

Saving lives, delivering value: economic and health co-benefits of a fair oil and gas emissions cap

Key points:

- A cap on oil and gas emissions will reduce air pollution in Canada.
- If the cap is in line with Canada's target for its entire economy – to reduce emissions by 45% below 2005 levels between 2030 and 2040 – this would avoid approximately 4,860 premature deaths in Canada. This reduced risk of mortality alone would provide an economic benefit of about CAD \$45.1 billion. Avoiding non-fatal health outcomes, such as respiratory diseases, would benefit people in Canada's quality of life and bring additional savings in terms of health care costs and reduction in days of work missed.
- The longer Canada waits to cut oil and gas emissions, the more people in Canada are at risk of premature deaths and the greater the costs to Canada's economy.
- The federal government has not yet fulfilled a decade-long promise to provide an independent study of the health impacts on communities near the oil sands.
- Canada should follow the U.S. example to assess the national health impacts and costs of air pollution linked to oil and gas production.

Oil and gas production is Canada's [largest source of greenhouse gas emissions](#), accounting for 28 per cent of total national emissions in 2021. Absolute emissions from Canada's oil and gas sector [grew by 5 per cent](#) between 2005–2020 while other sectors, such as electricity, decreased their emissions. To date, Canada has never met an emissions reduction target, in part due to rising oil and gas emissions.

A recent report from the Commissioner of the Environment and Sustainable Development confirmed Canada is [not on track](#) to meet its 2030 target – partly as a result of delays in key pieces of climate legislation including a federal [cap on oil and gas emissions](#).¹

A cap on oil and gas emissions would result in reduced overall air pollution in Canada. Greenhouse gas emissions not only drive global warming, they impact air quality. Poor air quality can damage human health. Health Canada estimates that air pollution contributes to [15,300 premature deaths annually](#) in Canada.²

¹ First promised in 2019, last year at COP27 Canada's minister of environment said [final regulations](#) for an emissions cap would be complete by the end of 2023. Spring, and summer passed without even draft regulations released. In September, Prime Minister Justin Trudeau said a framework – not draft regulations – would be released [by the end of 2023](#). The framework is expected to be followed by consultations and then draft regulations.

² Health Canada's study estimated the number of premature deaths in 2016. It is possible the number of premature deaths linked to air pollution may be higher than Health Canada's estimate. Another study by [Vohra et al.](#), which uses a different concentration–response function (the relationship between exposure to pollution and health outcomes) and relative risk estimate, estimates 34,000 annual premature deaths in Canada attributable to exposure to fine particulate matter alone. Whether one looks at Health Canada's estimate or Vohra et al.'s, it is clear air pollution contributes to thousands of premature deaths each year in Canada.

An emissions problem is an air pollution problem

The oil and gas industry contributes to the release of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}), as well as nitrogen oxides and volatile organic compounds, which form ozone in the atmosphere via secondary reactions with sunlight. Some of these are linked to methane venting and leakage.

Health Canada and other international health agencies have concluded that “[PM_{2.5}, NO₂ and ozone cause or are likely to cause premature mortality](#) based on extensive evidence from epidemiological studies.”

Health Canada notes: “These three pollutants also account for the majority of population health impacts from air pollution. There is robust scientific evidence of health effects at very low concentrations of these pollutants . . . In other words, any incremental increase in air pollutant concentration is associated with an increased risk of adverse health outcomes.” The same report notes that from 2015–2017 oil and gas emissions were responsible for 28% of nitrogen oxides released in Canada.

Capping emissions benefits air quality

While the size of the federal cap on oil and gas emissions is still under discussion and draft regulations have not yet been released, Canada has committed to reduce emissions from its entire economy by [40–45% below 2005 levels by 2030](#).

According to the federal government, Canadian emissions from oil and gas in 2030 are [projected to be 183 million tonnes of carbon dioxide equivalent](#) (MtCO₂eq) in a scenario that accounts for all policies and measures under development in Canada – but [does not include measures in early stages of planning](#), such as the oil and gas cap. If the government implements a 45% cap for oil and gas emissions, this analysis calculates emissions would fall to 94 MtCO₂eq in 2030.^{3 4} Complementary policy measures, such as stronger methane regulations, [would increase the cost-effectiveness](#) of a cap on oil and gas emissions.

³ Projections to 2030 are ‘[with measures](#)’, which includes “all policies and measures funded, legislated and implemented by federal, provincial and territorial governments” up to November 2022.

⁴ It is possible that the emissions cap could bring bigger decreases in air pollution than the federal government projects. [Analysis](#) by the Canadian Climate Institute (CCI) shows a [bigger](#) drop in emissions than the federal government’s data, which could, theoretically, mean a bigger corresponding drop in air pollutants and therefore, even more premature deaths avoided. However, CCI’s analysis is only for carbon emissions and does not include projections for decreases in specific pollutants. The more detailed government data provides this and as a result, was relied upon for this briefing.

Furthermore, CCI’s analysis assumes a cap for the oil and gas sector that is weaker than Canada’s whole-of-economy target. CCI’s analysis illustrates that without a cap on oil and gas emissions, oil sands’ emissions [would climb](#) by 15 per cent above 2005 levels by 2030. With announced policies including an emissions cap and stronger methane regulations, oil sands emissions would fall – by 30 per cent below 2021 levels. CAPE supports Climate Action Network Canada’s position that [for an emissions cap to be fair](#), at minimum it must be on par with Canada’s whole-of-economy goal: a 45% cut in emissions below 2005 levels by 2030. Canada’s biggest emitting sector should not have a weaker target than the rest of the economy.

Avoiding premature deaths

Health Canada has calculated the relationship between premature mortality in Canada and population-weighted exposure to above-background air pollution from nitrogen dioxide, fine particulate matter, and summer and annual ozone. Above-background refers to air pollution which is mainly the result of emissions from human activities, but also includes emissions from natural events, such as forest fires, which are increasing due to climate change.

With a 45% cap on the oil and gas sector, Canada would experience decreases in above-ground air pollution, specifically in a decline in NO₂, PM_{2.5}, annual ozone and summer ozone. More specifically, a 45% cap on emissions from the oil and gas sector would reduce levels of NO₂, PM_{2.5}, annual ozone and summer ozone in 2030 by 0.14 ppb, 0.02 µg/m³, 1.06 ppb and 1.16 ppb, respectively. When those decreases are applied proportionately to Health Canada's own figures for premature death associated with pollution, the findings are clear: an emissions cap would prevent premature deaths.

Introducing a 45% cap on emissions from oil and gas is projected to result in approximately 462 fewer deaths in 2030, compared to a scenario with no cap, based on findings from Health Canada's [2021 analysis](#) that integrates results from different studies on the impact of increased levels of NO₂, PM_{2.5} and ozone on mortality.⁵ The economic benefit of preventing the 462 premature deaths associated with air pollution is estimated at CAD 4.3 billion in 2030, based on the economic value of the decreased risk of mortality used by Health Canada.⁶ If we assume that projected policies for 2030 remain the same until 2040, **an emissions cap would avoid an estimated 4,860 premature deaths associated with air pollution during that decade. This alone would be equivalent to an economic benefit of CAD 45.1 billion.⁷ This same amount is equivalent to building 37 new hospitals in Canada⁸ or renovating 320 emergency rooms.⁹**

⁵ The number of avoided premature deaths was calculated by applying a 45% reduction in the proportion of pollution (from NO₂, PM_{2.5} and annual and summer ozone) associated with oil and gas in the Canadian government's 2030 emissions projections, and using ratios of the levels of above-background pollution associated with premature mortality from [Health Canada's 2021 analysis](#), which assessed exposure between 2014–2017. These calculations are based on the impact of a 45% reduction in pollution levels associated with oil and gas levels. These calculations do not reflect federal methane regulations, which had not yet been released at the time of the analysis, nor do they reflect potential use of carbon capture utilisation and storage. The recently published [UN Production Gap report](#) notes that 80% of CCS pilot projects have ended in failure over the past 30 years. It should also be noted that CCS projects are expected to yield mixed results on various air pollutants, according to [an analysis](#) from the European Environment Agency.

⁶ The economic cost of premature deaths is calculated using the same method used in [Health Canada's 2021 analysis](#), based on a [2009 study](#) that found the average Canadian was willing to pay 65 CAD to reduce the risk of premature death by 1 in 100,000. This figure has been adjusted for inflation to 93 CAD in 2023.

⁷ The calculations use population projections from Statistics Canada using a [medium-growth scenario](#).

⁸ Based on 2018 estimate for West Park new hospital of \$1.2 billion <https://www.canhealth.com/2018/10/17/west-park-healthcare-to-build-new-1-2-billion-hospital>

⁹ Emergency Room calculation based on 2022 cost for St. Boniface Hospital \$141 million emergency department renovation and expansion <https://www.cbc.ca/news/canada/manitoba/new-emergency-department-st-boniface-hospital-1.6431176>

Table 1: Annual premature deaths attributable to air pollution in 2030

	NO ₂	PM2.5	Annual Ozone	Summer Ozone	Total deaths
Projected 2030 emissions (with cap)	1301	11796	2676	1242	17015
Projected 2030 emissions	1330	11841	2941	1366	17478
Deaths avoided by emissions cap	29	44	266	123	462

Over time the number of lives saved is substantial, and the avoidance of hundreds of premature deaths each year, alongside a reduced strain on Canada's healthcare system, represents a key motivator for implementing a cap on emissions from the oil and gas sector. Additionally, the longer Canada waits to cut oil and gas emissions, the more people in Canada are at risk of premature deaths and the higher the economic costs.

This research highlights the potential economic and health benefits from an emissions cap. However, additional modelling of projected scenarios is needed to estimate individual projected levels of NO₂, PM2.5 and ozone and associated health impacts, and to consider variation in geographic distribution of emissions, based on proximity to oil and gas production, and the way emissions travel. There should also be consideration of the impacts for vulnerable populations, as well the cumulative effects of exposures as now required under the updated Canadian Environmental Protection Act (CEPA).

Additional health-related savings

The calculation that a federal cap on oil and gas emissions could provide an economic benefit of CAD \$45.1 billion by avoiding premature deaths does not include the cost savings from avoided health care costs associated with these deaths nor from preventing non-fatal health outcomes, including respiratory conditions such as asthma, cardiac disease, neurological outcomes including dementia, and reproductive issues such as low birth weight. In 2016, the total economic cost of both fatal and non-fatal health outcomes attributable to respiratory diseases connected with all air pollution was \$120 billion annually, or 6% of Canada's 2016 real gross domestic product.¹⁰ Of all air pollution deaths globally, 61% are attributable to fossil fuels.¹¹ Indigenous, racialized and poor people are disproportionately exposed to and disproportionately negatively impacted by emissions.¹²

Though the economic cost of respiratory and cardiac disease is [lower than the cost of mortality](#), The costs to the Canadian healthcare system from air pollution-related death

¹⁰ Health Canada, Health Impacts of Air Pollution in Canada: Estimates of morbidity and premature mortality outcomes – 2021 Report <https://www.canada.ca/en/health-canada/services/publications/healthy-living/health-impacts-air-pollution-2021.html>

¹¹ Air pollution deaths attributable to fossil fuels: observational and modelling study <https://www.bmj.com/content/383/bmj-2023-077784>

¹² Under the Canadian Environmental Protection Act (CEPA), which governs oil and gas emissions, the right to a healthy environment is now law. The Government of Canada now has a duty to protect people in Canada's right to a healthy environment when making decisions under CEPA, and a duty to uphold related principles, such as environmental justice, non-regression and intergenerational equity, considering vulnerable populations, and a duty to uphold the United Nations Declaration on the Rights of Indigenous Peoples.

and disease, emergency room visits, and lost workplace productivity are substantial and will lead to significant cost savings as we decarbonize our economy. Canada's emergency rooms are already straining at capacity. Health co-benefits from reduced fossil fuel air pollution could lead to immediate reduced demand on the healthcare system. Air pollutants from fossil fuels cause the following diseases (cardiac, respiratory, neurological) that impact people in Canada's quality of life. For example:

- [Nitrogen dioxide](#) has been linked to respiratory disease. Long-term exposure to low levels of nitrogen dioxide can increase risk of developing breathing problems, such as coughing and wheezing. Short-term exposure to NO₂ can cause airway inflammation. People with pre-existing conditions such as asthma, chronic obstructive pulmonary disorder (COPD) or chronic bronchitis can be more sensitive.
- [Ozone](#) is a colourless, odourless and highly irritating gas and a major component of smog. Exposure to ozone is associated with respiratory symptoms (throat irritation, coughing, shortness of breath, reduced lung function) and can aggravate pre-existing conditions like asthma or other chronic lung diseases. Children are at greatest risk because their lungs are still developing.

Federal government must fix the knowledge gap: health-costs studies needed

A U.S. geographic-based [study](#) published in May 2023 found [health costs of air pollution linked to oil and gas production in the US total USD \\$77 billion](#) per year. The pollutants nitrogen oxide, fine particulate matter and ozone from US oil and gas production contributed to 7,500 excess deaths, 410,000 asthma attacks, and 2,200 new cases of childhood asthma across the U.S. in 2016. The study found that emissions from oil and gas production can generate health costs in places that produce very little oil and gas. For example, Illinois and New York — states that produce "very little oil and gas" — were among the top eight most impacted health hot spots.

To date, there has not been a similar national study of health costs (both fatal and non-fatal) from air pollution arising from oil and gas production in Canada, despite the sector's [growth](#) and [plans for expansion](#).

In October, Canada's leading medical associations including Canadian Association of Physicians for the Environment released [a letter](#) urging Canada's health minister to bring a health-centered approach to the federal government's efforts to tackle the climate crisis. **A concrete step forward would be the federal government commissioning a national, geographic-study to assess the health costs of air pollution linked to oil and gas production in Canada.**

Following the publication of the US-based study, CAPE was among the leading organizations who issued a [letter](#) urging Canada's Minister of Environment and Minister of Health that a cost-benefit analysis of the health impacts of oil and gas be included in key environmental policies, such as the cap on oil and gas emissions, methane regulation and Clean Electricity Regulations.

A broken research promise: health-impacts study of the oil sands

For years, Indigenous communities living near the oil sands have urged the federal government to conduct a detailed, scientific assessment of health impacts in their communities of oil sands production.¹³ In 2009, the Alberta Cancer Board confirmed

¹³ Lawrynuik, Sarah. Downstream of oilsands, death by cancer comes too often, National Observer, Dec 17, 2019. <https://www.nationalobserver.com/u/sarah-lawrynuik>

cancer rates were higher for blood and lymphatic system, biliary tract and soft tissue in Fort Chipewyan than what would be expected. The board recommended a comprehensive baseline health study by the federal government but one has never been completed.¹⁴

In 2019, asked why the federal government had not fulfilled its promise to conduct the study, a spokesperson said: “Since 2009 many efforts have been undertaken to bring partners together to create a framework for the Fort Chipewyan Regional Baseline Health Study, but consensus has yet to be reached.”¹⁵

Athasbacan Chipewyan Chief Allan Adam told reporters the delay was over concerns the oil and gas industry would play a role in the research – which would threaten the study’s independence.

Fourteen years have passed since the initial report recommending study. **To say a federal government study into the health impacts of the oil sands on local communities is overdue is a massive understatement. Canada must accelerate action on this study and ensure the study is independent by barring oil and gas from participating.**

An emissions cap is good for Canada’s economy

Across Canada, people from coast to coast to coast are experiencing [devastating impacts from climate change](#). From record-breaking heatwaves to wildfires to flooding, People in Canada’s lives are being impacted by fossil fuel-driven climate change. Putting a cap on emissions from oil and gas is not only good for our climate, but, as this analysis shows, it has economic benefits.

This study finds an emissions cap could bring economic benefits of \$45.1 billion from avoiding **4,860** premature deaths. However, it’s not alone in detailing economic benefits of an oil and gas emissions cap. [Research](#) from Clean Energy Canada shows strong climate action including an emissions cap drives job growth, helping to create over 700,000 more energy jobs in a net-zero 2050 Canada. [Research](#) released by Environmental Defence shows even if carbon pollution from oil and gas were capped at 80% by 2030, Alberta’s GDP would continue to grow at an annual rate of 1.9%, above the national average of 1.8% and households energy bills would drop 1% due to long-term savings through clean energy solutions.

Canada has already participated in an effective emissions cap. Over 30 years ago, Progressive Conservative Prime Minister Brian Mulroney and Republican President Ronald Reagan introduced the [US-Canada Air Quality Agreement](#), to put a cap on sulfur and nitrogen emissions that caused acid rain and related pollution. The system is still in place. Every year, industry and electricity producers across North America still (quietly) work to meet new targets, which to this day continue to get more stringent – and which have largely eliminated acid rain as a threat.

Taking steps to protect our climate is critical. As this analysis shows, there are important co-benefits that are often uncounted – saving lives and delivering economic value. Climate policy in Canada may be increasingly politicized, but saving lives should be one area where politicians of all stripes can find common ground.

¹⁴ Ibid

¹⁵ Ibid