world, throwing out about 695.4 kg per person per year, ranking last among 36 rich countries (Figure 16). This contrasts to 141.9 kg in the Republic of Korea and an average of 322.9 kg per person per year among rich countries. Canada performs better in its rate of MSW recovery, ranking 12th at 265.3 kg

per person per year, which is better than the rich-country average of 219.4 kg per person per year. On the other hand, Denmark managed to recover 438.0 kg per person per year. Effective waste management is an essential prerequisite for a healthy environment. But waste prevention is the preferred option in the waste hierarchy, followed by reuse, recycling and composting, energy recovery and, finally, disposal.

121 United Nations Environment Programme (2021). Food Waste Index Report 2021. Nairobi: UNEP.

Electronic waste

ELECTRONIC WASTE

Canada ranks:

32nd

(20.2 kg per person per year)

Top performer:

Colombia

(6.3 kg per person per year)

Worse than country average

(16.8 kg per person per year)

Although electronic waste (e-waste) comprises only about 2 per cent of waste, it constitutes up to 70 per cent of hazardous waste.¹²² In 2019, the global e-waste stream was estimated to be 53.6 million tonnes, constituting the fastest-growing form of waste.¹²³ E-waste is expected to almost double in weight over the next 16 years.¹²⁴ Factors driving e-waste growth include rapid changes in technology, changes in media and ever-shortening product life-spans, including planned obsolescence.^{125 126} As well, population growth and the economic transition of middle-income countries come with more consumption and electronic

waste. In high-income countries, households have an average of 52 electronic devices and appliances. In middle-income countries, the average is just under ten devices and appliances, while in low-income countries, the average is less than two. As economic activity intensifies in more countries, so too will the generation of e-waste.

Among rich countries, the volume of e-waste follows a pattern where the most industrially advanced and wealthiest nations generate disproportionately more (Figure 17). Canada ranks near the bottom for e-waste volume, at 32nd of 43 rich countries. Canadians toss 20.2 kg of e-waste per person per year. This is far more than the 6.3 kg per person per year wasted by Colombians, and more than the average 16.8 kg per person per year among Report Card countries.

Most global e-waste – an estimated 40 million tonnes or more – is discarded in landfill, burned or illegally traded on a global basis.¹²⁷ Less than a fifth is recycled. The Global E-Waste Monitor reports that the global collection and

recycling of e-waste has grown at a rate of 0.04 million tonnes per year since 2014. However, the total amount of e-waste generated during the same time period grew at an annual rate of approximately 2 million tonnes.¹²⁸ With the high expense of recycling, an export industry has emerged, shipping toxic, unwanted e-waste to countries like Ghana, India, Nigeria and Pakistan. Rich countries are essentially globalizing waste. Despite ratifying the Basel Convention to control and reduce international waste shipments, Canada, like many affluent nations, exports a large volume of its e-waste to other countries. Children work in, live and go to school near these toxic dumping sites. With potential exposure to hazardous elements like cadmium, lead and mercury, these children face the heightened risk of adverse birth outcomes, reduced neurodevelopment and learning,¹²⁹ and damage to their DNA¹³⁰ and immune systems.¹³¹

Most countries approach e-waste with a mix of policies, and most incorporate variations of extended producer responsibility – typically a small consumer charge applied to

122 Holgate, P. (2019). *How Do We Tackle the Fastest Growing Waste Stream on the Planet?* World Economic Forum. Geneva.

123 World Economic Forum. (2019). *A New Circular Vision for Electronics: Time for a Global Reboot*. United Nations E-Waste Coalition, Geneva.

124 Forti, V., Balde, C.P., Kuehr, R. and Bel, G. (2020). *The Global E-waste Monitor 2020: Quantities, flows and the circular economy potential*. Bonn, Geneva and Rotterdam: United Nations University/United Nations Institute for Training and Research, International Telecommunication Union, and International Solid Waste Association, p. 55.

125 Baldé, C. P. et al. (2015). *The Global E-Waste Monitor*, United Nations University, IAS – SCYCLE, Bonn, Germany.

126 Slade, G. (2006). *Made to Break: Technology and Obsolescence in America*. Harvard University Press, Cambridge, MA.

127 Baldé, C. P. et al. (2017). *The Global E-Waste Monitor*. United Nations University, International Telecommunication Union and International Solid Waste Association.

128 Forti, V. et al. (2020). *The Global E-Waste Monitor 2020: Quantities, Flows and the Circular Economy Potential*. United Nations University /United Nations Institute for Training and Research – co-hosted SCYCLE Programme, International Telecommunication Union & International Solid Waste Association, Bonn/Geneva/Rotterdam.

129 Zhang, B., et al. (2017). Elevated lead levels from e-waste exposure are linked to decreased olfactory memory in children. *Environmental Pollution*, 231, 1112–1121.

130 Xu, L., et al. (2020). Hearing loss risk and DNA methylation signatures in preschool children following lead and cadmium exposure from an electronic waste recycling area. *Chemosphere*, 246, 125829.

131 Zhang, Y. et al. (2016). Elevated lead levels and adverse effects on natural killer cells in children from an electronic waste recycling area. *Environmental Pollution*, 213, 143–150.

subsidize collection and recycling.¹³² In Canada, e-waste responsibility is the constitutional jurisdiction of provinces, and e-waste management is governed by a varied landscape of provincial legislation and regulations. In 2004, the Canadian Council of Ministers of the Environment endorsed a National Model for E-waste Stewardship and the diversion of e-waste is increasing. However, the consumption of electronic devices is accelerating at a greater rate, so the total amount of e-waste is escalating. Environmental progress is faltering, taking two steps back with every step forward.

CO₂ emissions

CO₂ EMISSIONS

Canada ranks:

41st

(15.4 tonnes per person per year)

Top performer:

Colombia

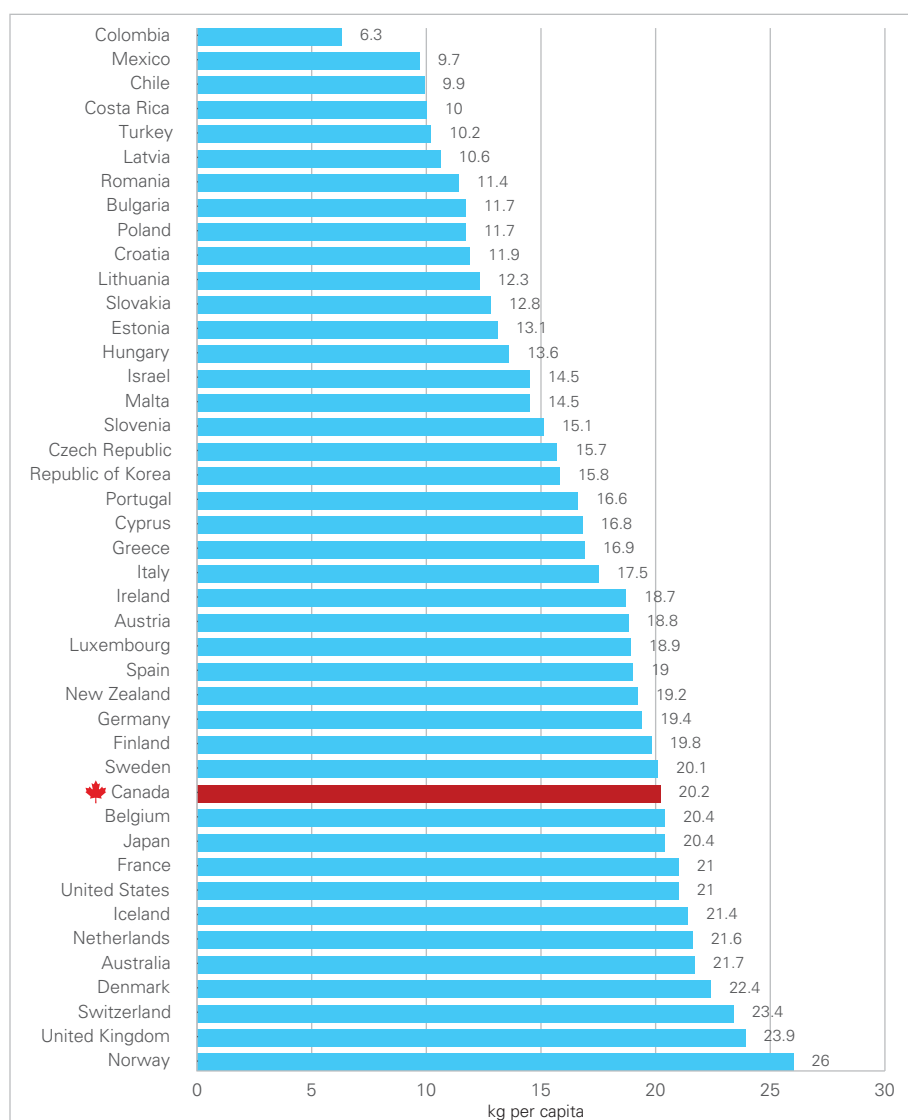
(2.0 tonnes per person per year)

Worse than country average

(9.1 tonnes per person per year)

As a greenhouse gas, carbon dioxide (CO₂) is considered to be a key contributor to climate change. Climate change is already visiting devastating impacts on terrestrial ecosystems, hydrology and water resources, oceans and coastal zones, seasonal snow cover, ice and permafrost, and human settlements. It is driving ongoing environmental change, as well as extreme weather events and

Figure 17: Electronic waste produced (kg/person/yr) (2019)



Source: Forti et al. (2021).

disasters (e.g., floods, heat domes, hurricanes and wildfires) and disease transmission.

Children are at heightened risk in sudden-onset disasters resulting from climate change. Children’s physical

and mental health, education and many other aspects of life can be affected.¹³³ For instance, extreme weather events, such as heat domes and wildfires, pose direct dangers to physical health. Children affected by disasters are more likely to develop

132 Baldé, C. P., et al. (2017).

133 Gibbs, L., Nursey, J., Cook, J., Ireton, G., Alkemade, N., Roberts, M., Gallagher, H. C., Bryant, R., Block, K. and Molyneaux, R. (2019). Delayed disaster impacts on academic performance of primary school children. *Child Development*, 90(4), 1402–1412, <<https://doi.org/10.1111/cdev.13200>>, accessed 10 February 2022.

post-traumatic stress disorder, anxiety and depression than their peers.^{134 135 136}

¹³⁷ If such events trigger displacement, children often experience mental distress, school disruption and poorer academic performance, weakened social connections and protection, food insecurity, disruptions to breastfeeding, loss of access to services and other impacts. For example, prenatal exposure to Hurricane Katrina was associated with an increased risk of preterm births and low birthweight.¹³⁸ Another study in the U.S. found that wildfires had negative psychological effects on children with disabilities in California in 2017.¹³⁹

The critical goal is to prevent a rise in the global mean temperature of more than 1.5 degrees Celsius, compared to the pre-industrial mean, by 2050. With a rise in the global temperature of 2 degrees or more, three times as many people would be exposed to extreme heat, sea levels would rise even higher, twice as many plants and vertebrate species would become extinct, fisheries catches would

decline by half, and crop yields would fall even more in some regions.¹⁴⁰

Measuring and comparing CO₂ emissions can be done in a variety of ways. For this Report Card, we compare consumption-based emissions. Consumption-based emissions arise from the consumption of goods and services in a country regardless of where they are produced. Unlike production-based emission measures that capture emissions created in a country, a consumption-based measurement accounts for the emissions of imported products.¹⁴¹ While a country may purchase more products abroad to improve its domestic emission rate, its overall contribution to global emissions may persist or climb, which makes the consumption-based indicator valuable. Ultimately, production-based and consumption-based measures create a global emissions balance sheet.

A key milestone in international commitments to curb climate change

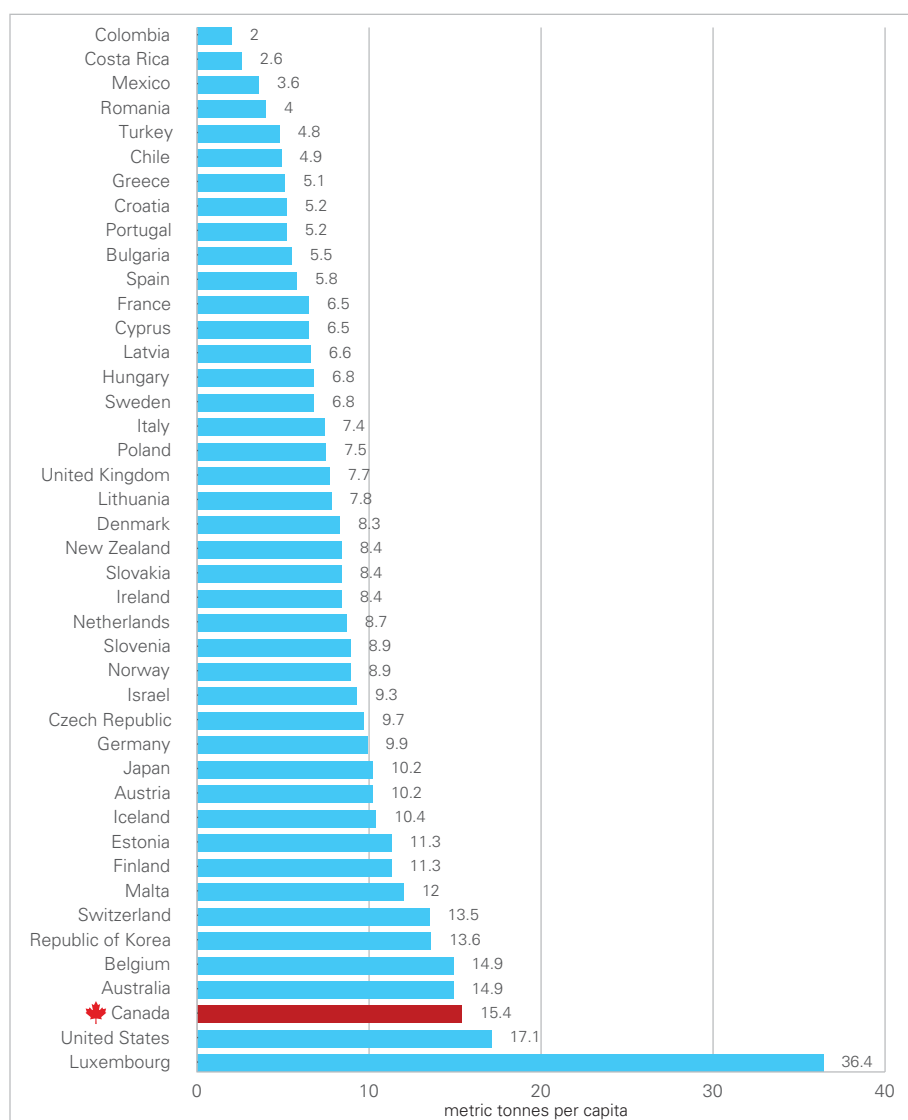
was the adoption of the Kyoto Protocol in 1997. This agreement committed industrialized countries and economies in transition to limit and reduce greenhouse emissions. Countries have very different historical CO₂ emissions records and are moving at different speeds toward a more sustainable future. The League Table measuring the level of per capita CO₂ emissions following adoption of the Kyoto Protocol shows that countries such as Canada, the United States and Australia fare relatively poorly (Figure 18). Canada has committed to reducing its greenhouse gas emissions by 40 per cent below 2005 levels by 2030 (from 730 megatonnes in 2019 to 443) and achieving net-zero greenhouse gas emissions by 2050. This is a significant commitment, since Canada's emissions per capita are currently the third highest, ranking 41st of 43 rich countries. The emission rates vary widely, from 2.0 tonnes per person per year in Colombia to 15.4 in Canada. The rich-country average is 9.1 tonnes per capita per year.

- 134 Orengo-Aguayo, R., Stewart, R. W., de Arellano, M. A., Suárez-Kindy, J. L. and Young, J. (2019). Disaster exposure and mental health among Puerto Rican youths after Hurricane Maria. *JAMA Network Open*, 2(4), e192619–e192619, <<https://doi.org/10.1001/jamanetworkopen.2019.2619>>, accessed 10 February 2022.
- 135 Xiong, X. U., Harville, E. W., Buekens, P., Mattison, D. R., Elkind-Hirsch, K. and Pridjian, G. (2008). Exposure to Hurricane Katrina, post-traumatic stress disorder and birth outcomes. *The American Journal of the Medical Sciences*, 336(2), 111–115, <<https://doi.org/10.1097/MAJ.0b013e318180f21c>>, accessed 10 February 2022.
- 136 Lochman, J. E., Vernberg, E., Powell, N. P., Boxmeyer, C. L., Jarrett, M., McDonald, K., Qu, L., Hendrickson, M. and Kassing, F. (2017). Pre–post tornado effects on aggressive children's psychological and behavioral adjustment through one-year postdisaster. *Journal of Clinical Child & Adolescent Psychology*, 46(1), 136–149, <<https://doi.org/10.1080/15374416.2016.1228460>>, accessed 10 February 2022.
- 137 Usami, M., Iwadare, Y., Watanabe, K., Kodaira, M., Ushijima, H., Tanaka, T. and Saito, K. (2016). Long-term fluctuations in traumatic symptoms of high school girls who survived from the 2011 Japan tsunami: Series of questionnaire-based cross-sectional surveys. *Child Psychiatry & Human Development*, 47(6), 1002–1008, <<https://doi.org/10.1007/s10578-016-0631-x>>, accessed 10 February 2022.
- 138 Xiong et al. (2008); Lai, B. S., Beaulieu, B., Ogokeh, C. E., Self-Brown, S. and Kelley, M. L. (2015). Mother and child reports of hurricane related stressors: Data from a sample of families exposed to Hurricane Katrina. *Child & Youth Care Forum*, 44, 549–565, <<https://doi.org/10.1007/s10566-014-9289-3>>, accessed 10 February 2022.
- 139 Ducy, E. M., & Stough, L. M. (2021). Psychological effects of the 2017 California wildfires on children and youth with disabilities. *Research in developmental disabilities*, 114, 103981.
- 140 Allen, M. R. et al. (2018). Framing and context. In: *Global Warming of 1.5 °C. An IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. The International Panel on Climate Change, Geneva. Retrieved from: <https://www.ipcc.ch/sr15/>.
- 141 Environment and Climate Change Canada. (2020). *Canadian Environmental Sustainability Indicators: Carbon Dioxide Emissions from a Consumption Perspective*. Ottawa, ON.

Canada has managed to hold carbon emissions steady since 2005, but now has only eight years to meet its pledge of a 40 per cent reduction by 2030. Canada's rate of progress is slower than many rich countries'.¹⁴² From 1990 to 2019, Canada reduced its emissions by 13 per cent. Only the U.S. had had a slower pace of change. In contrast, Denmark (31 per cent), Finland (30 per cent), the U.K. (34 per cent), Sweden (32 per cent) and Germany (34 per cent) all achieved more substantial improvements in their consumption-based CO₂ emissions.

Almost 25 years after the International Panel on Climate Change (IPCC) released its first report signalling the dire need to stem the anthropogenic release of greenhouse gases like CO₂, Canada is strengthening its climate policies. In 2018, the *Greenhouse Gas Pollution Pricing Act* introduced a tax on CO₂ emissions in Canada. This federal "carbon tax" was not the first. British Columbia pioneered a carbon tax in 2008. In 2020, Canada was one of 59 national and sub-national jurisdictions implementing a carbon tax or emission trading system. More than half of these (29) involve some form of carbon tax, addressing 21.7 per cent of total greenhouse gases.¹⁴³ A critical component of carbon tax effectiveness is the level of pricing. The accepted global benchmark price is US\$40–80 per tonne by 2020 and US\$50–100 per tonne by 2030.¹⁴⁴ Currently, fewer than 4 per cent of

Figure 18: Consumption-based CO₂ emissions (t/person/year) (2019)



Source: Global Carbon Budget database <https://www.globalcarbonproject.org/carbonbudget/index.htm>. Data for Iceland refers to 2016 and comes from <www.sciencedirect.com/science/article/abs/pii/S0959652617318267>

carbon schemes have achieved the 2020 price level.¹⁴⁵ The highest price is Sweden's at US\$137. In Canada, the price was US\$20 in 2019, reaching US\$50 in 2022. The federal and

provincial governments reached an agreement to raise the carbon price to within the benchmark range at US\$90 by 2030.¹⁴⁶ The 2021 *Canadian Net-Zero Emissions Accountability Act*

142 Global Change Data Lab. (n.d.) Production vs. consumption-based CO₂ emissions per capita. *Our World in Data*. Retrieved from: <https://ourworldindata.org/grapher/prod-cons-co2-per-capita?country=~CAN>

143 World Bank. (2021). *State and Trends of Carbon Pricing 2021*. World Bank, Washington, DC.

144 World Bank. (2019). *State and Trends of Carbon Pricing 2019*. World Bank, Washington, DC.

145 World Bank. (2021). *State and Trends of Carbon Pricing 2021*. World Bank, Washington, DC.

146 Government of Canada. (2021). *Update to the Pan-Canadian Approach to Carbon Pollution Pricing 2023-2030*. Retrieved from: <https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/carbon-pollution-pricing-federal-benchmark-information/federal-benchmark-2023-2030.html>.

Figure 19: Percentage of energy from renewable sources

Overall rank	Country	%
1	Iceland	90.10
2	Norway	54.60
3	New Zealand	41.80
4	Latvia	41.40
5	Sweden	40.80
6	Denmark	36.90
7	Finland	34.10
8	Austria	30.20
9	Croatia	25.50
10	Chile	24.30
11	Estonia	23.20
12	Portugal	23.20
13	Switzerland	22.50
14	Lithuania	20.40
15	Italy	18.20
16	Romania	18.00
17	Slovenia	16.70
 18	Canada	16.40
19	Spain	14.70
20	Germany	14.60
21	Bulgaria	13.10
22	Greece	12.80
23	United Kingdom	12.50
24	Ireland	11.10
25	Czech Republic	10.70
26	France	10.70
27	Hungary	10.30
28	Slovakia	9.90
29	Poland	9.30
30	United States	7.90
31	Belgium	7.80
32	Netherlands	7.20
33	Australia	7.10
34	Japan	6.20
35	Malta	5.20
36	Republic of Korea	2.40

Notes: 2018 BGR, HRV, CYP, MLT and ROU

Source: The percentage contribution of renewables to total primary energy supply is sourced from the World Bank Databank.

provides an accountability framework toward the achievement of net-zero greenhouse gas emissions by 2050.

Looking at another effort that countries are taking to curb climate change, Figure 19 charts the percentage of domestic energy supply from renewable sources for each country. Iceland is clearly an outlier, with 90 per cent renewable energy in its total energy supply. Canada performs

relatively well in renewable energy, at 18th among 39 countries, with more than 16 per cent of Canada's total energy supply from renewable sources. As for water stress, some of this is a natural bonus given Canada's geography. A strong commitment to renewable energy signals a commitment to help ensure that future generations of children have a sustainable environment.

Spotlight: Climate change is injustice for the North and Indigenous Peoples

As Canada's climate warms more than twice as fast as the global rate, and northern Canada at about three times the global rate, climate change exposure and consequence is amplified for First Nations, Inuit and Métis communities. Many are in environmentally sensitive regions. These communities face challenges from the ongoing loss of traditional plants and animals, emergent infectious diseases, water insecurity and disruption of winter roads made of snow and ice to extreme weather events including flooding and wildfires, and the impacts on Indigenous peoples include poorer health, food insecurity, loss of culture and population displacement.¹⁴⁷ A recent study concluded that 81 per cent of the 985 Indigenous land reserves in Canada had some flood exposure that affected properties.¹⁴⁸ Predominantly Indigenous communities accounted for 48 per cent of the communities evacuated due to wildfires between 1980 and 2021. Despite contributing the least to climate change, Indigenous and northern peoples are among the most exposed to its impact. In the words of one Indigenous person: "My fear is losing everything."

Still fighting the legacy of colonialism, Indigenous populations face heightened exposure to climate change along with strained adaptive capacity due to extreme poverty, insufficient funding and a lack of political power. Recently, the Council of Canadian Academies (working for Public Safety Canada) reaffirmed the urgency of support for Indigenous governance, knowledge and practices that can mitigate climate-driven events and ensure community-led disaster preparedness and resilience.¹⁴⁹

147 Council of Canadian Academies. (2022). *Building a Resilient Canada: The Expert Panel on Disaster Resilience in a Changing Climate*. Council of Canadian Academies, Ottawa, ON.

148 Chakraborty, L. et al. (2021). Leveraging hazard, exposure, and social vulnerability data to assess flood risk to Indigenous communities in Canada. *International Journal of Disaster Risk Science*, 12, 821–838.

149 Council of Canadian Academies. (2022). *Building a Resilient Canada: The Expert Panel on Disaster Resilience in a Changing Climate*. Council of Canadian Academies, Ottawa, ON.

Government expenditure on environmental protection

GOVERNMENT EXPENDITURE ON ENVIRONMENTAL PROTECTION

Canada ranks:

15th (0.7% GDP)

Top performer:

Malta (1.5% GDP)

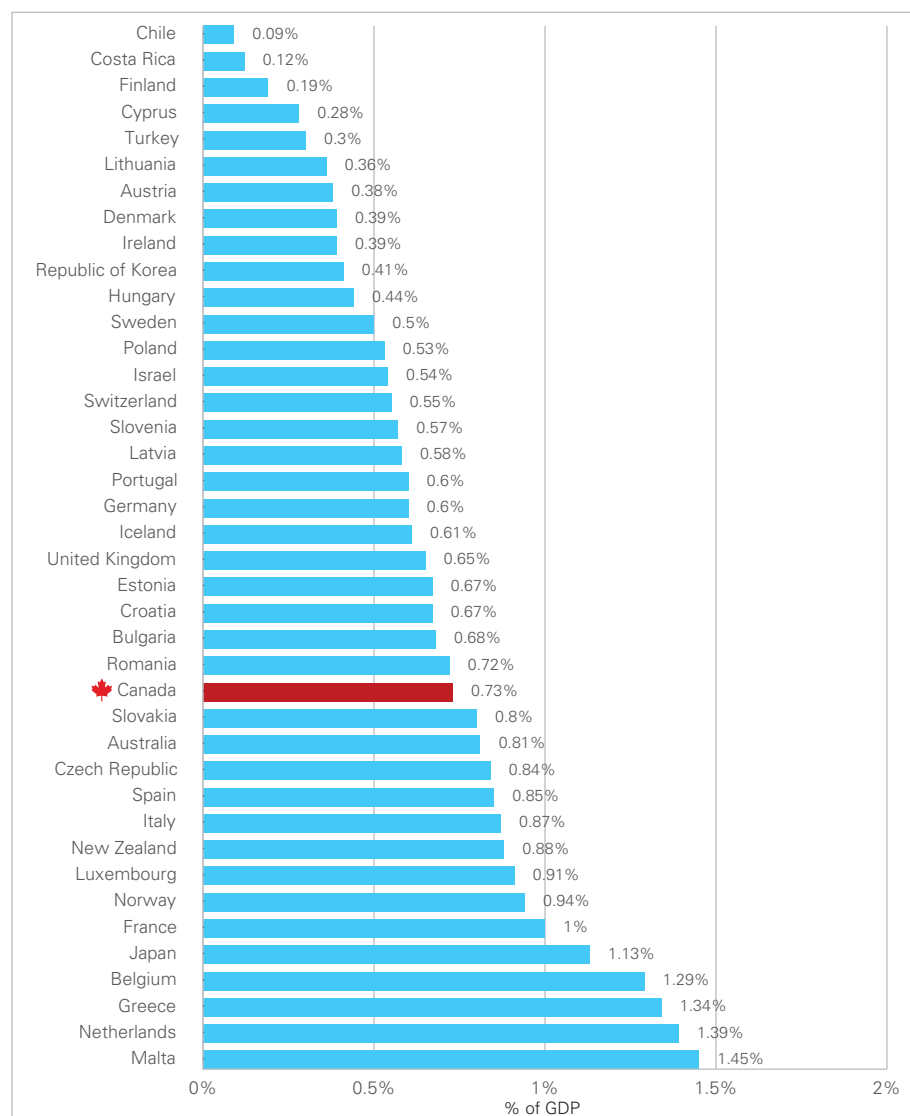
Same as country average

(0.7% GDP)

Ensuring children's rights to a healthy environment requires financial commitment from governments. The International Monetary Fund collects data on how much governments spend on environmental protection as a share of their national wealth generation (Gross Domestic Product; GDP). Environmental protection expenditures include pollution abatement, biodiversity protection, waste management, research and development, and other activities. Government expenditure on protecting the environment indicates how committed countries are to ensuring a healthy, safe and sustainable world for all children, today and tomorrow. Failure to spend today off-sets the higher costs of environmental damage to future generations.

Overall, a relatively small proportion of rich countries' economic resources are dedicated to these kinds of environmental protection, and levels of spending have little relationship with countries' levels of economic wealth or with their environmental impact. Some of the wealthiest, highest-consuming and most wasteful countries spend

Figure 20: Government expenditure on environmental protection (% of GDP) (2019)



Note: Data not available for Colombia, Mexico and the United States. Data for 2019 or the latest available (2018 for Chile and Hungary, 2010 for the Republic of Korea)

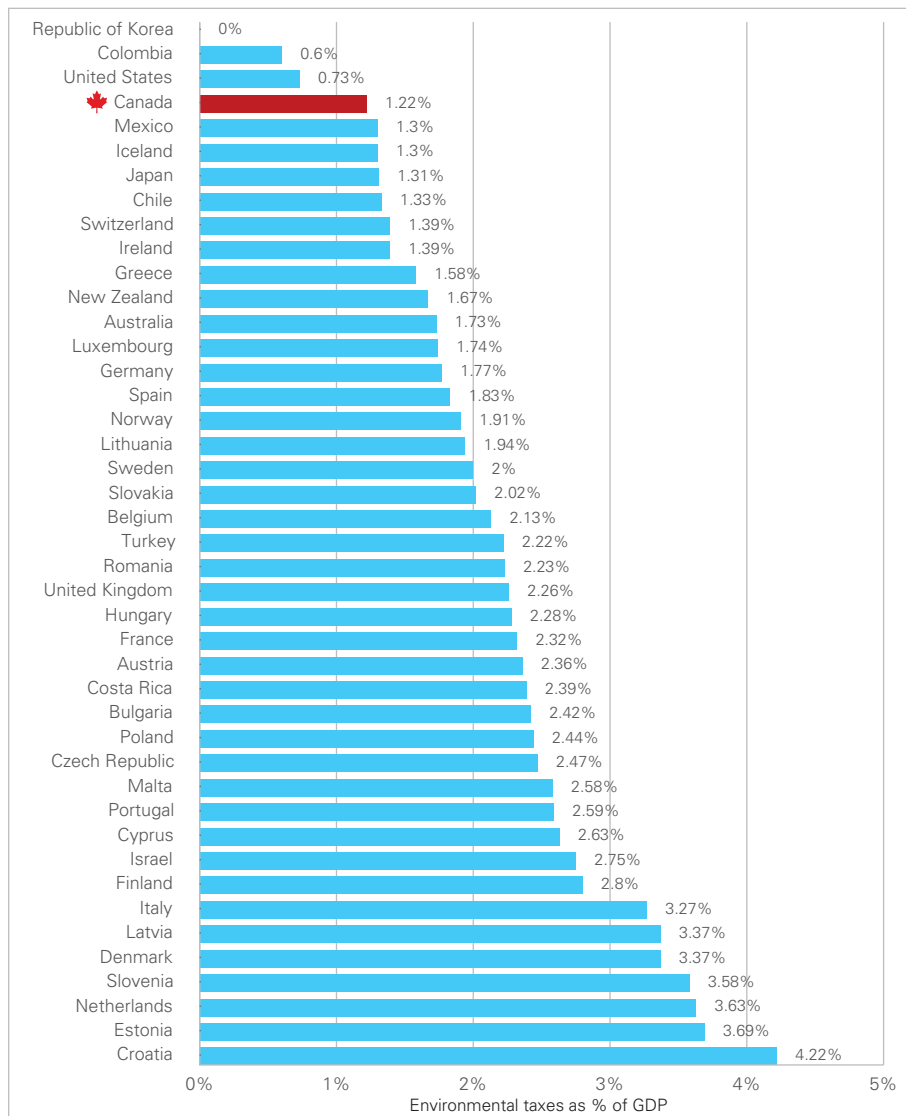
Source: IMF Climate Data <climatedata.imf.org/datasets/d22a6decd9b147fd9040f793082b219b_0/about>, accessed 16 February 2022.

less per capita on environmental protection than countries that consume and waste less (Figure 20). High-income countries vary in their spending, but none is doing enough.

Canada spends 0.7 per cent of GDP on environmental protection, equivalent to the rich-country average. Canada ranks 15th of 40 rich countries, but

given its extremely low rankings in consumption and waste, arguably Canada is not meeting the "polluter pays" principle. It is a wealthy country but a rather poor global citizen. Malta (1.5 per cent) and Netherlands (1.4 per cent) spend twice as much of their GDP on environmental protection.

Figure 21: Environmental taxes (% of GDP) (2019)



Source: <https://climatedata.imf.org/pages/go-indicators>

Direct government spending is not the only marker of environmental protection. Some of the most important environmental gains – such as prohibiting unleaded gasoline – have been achieved through environmental regulation and do not show up on a public account. Many of the top-performing countries in the core UNICEF League Table spend below

the rich-country average. Their record suggests they rely more on regulation to drive environmental protection. For example, Denmark, a country that performs well across dimensions of children’s environmental well-being, is at the bottom of government spending rankings, with only 0.2 per cent of GDP spent on environmental protection. Some of these countries

levy higher environmental taxes as a percentage of GDP, more aligned to the principle of “polluter pays.” In environmental taxes, Canadians pay 1.2 per cent of GDP, ranking at the bottom among rich countries (see Figure 21). On the other side of their balance sheet, Canadian consumers received 38 per cent of Canada’s fossil fuel subsidies in 2020, according to the OECD.¹⁵⁰

Despite spending on environmental protection, the cost of climate change is mounting. A generation ago, in 1983, that cost was \$0.4 billion. Now, climate change costs Canadians close to \$2 billion annually.¹⁵¹ This price tag includes the cost of wildfires, pest damage and other impacts, but does not fully account for economic, social and cultural losses or opportunity costs – for instance, paying for environmental damage instead of reducing child poverty. By 2080, the annual cost is projected to be \$459 billion. Canada’s investment in environmental protection is not sufficient to offset the rising price tag of environmental damage that the children of today and future generations will have to pay.

150 IEA (2021), “World energy statistics”, IEA World Energy Statistics and Balances (database). Retrieved from: https://www.oecd-ilibrary.org/sites/5a3efe65-en/1/3/10/index.html?itemId=/content/publication/5a3efe65-en&_csp_=2ffa7a733148fec42dccc926d7619e1c&itemIGO=oecd&itemContentType=book.

151 Intergovernmental Panel on Climate Change. (2022). *Climate Change 2022: Impacts, Adaptations and Vulnerability*. Sixth Assessment Report.

CAPITAL

Children's environmental capital

CHILDREN'S AWARENESS OF ENVIRONMENTAL CONDITIONS

Canada ranks:

2nd (87%)

Top performer:

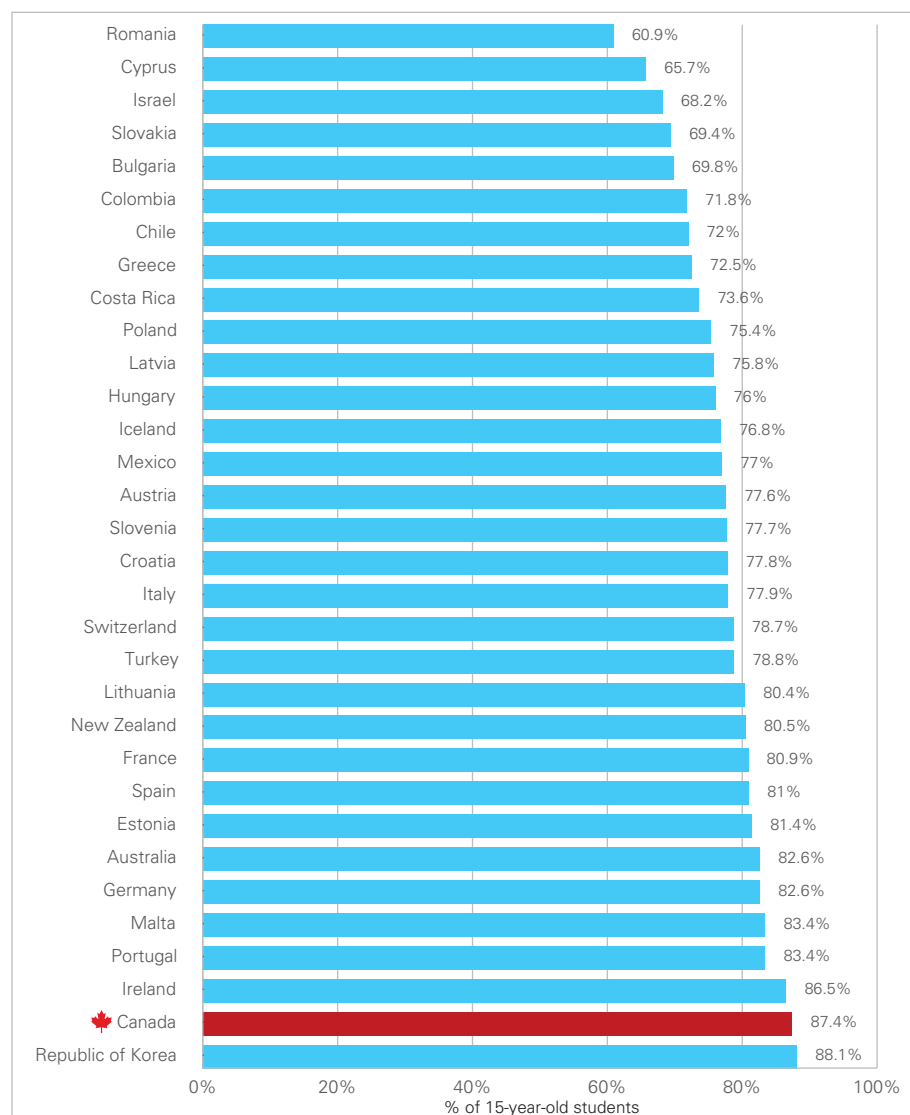
Republic of Korea (88%)

Better than country average

(78%)

Policies that protect the environment extend far beyond limiting pollution and greenhouse gases. Every policy domain, from health to social protection to education, has a role to play. Research on children's environmental education is still at an early stage.¹⁵² Many children still do not receive a formal education on global issues such as climate change, which is reflected in students' own assessments. On average, 78 per cent of young people in rich countries report that they are aware of or very familiar with climate change and global warming (Figure 22). Canada is a leader in providing environmental education, with 87 per cent of young people reporting knowledge, ranking second only to the Republic of Korea (88 per cent). Unfortunately, far fewer young people know their human rights, including the right to a healthy environment and to participate in decisions affecting them.

Figure 22: Awareness of climate change and global warming among students age 15 (2018)



Note: Data not available for Belgium, Czechia, Denmark, Finland, Japan, Luxembourg, Netherlands, Norway, Sweden, United Kingdom (apart from Scotland) and United States.

Source: PISA 2018.

Canadian research recommends that environmental curricula be further developed to take a trauma-informed approach that helps build resilience. Greater awareness of environmental issues can come with the risk of greater anxiety, without outlets for

influence and action. Too often, avenues for young people's action are limited to measures of individual responsibility, like garbage clean-ups and recycling. They also donate almost twice as much of their total charitable contributions to environmental

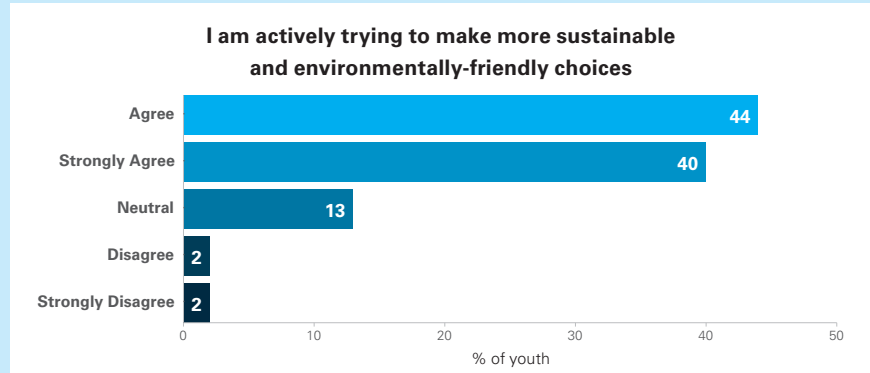
152 Rousell, D. and Cutter-Mackenzie-Knowles, A. (2020). A systematic review of climate change education: Giving children and young people a 'voice' and a 'hand' in redressing climate change. *Children's Geographies*, 18(2), 191–208, <<https://doi.org/10.1080/14733285.2019.1614532>>, accessed 11 February 2022.

organizations than do adults. While these are important, they are insufficient and neither reflect the principle of “polluter pays” nor the rights of young people to participate meaningfully in decisions affecting them.

Over the past few years, young people in Canada and around the world have demonstrated a growing desire – and ability – to influence debates about the environment. They are protesting in the streets and pursuing environmental justice. In Canada, young people have defended the federal carbon tax in court and launched a court challenge to lower the federal voting age. Today’s generation of children is growing up in the shadow of the mounting crisis of climate change and environmental degradation. They will have to live with and pay for the consequences of current actions and



U-REPORT: A strong majority of U-Reporters are taking actions in their own lives to address climate change. Three quarters are taking action daily or weekly to improve the environment. Almost eight in ten (79 per cent) are actively trying to make more sustainable and environmentally friendly choices.



tackle the environmental challenges that lie ahead. It is imperative that they have the opportunity to influence decisions today, not only as tomorrow’s adults. Evidence from

environmental education shows that young people are informed. It’s time to spend that knowledge capital and involve them in decisions.

Spotlight: Lower the voting age and raise the best interests of young people

In 2007, Austria passed legislation lowering the voting age to 16, a political action essentially transforming children from silenced citizens to full citizens. Austria was not the first country to allow 16 year olds to vote, but since then a number of jurisdictions have moved forward with similar legislation, including Scotland (2015), Malta (2018) and Wales (2019). More recently, the German coalition government has agreed to enact legislation enfranchising 16 year olds. Debates about lowering the voting age are alive in many more jurisdictions, including across Canada.

While the movement to empower younger citizens with the right to vote is not new and concern about climate policy is not the only motivation, climate change has become a catalyst for the movement in the wake of climate strike protests and other youth-led advocacy. From Germany, the Netherlands, Sweden, New Zealand, England and other rich countries, young people are calling out for full citizenship. Giving people a ballot typically gives them more influence on and recognition in public policies and investments.

In Canada, legislative efforts have been taken to enfranchise younger citizens. In 2005, a Liberal Member of Parliament (MP) introduced a private member’s bill to lower the voting age to 16, but the legislation was defeated at second reading. A New Democratic Party MP has moved forward a private member’s bill in the current Parliament, with the possibility of debate in 2022. A Canadian senator put forward draft legislation before and following the federal election in 2021. Legislative efforts have also occurred at provincial and local levels. Recently, a group of young Canadians filed an application with the Ontario Superior Court, presenting the legal argument that the Canada Elections Act is unconstitutional in denying them the right to vote. The Canadian Charter of Rights and Freedoms states in Section 3 that “every citizen of Canada” has the right to vote in an election for members of the House of Commons, and in Section 15 that “every individual is equal before and under the law.” Any discrimination in the right to vote must be justifiable. For now, Canadian youth must wait to see if the court agrees that they have the right to shape their own future through full citizenship.

Acting as if the future is now:

Policies for children’s environmental well-being

Children and youth bear a disproportionate accumulation of environmental risks. Exposure to pollution, loss of green space and climate change affect every aspect of their well-being. Almost every child in Canada is affected by one or more of these risks. No child in Canada should go without clean water or perish in road traffic. Canada’s policies and practices have improved some environmental conditions, such as reducing air and lead pollution, shifting to renewable energy sources and lifting many long-term boil water advisories in First Nations communities. But much more needs to be done to protect children’s air, water, land and climate and the constructed environment of housing, roads and communities.

Rich countries including Canada must take more responsibility for the world they give to children today and the world they leave for future generations.

Improving the environment for children will protect the planet

For example, reducing motorized traffic can protect children from injury and death as well as reduce air pollution and the carbon dioxide (CO₂) emissions that contribute to climate change. Because children’s exposure to environmental risks and impacts are substantially unequal, within and between countries, improving the environment for children’s well-being requires raising average standards and addressing the specific situations and challenges different children face to achieve greater environmental equality. All levels of government must enact policies that rectify these injustices and realize children’s environmental rights. Every policy domain, from health to social protection to education, has a role to play. For instance, lifting every child out of poverty and enacting the Spirit Bear Plan¹⁵³ for equitable access to public services for Indigenous children will help protect them from disproportionate exposure to environmental risk and harm.



153 Retrieved from: <https://fncaringsociety.com/spirit-bear-plan>

Protecting the planet will improve the environment for children

This Report Card points to the need for progress in a range of environmental policies that limit greenhouse gas emissions leading to climate change, eliminate exposure to pollution, ensure consistently clean drinking water and decent housing, and provide every child with safe mobility and access to quality green and public spaces in their communities. One of the most effective ways to make progress is to increase the child sensitivity of environmental policies and strategies.

Every government has specific lenses for decision-making, such as gender, privacy or small business, that signal the government's priorities. Every environmental policy should have a distinct lens on children and youth, giving them priority consideration and including child-specific targets and accountability. The mandate letter to Canada's Minister of Women, Gender Equality and Youth, the Honourable Marci Len, calls for new ways to "ensure the voices and needs of children are represented in our Government's agenda, working to make Canada the best place to grow up." Child and Youth Impact Assessment, which is used by many governments in rich countries, makes children and youth visible and builds consideration of their distinct needs and impacts into decision-making. It helps ensure the potential impacts on diverse young people and their environments are fully considered. Currently, only a few jurisdictions in Canada make children a priority. Every level of government in Canada should adopt Child Rights Impact Assessment for budgets, policies, legislation and other decisions. Child Rights Impact Assessment can be used together with other impact lenses, such as Environmental Impact Assessment, to consider the specific situation of diverse children and youth. There is no child-neutral decision.

There is a generational opportunity to improve the protection to children afforded by the 1999 *Canadian Environmental Protection Act* (CEPA). CEPA is Canada's cornerstone environmental law, but it has been more than two decades – a generation – since it was last updated. CEPA regulates toxic substances, greenhouse gases and other pollution, the treatment and disposal of chemicals and hazardous waste, and vehicle and engine emissions. Gaps in the current law fail to adequately protect Canadians from pollution and put public health at risk, with disproportionate impacts on



children. A bill to amend CEPA was introduced in the Senate in February 2022. Under the proposed provisions, the federal government must consider impacts on vulnerable populations in risk assessments. Vulnerable populations may include groups with elevated biological susceptibility, such as children, and groups with elevated exposure risks, such as Indigenous communities. CEPA should be strengthened by establishing children's unqualified right to a healthy environment and requiring consideration of children and their rights in risk assessments.

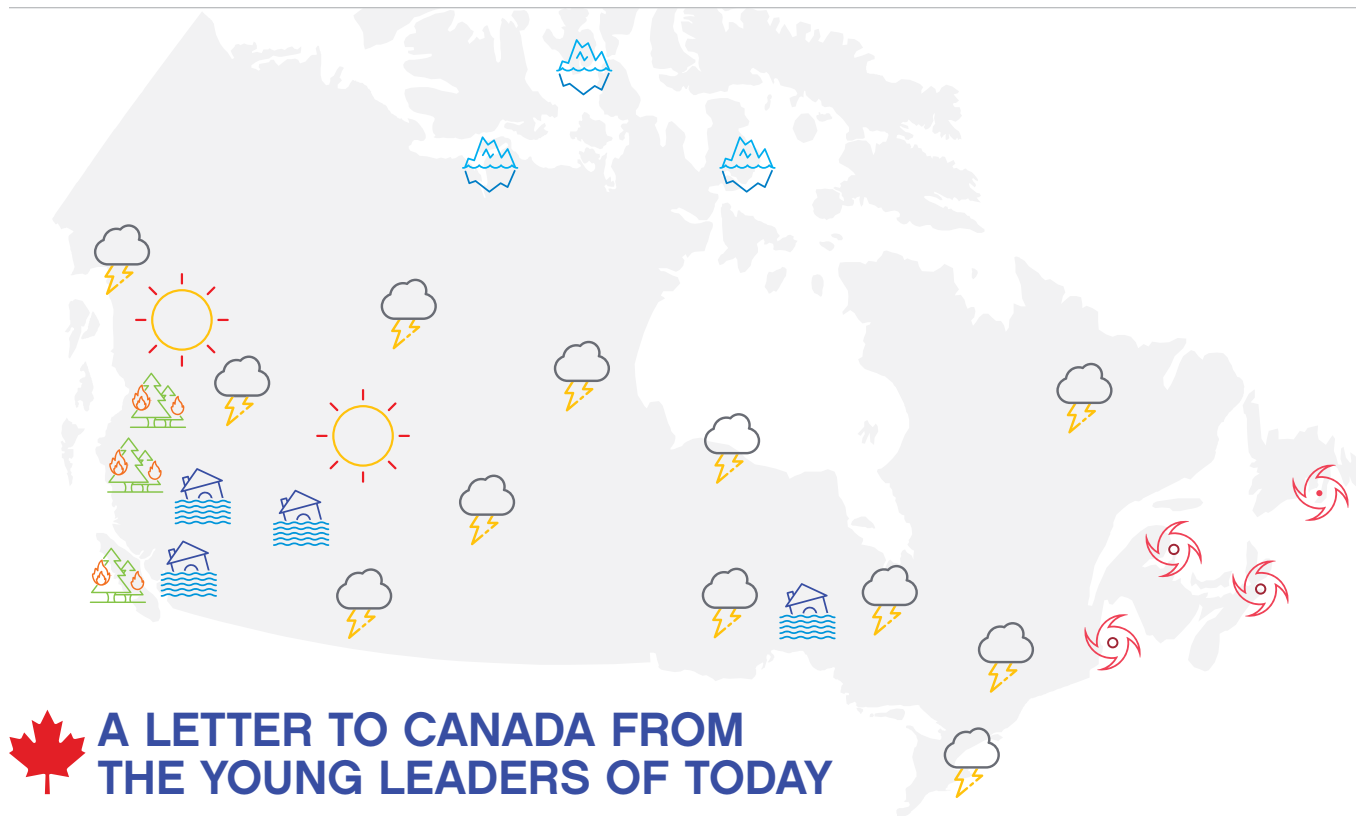
Another application for Child Rights Impact Assessment is the development or review of disaster risk reduction plans and disaster mitigation and emergency management strategies. Disaster risk-reduction strategies are formalized protocols of action that aim to reduce the exposure and vulnerability of people to environmental hazards. The importance of such strategies for sustainable development has been recognized in various international agreements, including the 2030 Agenda for Sustainable Development (Goal 11). Children and youth are given scant attention in Canada's plans and strategies, despite the often disproportionate and long-lasting impacts of disasters on them and the increasing likelihood they will experience more

frequent disasters. Every disaster reduction and climate adaptation plan should have a child and youth lens, as they have unique needs in climate adaptation, mitigation and recovery processes. Child-sensitive adaptation plans and resilience measures need to address the lifecourse from the prenatal period through adolescence and be multi-sectoral, covering the critical sectors that support children's survival and well-being: housing, water and sanitation, healthcare, nutrition, education, social policy and child protection. Support for Indigenous governance, knowledge and practices can mitigate climate-driven events and ensure community-led disaster preparedness and resilience.¹⁵⁴ Young people can play a role in developing plans, as well as in environmental monitoring and response.



U-REPORT: One third of U-Reporters say they have participated in a climate march in the past year, but none can vote for the policies they advocate.

¹⁵⁴ Council of Canadian Academies. (2022). *Building a Resilient Canada: The Expert Panel on Disaster Resilience in a Changing Climate*. Council of Canadian Academies, Ottawa, ON.



A LETTER TO CANADA FROM THE YOUNG LEADERS OF TODAY

We are already seeing the effects of climate change on people and the environment, and it will only worsen in years to come. Climate change disproportionately affects young people, while we are among the least responsible for its impacts. It also affects marginalized groups unequally, including Indigenous and racialized groups.

Climate change has had a huge impact on our mental health because we feel uncertain about how the world will look when we grow up, and there is only so much we can do on an individual level to make change. Furthermore, climate change has already degraded nature, leaving us worried. According to a U-Report Canada poll, nine in ten respondents say it is at least somewhat common for young people in Canada to experience eco-anxiety (April 2021).

Climate change impacts people around the world and even across the country differently, but every one of us is seeing and experiencing it. The UNICEF Canada Youth Advocacy Program brought together youth from different regions of so-called Canada, but many of our concerns and experiences are similar. In the North, we are seeing melting sea ice and thawing permafrost. On the West Coast, we are seeing heat waves, wildfires and floods. In the Prairies, we are seeing similar unpredictable weather. On the East Coast, we are seeing sea levels rising and hurricanes becoming more powerful. Weather patterns are changing all over the country, leaving many places ill-prepared and at risk. Climate change is here, and its impacts are devastating. But it's not too late to change things. Our planet is resilient, and with hard work and effort, we can make a genuine difference, especially with your support.

We are not giving in to apathy. We have all taken action on climate change. We have attended protests, worked with environmental organizations and written letters and media pieces. We planned an Earth Month campaign to get even more youth involved in climate action and support them along the way. We see climate change for what it is - an emergency. We know we will never achieve a perfect world, but as young people, we will never stop fighting for a better future. To the adult allies and decision-makers, we ask, are you with us?

Sincerely,

Ella Bradford, Karel Nelson, Katie Yu

Appendices

APPENDIX 1: Canadian indicators in UNICEF Report Card 17

Indicator	Canada rank	Canada value	Top value	Average value	Median value
AIR					
Ambient air pollution exposure	8	7.1 µg/m ³	5.6 µg/m ³	13.5 µg/m ³	12.7 µg/m ³
Child morbidity due to air pollution	29	0.644 DALY per 1,000	0.156 DALY per 1,000	0.847 DALY per 1,000	0.547 DALY per 1,000
TOXINS					
Child lead poisoning	11	1.6% > 5 µg/dL	1.0% > 5 µg/dL	4.0% > 5 µg/dL	2.8% > 5 µg/dL
Child pesticide pollution exposure	29	6.3%	0.0%	3.9%	4.2%
WATER					
Child morbidity due to unsafe water	24	0.135 DALY per 1,000	0.058 DALY per 1,000	0.600 DALY per 1,000	0.131 DALY per 1,000
HOUSING					
Overcrowded housing	1	0.7%	0.7%	10.6%	8.8%
Housing space for children	32	82%	93%	86%	89%
COMMUNITY					
Urban Green Space Index	15	4.96	5.73	4.46	4.74
Child road traffic casualties	23	119.9 DALY per 1,000	61.3 DALY per 1,000	134.2 DALY per 1,000	119.5 per 1,000
RESOURCE CONSUMPTION					
Ecological Consumption Footprint	40	5 Earths	1.2 Earths	3.2 Earths	2.9 Earths
Water stress	8	3.70%	0.40%	46.08%	16.40%
WASTE AND EMISSIONS					
Municipal waste	36	695.4 kg per capita/yr	141.9 kg per capita/yr	219.4 per capita/yr	303.1 kg per capita/yr
Electronic waste	32	20.2 kg per capita/yr	6.3 kg per capita/yr	16.8 kg per capita/yr	16.9 kg per capita/yr
CO₂ emissions	41	15.4 t per capita/yr	2.0 t per capita/yr	9.1 t per capita/yr	8.3 t per capita/yr
CAPITAL INVESTMENTS					
Government expenditure on environmental protection	15	0.7% GDP	1.5% GDP	0.7% GDP	0.6% GDP
Children's environmental capital (awareness of climate change)	2	87%	88%	78%	78%

NOTES:

- Indicators in bold text are included in the core League Table (Figure 1)
- Refer to UNICEF Report Card 17 for data reference years and sources
- Differences between countries may not be statistically significant

CANADA COMPARISON

BETTER THAN AVERAGE OR MEDIAN
SAME AS AVERAGE OR MEAN
WORSE THAN AVERAGE OR MEDIAN

CANADA RANKING

TOP THIRD
MIDDLE THIRD
BOTTOM THIRD

APPENDIX 2: International abbreviations (ISO) for countries and regions in the Report Card

Country name	2-letter ISO code	3-letter ISO code	Country name	2-letter ISO code	3-letter ISO code
Australia	AU	AUS	Japan	JP	JPN
Austria	AT	AUT	Latvia	LV	LVA
Belgium	BE	BEL	Lithuania	LT	LTU
Bulgaria	BG	BGR	Luxembourg	LU	LUX
Canada	CA	CAN	Malta	MT	MLT
Chile	CL	CHL	Mexico	MX	MEX
Colombia	CO	COL	Netherlands	NL	NLD
Costa Rica	CR	CRI	New Zealand	NZ	NZL
Croatia	HR	HRV	Norway	NO	NOR
Cyprus	CY	CYP	Poland	PL	POL
Czech Republic	CZ	CZE	Portugal	PT	PRT
Denmark	DK	DNK	Republic of Korea	KR	KOR
Estonia	EE	EST	Romania	RO	ROU
Finland	FI	FIN	Slovakia	SK	SVK
France	FR	FRA	Slovenia	SI	SVN
Germany	DE	DEU	Spain	ES	ESP
Greece	GR	GRC	Sweden	SE	SWE
Hungary	HU	HUN	Switzerland	CH	CHE
Iceland	IS	ISL	Turkey	TR	TUR
Ireland	IE	IRL	United Kingdom	GB	GBR
Israel	IL	ISR	United States	US	USA
Italy	IT	ITA			



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