

TEN QUESTIONS FOR JOYCE MURRAY

MEMBER OF PARLIAMENT FOR VANCOUVER QUADRA

REGARDING THE CONTINUED EXPANSION OF CANADA'S OIL PRODUCTION
AND THE UNFORGIVING DEADLINE FOR DEEP EMISSIONS REDUCTIONS

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INTRODUCTION FOR CONSTITUENTS

On November 1, 2021, on the stage at the COP26 meeting in Glasgow speaking to an assembly of world leaders, Prime Minister Trudeau declared that Canada has “formally committed” to cap emissions from our country’s oil and gas sector. The Canadian Press explained, in the subtitle to its news report, that “A cap had been promised in the Liberal’s recent election platform, with plans to force emissions down until they reach net-zero by 2050.”

In making this announcement in Glasgow, Trudeau invoked the memory of Lytton, the British Columbia town burned to the ground on June 30, 2021*, when wildfires again swept through our province. “What happened in Lytton can and has and will happen anywhere,” he told the assembled leaders (perhaps explaining the wildfires were not our fault). He added: “*How many more signs do we need? This is our time to step up.*”

What Trudeau did not tell the assembled leaders is that Canada, the world’s fourth largest oil producer and third largest oil exporter, intends to continue expanding its oil production.

While he portentously spoke about the “signs” and the warnings in front of our eyes, Mr. Trudeau did not remind the assembled leaders (and the assembled journalists) that multiple recent reports and studies released by the International Energy Agency (IEA) and other authoritative international bodies and climate scientists have found that to give us even a 50-50 chance of keeping the increased warming of the earth’s atmosphere to less than 1.5°C, global oil production must decline 25% below the 2019 level by 2030, 50% below the 2019 level by 2040, and in the order of 75% by 2050. Part I of this discussion paper refers to those reports in detail.

In contradiction to that, in its most recent *Canada’s Energy Future 2021* report released on December 9, 2021, the Canada Energy Regulator (CER) projects that Canada’s *oil production will continue to increase until at least 2032* (rising 19% above the 2019 level) and is expected to

* This event was of global significance. “Exceptional heatwaves affected western North America during June and July ... causing hundreds of related deaths. Lytton, in south-central British Columbia, reached 49.6°C on June 29, breaking the previous Canadian national record by 4.6°C and was destroyed by fire the next day”: World Meteorological Organization, *State of the Global Climate 2021*, October 31, 2021.

continue at high levels though to 2050, when it is projected to still be only 2% lower than it was in 2019. That is a clear sign that Canada does not intend to “step up”.

Mr. Trudeau’s government is proposing “capping and cutting” the volume of emissions during oil production activities in Canada by relying on technologies that we are told will “capture” or substantially reduce the volume of *emissions released per barrel* during the extraction process. But Canada intends to continue to increase the total number of barrels of oil we produce. Environment Minister Guilbeault has stated: “We are not trying to cap production. We will be capping the amount of pollution that comes from those sectors”.

On the same day Trudeau spoke on the stage in Glasgow, November 1, 2021, the Minister of Environment and Climate Change, Steven Guilbeault, and the Minister of Natural Resources, Jonathan Wilkinson, sent a letter to Canada’s Net-Zero Advisory Body requesting that it provide advice to the government “on our commitment to cap and cut emissions from the oil and gas sector”. The request was worded in this way:

With this letter, we are asking the Net-Zero Advisory Body to provide us with independent advice on our commitment to cap and cut emissions from the oil and gas sector. Specifically, we seek your advice on key guiding principles to inform the development of quantitative five-year targets. (emphasis added)

The Ministers’ request however is explicitly couched in terms of protecting the “competitiveness” of Canada’s oil and gas sector, and in particular the oil sands industry.

We know the members of the Net-Zero Advisory Body understand that climate change is not just an environmental issue, but a competitiveness issue for Canada’s energy sector and for the workers who have depended on providing Canadian energy to the world for generations. The good news is that ambitious action to cut pollution presents significant economic opportunities for the energy sector and for Canada’s economy as a whole, if we get this right. It is essential that as we move to a net-zero emissions economy, Canadian workers and communities continue to prosper. Our goal is a future in which energy workers and communities that helped build this country have even greater opportunities than they do today, through a responsible transition to a low-carbon economy.

Canada’s four largest producers, representing approximately 90 percent of Canada’s oil sands production, recognize this imperative and have already committed to net zero by 2050. Getting this right will also be an important part of how we get to the country’s ambitious new nationally determined contribution of reducing emissions by 40 to 45 percent below 2005 levels by 2030 and net zero by 2050.

— Letter, November 1, 2021, to the Net-Zero Advisory Body

The two Ministers in their letter are clearly providing guidance to the Advisory Body about the kind of advice they should offer to the government about reducing emissions in the oil sands industry. Their letter is a polite admonition that any advice the Advisory Body might give about the *stringency of future emissions reductions* in the oil sands industry, or about the timelines and

urgency for achieving those goals, must accommodate the need to protect the *competitiveness* of Canada's oil sands industry.

Competitiveness in this context is a term that refers to the oil and gas industry's interest in maintaining its ability to *continue to expand production* and export profitably into the global market. In the case of the oil sands industry, the concern about competitiveness addresses the economic impacts of more stringent climate policies in Canada that could appreciably increase their per barrel costs of oil production. That concern covers not just the increased costs per barrel that would result from any increase in the currently very low carbon price that applies to oil and gas producers, but also any increased costs of production that would occur if Canadian producers were obliged by mandatory government regulations to adopt or deploy costly emissions-reduction technologies aimed to reduce emissions during the extraction process.

Our government rarely talks explicitly about its plans to continue *expanding* Canada's oil production. Rather, it likes to speak about protecting our "competitiveness" and about continuing to "extract value" from Canada's resources. Thus, in an article based on an interview with Jonathan Wilkinson published on January 4, 2022, the *Financial Times* reported that Wilkinson "insisted Canada still has the right to keep pushing exports from one of the world's most carbon-intensive sources of oil". It quotes him:

For the [oil] demand that continues to exist, Canada needs to extract value from its resources, just like the United States, the United Kingdom in the North Sea, and Norway", Wilkinson said.

— *Financial Times*, January 4, 2022

The *Financial Times* article elaborates on Canada's Glasgow promise to "cap and cut" the emissions produced while we continue to expand oil production. The plan is to deploy carbon capture and storage (CCUS) technology on a massive scale:

... Wilkinson also indicated that the federal government could help pay for a vast new project proposed by oil sands producers to capture greenhouse gas emissions in Alberta.

Calgary-based Cenovus Energy told the FT last year that Ottawa should fund most of the C\$75 bn (US\$60bn) cost of the project, which backers claim could eventually capture about half of the oil sands' CO2 emissions. Wilkinson pointed to government-funded carbon capture projects in the Netherlands and Norway as a possible model for Ottawa's involvement.

"Companies are going to have to come to the table and put their own capital into those projects," he said of the oil sands producers' idea. "But certainly we are willing to work with the sector to help us reduce emissions".

The unspoken truth is that the entire C\$75 billion scheme to rely on CCUS technology, even if it were fully implemented, would capture only a very small portion of the total emissions that are released into the atmosphere by every barrel of oil we produce. The problem is that even if all the emissions associated with the oil sands production process within Canada's borders (referred to as our "upstream emissions") could be fully captured by CCUS technology at production sites,

they comprise less than 15% of the total emissions released by every barrel of oil we produce and export. Over 85% of the total emissions (the “downstream emissions”) occur after we export our oil, when our crude oil is refined and most of the emissions occur when the refined products are burned as fuel in vehicles.

The CCUS plan is examined in detail in Part 5 of this paper and in Appendix IV.

There is no existing technology that can remove CO₂ once it is released into the atmosphere when our oil is burned as a transportation fuel. From the perspective of the time frame that concerns us (and that concerns our children and their children), the incremental increases in the concentration of CO₂ now occurring in the upper atmosphere are irreversible, unless technologies are developed in future that give us the capability to remove CO₂ from the atmosphere on a massive scale. Although several direct air removal technologies presently exist in very small-scale experimental form, it is a matter of conjecture whether they will ever prove to be scalable or economically viable.

The immediate and unforgiving deadline we face is that we must achieve very deep reductions in global emissions by 2030, which will require deep reductions in global oil production in the next nine years. The available scientific evidence is summarized in Parts 1.2 and 1.3, and in Part 9 and Appendix V.

There is simply no evidentiary foundation for the proposition that massive deployment of CCUS technology in Canada’s oil sands industry can protect us from the consequences of a plan to continue increasing Canada’s oil production and to maintain our current high production levels until 2050. The plan is catastrophic and unconscionable. It does not soften the wrong of this plan to say that we are going to do it with Norway, the United Kingdom, and the United States.

Any climate plan for our oil and gas sector that is truly aligned to meeting the Paris Agreement’s ambition of limiting global temperature rise to 1.5°C must incorporate a plan to “cap production” and substantially reduce oil production by 2030, and to achieve deeper production cuts by 2040 in the order of 50% below the 2019 level. In the absence of a clear policy decision to halt the further expansion of Canada’s oil production, measures that are focused on reducing *emissions during the extraction and processing* will not address the unfolding crisis.

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CANADA'S CLIMATE PROMISES

- One year ago, on November 19, 2020, the Liberal Government announced that it would enact legislation committing Canada to achieve “net-zero greenhouse gas emissions” by the year 2050. Seven months later, on June 30, 2021, Parliament passed into law the *Canadian Net-Zero Emissions Accountability Act* (Bill C-12). The new law, however, does not provide Canadians with any quantitative target telling us what Canada’s remaining emissions are supposed to be by 2050, or any interim reduction targets for 2045, 2040, or for 2035. Under this new law, our government is under no legal obligation to reveal what the reduction target will be for 2045 until December of 2034.
- In terms of Canada and its emissions impact on global emissions, oil production is our most salient economic activity. Canada’s oil and gas sector is our country’s largest source of greenhouse gas emissions, accounting for 26% of the national total. Oil sands production since 2005 has been by far the largest source of emissions growth in Canada. In recent years we have ranked as the world’s 4th largest oil producer, and the 3rd largest oil exporter. We export 80% of our oil production.
- On December 11, 2020, the government announced that the Federal carbon price, scheduled to increase to \$50 per tonne by 2022, will in 2023 and thereafter increase by \$15 annually and rise to \$170 per tonne by 2030. Yet, under the *Greenhouse Gas Pollution Pricing Act*, about 80% of the total greenhouse gas emissions released into the atmosphere at oil sands industry sites are exempt from the carbon price. That exemption is designed to ensure we maintain higher levels of oil production in Canada.
- The Canada Energy Regulator (CER) on November 24, 2020, released *Canada’s Energy Future 2020* report. It published projections showing the expected growth of Canada’s oil and gas production to 2050. The “Reference Case” showed that Canada’s oil production will continue to expand until 2045, when it will “peak” at 7.1 million bpd, more than 2.2 million bpd above the 2019 level. The CER 2020 report included an alternative scenario called the “Evolving Scenario”, which showed a slightly lower rate of expansion. The Evolving Scenario projected that Canada’s oil production will continue to increase to 2039 when it will peak at 5.8 million bpd, still 900,000 bpd above the 2019 level. Both scenarios indicated that by 2050 our total oil production would remain well above the 2019 level.
- On May 18, 2021, the International Energy Agency (IEA) published *Net-Zero by 2050: A Roadmap for the Global Energy Sector*. It examines the magnitude of the reductions in global oil production required by 2040 to give the world a 50-50 chance to reach a goal of net-zero emissions by 2050 and limit warming to 1.5°C. The report concludes that would require cutting oil use worldwide from 98 million bpd (the 2019 level) to 44 million bpd within the next 20 years. To stay within the 1.5°C temperature threshold, oil consumption worldwide must decline to 24 million bpd by 2050. The new IEA study calls for *an immediate halt to any further expansion of global oil production*.
- On December 11, 2020, the government published a 79-page brochure titled *A Healthy Environment and a Healthy Economy*. It discussed proposed new policies that the

government promised it will adopt in future to reduce emissions in the Canadian economy (Transportation, Industry, etc.). Yet it provided very little detail or numerical analysis showing the actual reductions these promised measures will achieve. Despite the absence of detail, the *Healthy Economy* document makes a bold claim that Canada's overall emissions will be reduced to 503 million tonnes (Mt) of CO₂ eq by 2030. To meet the promised 503 Mt reduction target by 2030 (promised on December 11, 2020) we will have to cut our emissions 237 Mt within the next nine years, below the 2019 level.

- On April 15, 2021, the government released the *National Inventory Report* documenting Canada's emissions up to 2019. The national total in 2019 reached 730 million tonnes (Mt) CO₂ eq. When we signed the Paris Agreement in 2015, Canada made a commitment to reduce its total emissions 30% by 2030, below the 2005 level. The 2005 level was 738 Mt. During the entire fourteen years between 2005 and 2019, Canada cut its emissions by a total of 9 Mt, equivalent to 1.2 % reduction.
- On April 22, 2021, the government announced another new goal for the reduction of Canada's greenhouse gas emissions by 2030. The April promise is that emissions will be reduced 40% to 45% by 2030. A 45% reduction would reduce Canada's emissions to 401 Mt. That would require we reduce our emissions by 329 Mt within the next nine years.
- During the Federal election campaign leading up to the vote on September 21, 2021, none of the three main political parties (the Liberals, the NDP Party, or the Conservatives) questioned Canada's plans to continue expanding our oil sands production to 2045.
- The CER released its new *Canada's Energy Future 2021* (CER 2021) report on December 9, 2021, which again updates our oil and gas production data. The newly revised "Evolving Policies Scenario" shows our oil production will continue to increase until 2032 when it will "peak" at 5.8 million bpd, a 16% increase over the next ten years. It projects that Canada's oil production after 2032 will begin to slowly decline to 4.8 million bpd by 2050, a 2% reduction below our production level of 4.9 million bpd in 2019. Canada plans no significant reduction of its oil production over the next 30 years.

SUMMARY: TEN QUESTIONS THAT IDENTIFY THE KEY ISSUES

In the wake of these developments during the past fourteen months, we identify ten questions that allow all of us, both our elected Members of Parliament and Canadian citizens, to carefully consider the gravity and serious implications of the rapidly unfolding climate crisis and to assess whether the plans and solutions promised by our government are adequate.

The ten questions outlined in this paper focus on key elements of the Government of Canada's announced new climate policy. They identify the fundamental contradiction between Canada's declared goal to reach "net-zero emissions by 2050" and Canada's plans to continue to expand our oil production. These questions call for the disclosure of important information by the government – information on crucial points that have not been addressed in any of the announcements and reports released by the Federal Government since November 19, 2020. And these questions call for absolute candour by Members of Parliament in their communications

with the public. Constituents are the foundation of our Parliamentary democracy. If constituents cannot play an informed part in political decision making on climate policy, there is no democracy.

1. **Do you agree that Canada's current plans to continue to expand oil sands production as reported in the CER 2020 and CER 2021 reports are inconsistent with Canada's recently announced climate goal of achieving "net-zero emissions by 2050"? Do you agree Canada must begin to reduce its oil production?**
2. **Do you agree that under the Evolving Scenario the Trans Mountain Pipeline Expansion is not required? Do you agree the project should be cancelled?**
3. **Do you know the government's number or quantitative measure that would tell us what the estimated level of Canada's "remaining emissions" will be in 2050? No such number has been provided to Canadians.**
4. **Are you aware of what future level of Canada's crude oil production would be safely aligned and consistent with achieving a national goal of "net-zero emissions by 2050"? Do you personally, as a Member of Parliament, have any idea of what that would be?**
5. **Do you agree that there should be no subsidies or funding or tax incentives from the Federal Government to support the deployment of CCUS in the oil sands industry?**
6. **How do you as a Member of Parliament account for the promised reduction of Canada's oil and gas sector emissions by 2030 down to 138 Mt by 2030, a cut of 56 Mt below the "Reference Case"?**
7. **The government promised on April 22, 2021, that by 2030 Canada will reduce our national emissions 40% – 45% below the 2005 level. Meeting the 45% goal would require that Canada reduce our total annual emissions to 401 Mt within the next nine years (Canada's emissions were 730 Mt in 2019). To date, the government has not provided Canadians with any analysis, studies, or data that explain how emissions reductions on that vast scale can be achieved. Do you as a Member of Parliament have any idea of how those promised reductions can be achieved?**
8. **The largest single source of emissions released into the atmosphere within Canada's borders is from forest fires. In calculating Canada's annual total emissions, and in all its published data showing our projected emissions to 2030, the Government of Canada *excludes* all wildfire emissions from its emissions accounting. Do you agree that Canada should include wildfire emissions in its emissions accounting?**
9. **The most recent *UN Emissions Gap Report 2021* released October 28, 2021, confirms that *even if the current NDCs are fully implemented* (including Canada's newly promised 40% to 45% reduction), the projected annual level of global greenhouse gas emissions to 2030 is not expected to show any reduction below the 2019 level. Do you agree that this new information justifies an immediate reconsideration by Parliament of the government's current plans and policies that support the continued expansion of Canada's oil production?**

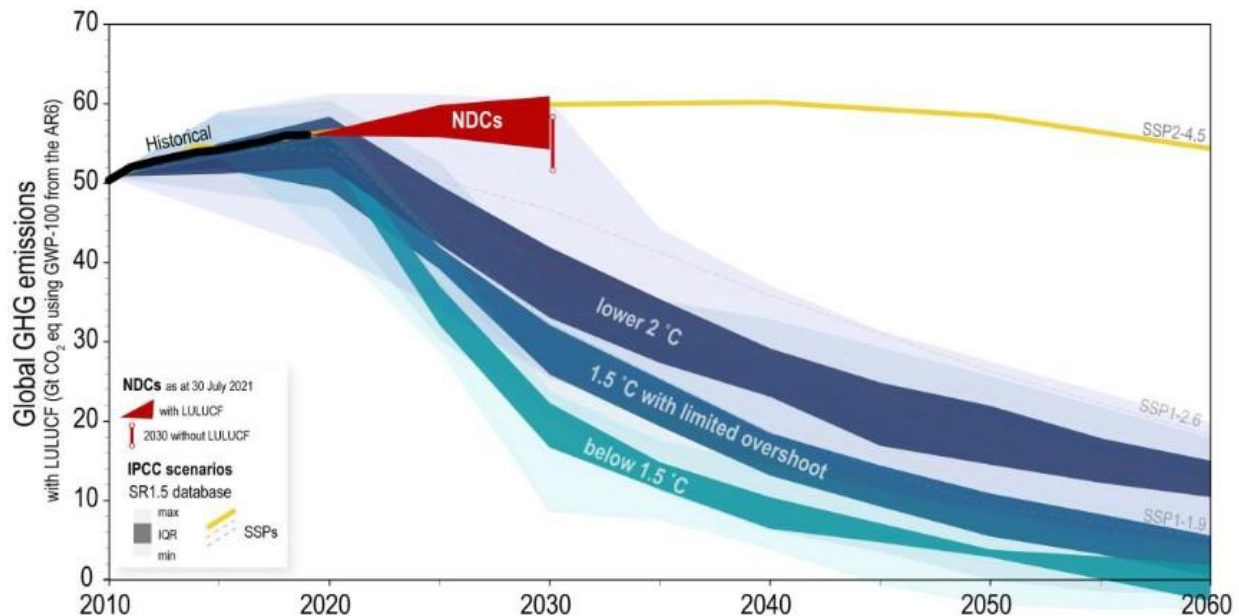
10. Do you accept that the Federal Government has the lawful constitutional power to impose a carbon price on oil and gas industry operations in all provinces, including in the oil sands sub-sector and on natural gas production and processing, and that it has a wide discretion to increase the carbon price substantially above the present levels set by the government?

THE GLOBAL REALITY: THE EMISSIONS “GAP”

Since September 2021, we have had the benefit of two authoritative reports by international bodies that have examined in detail the magnitude of the overall reductions in global emissions that would have to be achieved by 2030 to give us a realistic chance to keep the earth’s average surface temperature increase within the 1.5°C to 2°C warming thresholds.

Figure A below reproduces a graph published on September 17, 2021, in an analysis released by the UN which depicts across the top (in red and marked “NDCs”) the emissions path we are presently on to 2030 and, in comparison, it shows the much lower emissions pathways that would be needed to give us a realistic chance to limit warming to 1.5°C or 2°C. The report states that our current path, if not dramatically altered, will lead to warming of 2.7°C by the end of the 21st century. The term “NDCs” refers to the commitments made by the signatories to the 2015 Paris Agreement to reduce their national emissions by 2030, which are their “Nationally Determined Contributions”. The purpose of the September 17 report was to calculate the progress, if any, we have made towards closing the “gap” between the total reductions (NDCs) promised by all governments up to the eve of the Climate Conference held in Glasgow on October 31, and the much deeper reductions needed by 2030 to stay within the warming limits.

Figure A: Global emissions projections to 2030, UN report (September 17, 2021)



Source: UN synthesis report, September 17, 2021, figure 9, p. 29.

It shows that we have made no progress at all. Four years ago, an earlier edition of the *UN Emissions Gap Report* published in November 2017, explained the crucial importance of what happens between now and 2030:

Looking beyond 2030, it is clear that if the emissions gap is not closed by 2030, it is extremely unlikely that the goal of keeping warming to well within 2°C can still be reached. Even if the current NDCs are fully implemented, the carbon budget for limiting global warming to below 2°C will be about 80% depleted by 2030. Given the currently available carbon budgets, the available carbon budget for 1.5°C will already be well depleted by 2030.

— *The Emissions Gap Report 2017*, Executive Summary, p. xvii (emphasis added)

The November 2017 report left no doubt that the full implementation of all the NDCs by 2030 was insufficient to put the world on an emissions pathway consistent with keeping warming “well below 2°C”, let alone 2°C:

Full implementation of the unconditional NDCs and comparable action afterwards is consistent with a temperature increase of 3.2°C by 2100 relative to pre-industrial levels.

The problem is that the annual level of global emissions has continued to increase during the past decade – and the major industrial countries have been unwilling to alter their plans that rely heavily on the continued expansion of oil and natural gas use for another 20 or 30 years. The annual level has been increasing at about 1.3% per year since 2010.

Now, the situation we face is essentially the same as it was four years ago.

The September 17, 2021 report concluded that even after counting all the NDCs reductions promised by the signatories to the 2015 Paris Agreement and based on the assumption that all the national pledges will be fully implemented between now and 2030 (including Canada’s 40%-45% reduction promise on April 22, 2021), global emissions are on track to *continue increasing* to 55.1 GtCO₂eq by 2030 which represented a 5% rise above the 2019 level.

Annual global emissions reached a record high of 51.5 GtCO₂eq in 2019 (that figure does not include additional emissions from land use and land use change, i.e., deforestation, land clearance, and wildfires).

The UN Emissions Gap Report 2021 (October 26, 2021)

A second major report, the *UN Emissions Gap Report 2021*, published on October 26, 2021, provided a further updated and more comprehensive analysis of the expected path of global emissions to 2030. It includes a revision to the expected annual level of global emissions by 2030. Assuming all the NDCs are fully implemented, the revised estimation given on October 25 is that global emissions will reach 52 GtCO₂eq by 2030 (less than the 55.1 GtCO₂eq number given in the September document). Part of the reason for this lower number is that the lingering economic impacts of COVID-19 are now expected to slow economic growth more than

previously expected, which will have the effect of slightly reducing the growth of global emissions between now and 2030. That has slightly narrowed the “gap”.

But notwithstanding that downward revision, the overall conclusions are the same. Even after counting all the additional emissions reduction commitments (NDCs), *the annual level of global emissions will be higher in 2030 than it was in 2019.*

The outlook is extremely grave. The most recent findings of climate scientists, which are summarized in the new *UN Emissions Gap Report* released on October 26, 2021, show the much lower level of annual global emissions that would have to be achieved by 2030 if we are going to have any realistic chance of keeping global warming within safe limits.

The findings reported in the new report inform us that even with the full implementation of all the unconditional NDCs promised by all countries up to September 30, 2021 (including Canada’s new 40% to 45% pledge), the anticipated level of global emissions by 2030 (52 GtCO₂eq) will put us on a pathway to a temperature increase of 2.7°C above pre-industrial levels. To stay on a pathway to give us a realistic chance to keep the increase in global average surface temperature to less than 2°C, the annual level of global emissions must by 2030 be cut to an annual level of 39 GtCO₂eq. That leaves an “emissions gap” of 13 GtCO₂eq that must be closed within the next nine years to meet the 2°C goal.

The emissions gap for 1.8°C is 19 GtCO₂eq.

To stay on a pathway to limit the warming increase to 1.5°C requires the annual level of global emissions be reduced to 25 GtCO₂eq between now and 2030, which means we have nine years to close a massive emissions gap of 28 GtCO₂eq. Closing any of those emissions gaps will require an epochal change of course.

2030 is an unforgiving timeline.

1. FUNDAMENTAL CONTRADICTION BETWEEN THE “NET-ZERO BY 2050” GOAL AND CONTINUED EXPANSION OF CANADA’S OIL PRODUCTION TO 2045

In the past twelve months, Canadians have been presented with two starkly contrasting views about the future path of oil production to 2050.

Part 1.1 of this discussion begins with a review of projections released by the Canada Energy Regulator (CER) showing the expected future levels of Canada’s oil production to 2030 and through to 2050. That data was published by the CER on November 24, 2020, in a report titled *Canada’s Energy Future 2020*. It depicted continued increases in Canada’s total oil production for another 25 years.

Part 1.2 presents the findings of a comprehensive study by the International Energy Agency (IEA) released on May 18, 2021, in a report called *Net-Zero by 2050: A Roadmap for the Global Energy Sector*. The IEA report concluded that to have a realistic chance of keeping the increased warming of the earth’s atmosphere to less than 1.5°C, global oil production must decline 50%

below the 2019 level by 2040 and further decline 75% below the 2019 level by 2050. Those findings were confirmed and set out in more detail in a subsequent IEA report, *World Energy Outlook 2021*, released on October 12, 2021. The IEA warns that meeting the 1.5°C goal will also require about a 25% cut in worldwide oil production as early as 2030.

During the past six months, additional studies have examined the future path of global oil production in a 1.5°C world. In particular, the *UN Production Gap Report 2021*, released on October 20, 2021, describes the very deep reductions in global oil production required by 2030 to meet that goal (discussed in Part 1.3).

On December 9, 2021, the Canada Energy Regulator released a new report, *Canada's Energy Future 2021* (CER 2021). This new report publishes two updated scenarios showing the expected path of Canada's oil production to 2050. Unfortunately, the new CER projections show no significant decline at all in Canada's oil production over the next 30 years, measured against our current output level. This new CER 2021 report is discussed below in Part 1.6.

1.1 Canada's oil production increases to 2045: CER 2020 report (November 24, 2020)

The *Canada's Energy Future 2020* report provided a detailed projection (called the “Reference Case”) showing that Canada's overall oil production (including both oil sands and conventional oil) is expected to continue increasing until 2045, when it will “peak” at 7.1 million bpd, more than 2.2 million bpd above the 2019 level. Expanding oil sands production drives that growth.

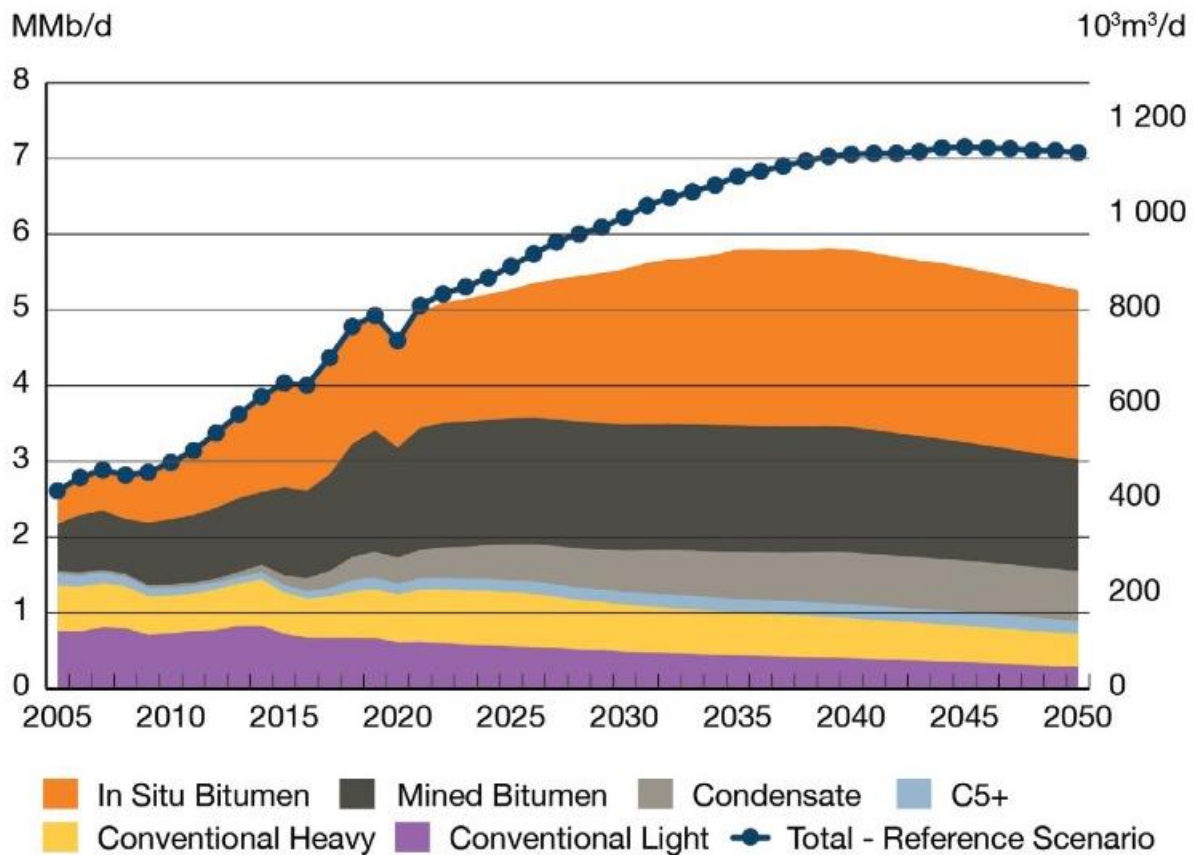
The report also published an alternative scenario called the “Evolving Scenario”, which shows a slightly lower rate of expansion. The Evolving Scenario projected that the expansion of Canada's oil production will continue to increase to 2039 when it will peak at 5.8 million bpd, still 900,000 bpd above the 2019 level.

The Reference Case projection released by the Canada Energy Regulator (CER) in November 2020 was a “current policies” scenario, based on the assumption that for another 20 or 30 years the overall share of fossil fuels in the world's total energy supply (and specifically global demand for crude oil) will not substantially decline. Figure B below (reproduced from Figure R.7 on page 41 of the CER report) shows how the Reference and Evolving Scenarios will both allow continuing expansion of Canadian oil production for another twenty years.

Under the Reference case, shown by the top dotted black line, production is projected to “peak” in 2045. In the CER's Evolving Scenario, shown by the lower orange coloured curve, overall production (including both oil sands bitumen and conventional oil) reaches its maximum level in 2039. Under both scenarios Canada's total oil production in 2050 is still well above the 2019 level.

Canada's total oil production in 2019 reached a record high of 4,928.3 thousand bpd (rounded to 4.9 million bpd in the report's summary). That was an increase of 900,000 bpd above the production level in 2015 (a 22% increase in Canada's total oil production over those four years) of which 600,000 was increased output in the oil sands sub-sector.

Figure B: Canada's oil production to 2050



Source: *Canada's Energy Future 2020*, November 24, 2020, Figure R.7 at page 41

Both these scenarios published by the CER in November 2020 showed that the expansion of oil sands production will continue for at least twenty more years, although under the Evolving Scenario the rate of production growth is slower. The two scenarios are based on different assumptions about future world oil prices. In the Evolving Scenario, the Brent price (a benchmark world oil price) peaks at US\$55 in 2025 before declining to US\$50 by 2050 (future prices are given in terms of 2019 US dollars discounted to remove the effect of price inflation). In the Reference Scenario, crude oil prices rise by 2025 to US\$75 per barrel and maintain that level for the following 25 years to 2050. The report explains (at page 29) that, in the case of the Evolving Scenario, the cause of the decline in production is that “increased global action on climate change, which reduces demand for crude oil, puts downward pressure on prices relative to the Reference Scenario”.

During the past decade, projections of Canada's future oil production have played a crucial role at every step of the pipeline approval process that culminated on November 29, 2016, when the government by an Order in Council authorized the construction of the Trans Mountain Pipeline (TMX). In 2015 and in 2016, a series of reports prepared by this same agency, then called the National Energy Board (“NEB”), provided the economic rationale for approving the TMX project. Guided by a broadly shared consensus that *global oil consumption would continue to rise for another thirty years* (a consensus that has now begun to dissolve) and that world oil

prices would remain high for decades to come, the NEB's reports consistently affirmed that Canada's oil sands production will continue its increase to 2040 and beyond.

The argument in favour of the TMX project, when it was approved in 2016, was therefore based on the proposition that Canada will need additional pipeline capacity to facilitate the *expected production increases over the next two decades*.

That proposition is no longer tenable. The available scientific evidence is unequivocal that continued growth of global oil production for another 20 or 30 years is incompatible with any realistic remaining chance to keep the increase in the earth's average surface temperature within the 1.5°C warming threshold or to less than 2°C.

1.2 The International Energy Agency's "Net-Zero by 2050 Scenario" (May 18, 2021)

On May 18, 2021, the International Energy Agency (IEA) warned in its report *Net-Zero by 2050: A Roadmap for the Global Energy Sector* that to have a realistic chance of keeping the increased warming of the earth's atmosphere to less than 1.5°C, global oil consumption must decline 50% below the 2019 level by 2040. That would require cutting oil use worldwide from 98 million bpd (the 2019 level) down to 44 million bpd within the next 20 years. To stay within the 1.5°C temperature threshold, oil consumption worldwide must decline to 24 million bpd by 2050. In a dramatic departure from its past approach, the new IEA study calls for *an immediate halt to any further expansion of global oil production*. For Canada, the world's fourth largest oil producer, this report has enormous implications.

In its most recent annual report *World Energy Outlook 2021* released October 12, 2021, the IEA provides a further comprehensive analysis of the massive scale of the transition that will be required in all sectors of the world economy (transportation, electricity generation, industry, etc.) which at present relies on coal, oil, and natural gas to supply 80% of our primary energy. Figure C on the top line shows the decline in global oil consumption that will be required to be consistent with limiting the global temperature increase to 1.5°C (with a 50% probability of meeting that goal):

Figure C: IEA Net-Zero by 2050 Scenario: projections (in millions bpd)

	2019	2020	2030	2040	2050
Net-Zero by 2050 Scenario			72	44	24
Stated Policies Scenario	97.9	91.3	103.0	103.0	103.0
Announced Pledges			96.1		76.7

Sources: *Net-Zero by 2050: A Roadmap for the Global Energy Sector*, IEA, May 18, 2021; *World Energy Outlook 2021*, October 12, 2021, Figure 5.3, p. 214.

In 2019, world oil production reached 98 million bpd, the highest level ever. As a result of the severe economic impact of the Covid-19 pandemic, oil consumption dropped to 91.3 million bpd

in 2020. The IEA's Stated Policies Scenario ("STEPS") projects the expected future path of oil demand over the next 30 years based *on existing energy policies*. The STEPS scenario counts the benefit of all promised new carbon-reduction measures that have already been announced by governments and this scenario *assumes* all the announced future measures will be fully implemented. With that optimistic assumption, STEPS reflects the pathway we are presently following. Under the STEPS Scenario, global oil demand will move back up to 98 million bpd by 2023 and rise to 103 million bpd by 2030 or soon after and flatline at that level to 2050.

The Announced Pledges Scenario ("APS") envisions deeper production cuts. It takes account of a series of additional reduction commitments very recently made by governments around the world including all NDCs promised under the Paris Agreement and it assumes optimistically that all these commitments "*will be met in full and on time*" (including promised new targets which have not yet been matched by any actual policies). Even with the benefit of all those commitments, under the APS Scenario global oil consumption is projected to decline only to 76.7 million bpd by 2050.

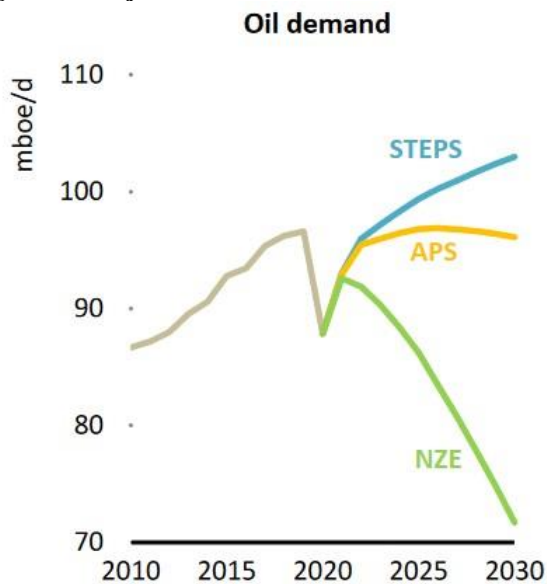
In sharp contrast to that, the IEA's Net-Zero by 2050 Scenario (NZE) requires that global production decline to 24 million bpd by 2050. Furthermore, to limit the release of any further substantial emissions from burning oil as a transportation fuel, 70% of the remaining 24 million bpd of oil production by 2050 will have to be used in applications where *the fuel is not combusted and so does not result in any direct CO₂ emissions* (i.e., used to produce chemical feedstocks, lubricants, and asphalt). By 2050, oil must have very limited use as a transportation fuel except for aviation.

Given Canada's recently confirmed plans to continue *increasing* our oil production to 2032 (a projected 19% increase), it is worth noting that the IEA's "Net-Zero by 2050" Scenario requires that to stay on a pathway to 1.5°C global oil production must decline to 72 million bpd by 2030, which is about a 25% reduction below the 2019 level.

The IEA's 285-page report provides the results of a comprehensive study of the cuts in global oil, coal, and natural gas consumption required to achieve net-zero emissions by 2050. The study is based on the IEA's "Net-Zero by 2030 Scenario" designed to show what changes are needed across the main energy sectors to achieve net-zero energy related and industrial process emissions by 2050, with a 50% chance of limiting the long-term average global temperature rise to 1.5°C without a temperature overshoot. It sets out details of the scale of the growth in renewable energy that will be required. It recommends that starting this year *no new oil fields or gas fields be developed in the world*. It describes the oil industry as entering a period of "contraction" in global terms, and projects a major decline in world oil prices by 2030 assuming the world embarks on this transition: <https://iea.blob.core.windows.net/assets/4719e321-6d3d-41a2-bd6b-461ad2f850a8/NetZeroBy2050-ARoadmapfortheGlobalEnergySector.pdf>

The complete divide between the present intentions of our governments and what human beings need to do within the next nine years is depicted in Figure D. It shows the path of oil demand under each of the IEA's three Scenarios:

Figure D: Projected Oil Demand to 2030



Source: *World Energy Outlook 2021*, October 12, 2021, Figure 5.3, page 214.

The top blue line of the above graph (“STEPS”) depicts the IEA’s most recent projection indicating the rising pathway of global oil production between now and 2030, based on the current plans of Canada and the world’s other oil producing countries. The sharply declining green line (“NZE”) shows the magnitude of the cuts in overall world oil production needed by 2030 to give us a 50-50 chance of being able to limit global heating to less than 1.5°C.

These warnings by the IEA and by the UN’s *Production Gap Report* (see below) about the urgent need to curb oil production are not new. Two years ago, in November 2019, the IEA published a scenario in its annual report, *World Energy Outlook 2019*, showing the enormous scale of the reductions in global oil consumption that would be required to meet even a 1.8°C warming limit. To meet the lesser goal of 1.8°C, the 2019 scenario, named the “Sustainable Development Scenario”, called for a 10% reduction of production by 2030 and a 33% reduction by 2040. The WEO 2019 report also included a comprehensive analysis showing that, based on “current policies” at that time (just before the advent of COVID), global oil production was on a path to increase to 121 million bpd by 2040. Details of the findings in the IEA’s “Sustainable Development Scenario” study are set out in Appendix I.

1.3 UN Production Gap Report (October 20, 2021)

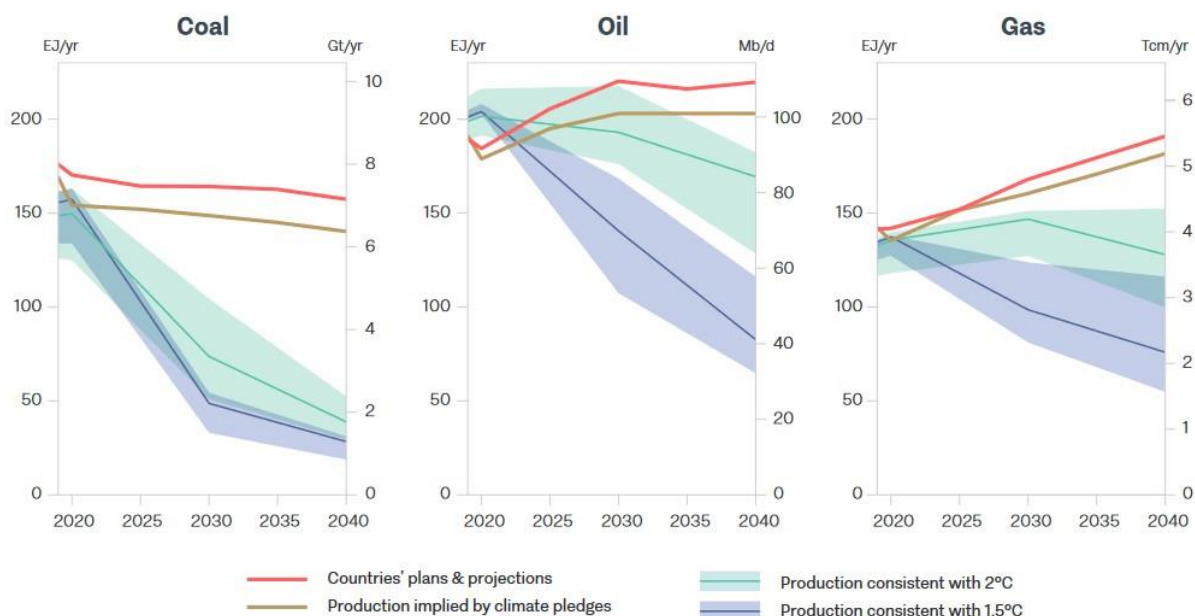
On October 20, 2021, the UN Environmental Programme and the Stockholm Environmental Institute released their *Production Gap Report 2021*, which confirms the tragic disconnect between the existing plans of the world’s major oil producing countries (including Canada) to continue the expansion of global oil production and the desperate need to start reductions. The world’s 15 largest oil producers are still planning to substantially expand their oil production to 2030. This is the third annual report in the UN’s *Production Gap* series, first published in 2019,

prepared by the UN Environmental Programme and several other research institutes. The purpose of the report is “to quantify the discrepancy between the global levels of fossil fuel production implied by governments’ plans and projections and the levels consistent with the Paris Agreement goals (namely limiting warming to well below 2°C and pursuing efforts to limit the temperature increase to 1.5°C).” The difference is the “production gap”.

The discrepancy for all three fossil fuels up to 2040 is shown in Figure 2.2 of the report, which is reproduced below as Figure E. The report covers coal, oil, and natural gas production plans in 15 major producer countries, which in the aggregate account for 75% of all global fossil fuel extraction (including the U.S., Saudi Arabia, UAE, Canada, Brazil, Norway, UK, and Russia).

In the case of oil production, the center graph shows that based on producing countries’ current plans (including Canada’s plans described in the CER 2020 report) between now and 2030 the gap will widen between the deep production decline required to be consistent with the 1.5°C pathway (the bottom diagonal line) and the current expansionary pathway (the top red line). It is based on a compilation of each government’s published projections for fossil fuel production, as well as publicly available national energy outlooks and targets as of August 2021.

Figure E: Projected coal, oil, and gas use to 2050



Source: *Production Gap Report*, October 20, 2021, Figure 2.2 at page 16.

In the case of Canada, the *Production Gap Report* specifically cites and relies on the *Canada’s Energy Outlook 2020* report released November 24, 2020, which is the same document discussed in Part 1.1 above. The report’s overall conclusion is that “the world’s governments plan to produce more than twice the amount of fossil fuels in 2030 than would be consistent with limiting warming to 1.5°C”. In the specific case of oil production, it states:

Nations are, in aggregate, planning on producing around 40 million barrels per day (Mb/d) more oil than would be consistent with the median 1.5°C pathway in 2030 (with a

range of 26-56 Mb/d). This excess is roughly equivalent to half of current global oil production.

— *Production Gap Report*, October 20, 2021, p. 15-16

1.4 Three recent studies by independent Canadian scholars

During the past ten months, additional studies by leading Canadian energy economists and scholars on climate and energy policy have affirmed that the scenarios produced by the CER showing continued expansion of Canada's oil production cannot be reconciled with any of the authoritative scenarios developed by the IEA and other international bodies that have examined the magnitude of the deep reductions in global oil production needed to stay within the 1.5°C warming threshold. On March 9, 2021, a paper titled *Evaluation of the Trans Mountain Expansion Project* (School of Resource and Environmental Management, Simon Fraser University, Thomas Gunton, Chris Joseph, Daniel Dale) concluded that the CER's Evolving Scenario substantially exceeds future oil production levels consistent with keeping warming under the 1.5°C warming threshold: <http://rem-main.rem.sfu.ca/papers/gunton/TMX%20CBA%20Report%20final%20march%2021.pdf>

An analysis¹ published April 16, 2021, by Angela Carter and T. Dordi (Cascade Institute, University of Waterloo) calculated the total cumulative amount of the future emissions that will be released into the atmosphere from Canada's currently planned oil and gas production to 2050 based on the CER Reference Case data published November 24, 2020: see "*Correcting Canada's 'one eye shut' climate policy: meeting Canada's climate commitments requires ending support for, and beginning the gradual phase out of, oil and gas production.*" The authors conclude that Canada's presently projected oil production to 2050 (if we allow it to occur) will add a cumulative 26.1 billion tonnes of CO₂ (GtCO₂) to the atmosphere over the next 30 years. Natural Gas production will add another 10.1 billion tonnes. The combined 36.2 GtCO₂ of cumulative emissions over the next 30 years represent 16% of the world's total remaining (and rapidly shrinking) carbon budget to stay within the 1.5°C warming limit: <https://cascadeinstitute.org/wp-content/uploads/2021/04/Carter-Dordi-Canadas-one-eye-shut-climate-policy-1.1-April-16.pdf>

A study by David Hughes, *Canada's Energy Sector: production forecasts, emissions and implications for emissions reduction* concluded that based on the CER's production scenarios published in November 2020, Canada's oil and gas sector's annual emissions will be about 200 Mt by 2050. Hughes concludes that "proceeding with an oil and gas production ramp-up as projected by CER makes achieving Canada's emissions-reduction commitment impossible":

¹ The *IPCC Special Report on Global Warming to 1.5°C* (October 2018) found that for a 66% probability of limiting warming to 1.5°C, the world's remaining carbon budget was 420 GtCO₂ and that it was depleting at the rate of 42 GtCO₂ every year: *IPCC Special Report SPM*, C.1.3 at p. 12. The analysis by Carter and Dordi assumes that by 2021 the available budget had been reduced to 230 Gt. They calculate that based on the CER 2020 production data the total cumulative volume of emissions that will be released by Canada's projected future levels of oil and gas production over the next 30 years to 2050 is equivalent to 16% of the remaining budget. Given on the current path of global emissions, the entire carbon budget for 1.5°C will be exhausted before 2030.

1.5 “Unextractable” fossil fuel: *Nature* (September 8, 2021)

If oil use does in fact substantially decline to meet the climate threat, Canada can expect to supply only a relatively small share of shrinking global oil demand. An analysis published in *Nature* on September 8, 2021, compares the sharp decline of production for Canada’s oil sands and other large producers (U.S., Middle East, Russia, etc.) that would be needed to keep the temperature increase below 1.5°C. It concludes that 84% of the 49 billion barrels of Canadian oil sands proven reserves would have to be left in the ground (“unextractable”) to allow a 50% probability of limiting warming to 1.5°C. Only 8 billion of Canada’s proven reserves remain marketable in that scenario. That is only about eight more years of oil sands production in Canada at current levels of output (3.1 million barrels per day in 2019): Welby, D., Price, J., Pye S., and Paul Ekins “Unextractable fossil fuel in a world.” *Nature* 597, 230-234 (2021): <https://doi.org/10.1038/s4158-021-03821-8>.

None of this information is completely new. A study published three years ago by three Canadian energy economists (“Global carbon budgets and the viability of new fossil fuel projects”, *Climate Change*, Mark Jaccard, James Hoeffle et al. May 2018) shows that to keep future atmospheric heating within a 2°C threshold, global oil demand would have to decline to 85 million bpd by 2025, to 79 million bpd by 2035, and to 69 million bpd by 2045 (those levels are well above the more draconian reduction to stay within a 1.5°C limit). The May 2018 study by Mark Jaccard explained that due to the combination of (1) already relatively high production costs in Canada’s oil sands, (2) high additional production cost increases that will be required to pay for the deployment of future carbon-reduction technologies in that emissions-intense industry (i.e., CCUS technology), and (3) the declining world price of oil, Canada’s oil sands has an extremely low likelihood of being able to be profitable and expand in a scenario designed to keep warming below 2°C (Jaccard refers to that as the “450 Scenario”). The Jaccard study concluded that there is less than a 5% probability that oil sands investments, and therefore new pipelines, would be economically viable over the next three decades under the 2°C carbon budget: <https://link.springer.com/article/10.1007/s10584-018-2206-2>.

Because of the relatively high costs of production per barrel in Canada’s oil sands (due to the high capital costs of extracting unconventional oil from the bitumen deposits in Alberta), we are one of the world’s highest-cost oil suppliers. Lower-cost suppliers will take an expanding share of declining global demand as world oil prices fall.

1.6 *Canada’s Energy Future 2021* report (December 9, 2021)

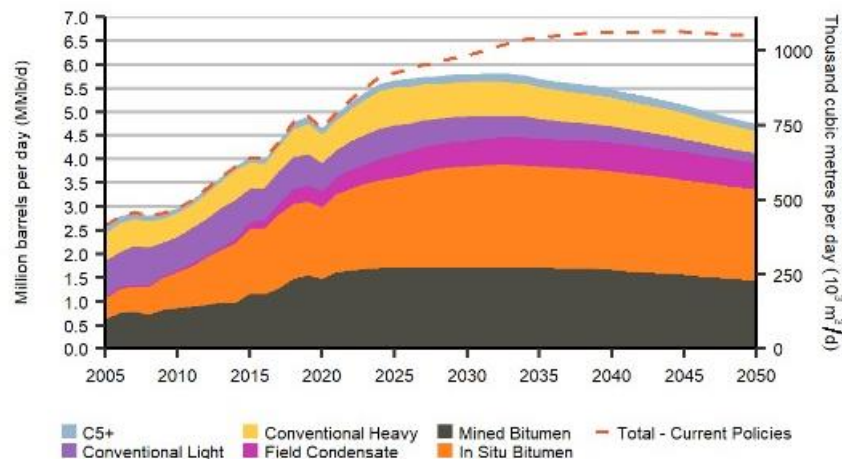
The Canada Energy Regulator on December 9, 2021, released a new annual report showing Canada’s projected oil and gas production to 2050. Again, it has produced two scenarios.

The CER’s new “Current Policies” scenario projects that Canada’s total oil production will continue to *increase* to 2044 when it peaks at 6.7 million bpd, an increase of 1.8 million bpd above the 2019 level. By 2050 production declines very slightly to 6.6 million bpd. The CER

2021 report explains that this scenario assumes that “energy and climate policies that are currently in place” around the world remain unchanged. In other words, it represents a continuation of the high-level dependence of the global energy system on fossil fuels to 2050. The CER’s “Current Policies” scenario is similar to the Stated Policies (“STEPS”) scenario published by the IEA in its *World Energy Outlook 2021* report on October 12, 2021. The STEPS scenario, according to the IEA, will lead to warming of 2.6°C.

The CER’s two new projections are depicted in Figure R.8 of the report, reproduced here as Figure F:

Figure F: Total crude oil production peaks in 2032 and then declines through 2050 in the Evolving Policies Scenario



Source: Canada’s Energy Future 2021, December 9, 2021, Figure R8 at page 40.

The upper dotted red line represents Canada’s oil production to 2050 based on the “Current Policies Scenario”. The lower gray line depicts the “Evolving Policies Scenario”, peaking at 5.8 million bpd in 2032 and showing a gradual decline to 4.8 million bpd by 2050.

The CER’s new “Evolving Policies Scenario”, which assumes the world will adopt “steadily more ambitious climate policies”, shows Canada’s oil production will continue growing until 2032, when it is projected to peak at 5.8 million bpd, about 900,000 bpd above the 2019 level. More than 80% of that expansion (an increase of 793,000 bpd) is expected to occur as early as 2026. The Evolving Scenario shows a slight decline that begins in the years after 2032, but Canada’s total production by 2050 will still be at the relatively high level of 4.8 million bpd – only about 2% less than it was in 2019.

In short, Canada’s oil production shows no significant reduction over the next 30 years, even under the Evolving Policies Scenario. The CER 2021 report gives this succinct summary of the outlook for Canada’s oil production between now and 2050:

From 2019 to 2032, crude oil production increases 19%. Between 2032 and 2050 production decreases by 19%.

— Canada’s Energy Future 2021, December 9, 2021, page 40

In contrast, as we have noted in Part 1.2 above, the IEA's *Net-Zero by 2050 Scenario* concludes that a 50% reduction of global oil will be required by 2040 to give us even a 50-50 chance of keeping warming within the 1.5°C pathway. The new CER report acknowledges the existence of the IEA's *Net-Zero Scenario* in this brief comment:

Conversely, some recent global net-zero studies, such as the International Energy Agency's Net-Zero Scenario in World Energy Outlook 2021, show rapidly declining global oil demand, which could lead to significantly lower Canadian production levels compared to the Evolving Policies Scenario.

— *Canada's Energy Future 2021*, December 9, 2021, p. 12 (emphasis added)

The CER's comment about the IEA's analysis is conspicuously non-committal about whether there is any need for deep reductions in Canada's oil production over the next thirty years. In a single brief sentence on page 19, the CER admits that its own new "Evolving Policies Scenario" does not put us on a pathway to meet the Paris goals, whether 1.5°C or 2°C:

In the Evolving Policies Scenario, significant GHG emissions reductions will be realized, but ambitious goals such as net-zero by 2050 are unlikely to be met".

But after admitting that its new climate-friendly Evolving Policies Scenario will not put us on a path to avoid catastrophic climate change, the CER report comments approvingly on what it describes as the "resilient" production levels the new Evolving Scenario promises for Canada's oil industry through to 2050.

Canadian crude oil production levels are resilient through 2050 despite the Evolving Policies Scenario's relatively low oil prices and steadily more ambitious climate policies.

The CER assures its readers that the operating costs of Canada's "oil sands facilities" are low enough to remain profitable even if oil prices decline to \$40 per barrel by 2050. It is a positive story, for Canada's oil industry. But the CER does not include any discussion at all about what degree of future warming will occur in the case of its "Current Policies" scenario, in which Canada's high oil production levels remain unchanged to 2050, and it is also entirely silent about the amount of warming implied by its "Evolving Policies Scenario".

An article published on December 14, 2021, by four of Canada's leading experts on energy policy and climate, points to that extraordinary omission. Commenting on the CER's new report, they write:

Scenarios that anticipate growing Canadian production are associated with higher levels of warming, but CER does not highlight to what degree. The one scenario in the International Energy Agency's (IEA) World Energy Outlook 2021 that roughly aligns with the CER current policies scenario anticipates 2.6°C of warming, far beyond the Paris target"

— "Canada's Energy Regulator Turns a Blind Eye to dangerous global warming", K. Harrison, M. Jaccard, N. Rivers, and A. Carter, December 14, 2021 (emphasis added)

The article by Harrison, Jaccard and others is further discussed in Part 1.7 below.

What the CER's new report did not publish is a scenario that tells us the truth - that candidly tells us how much faster Canada's oil production levels must be reduced by 2030 and by 2040 to align our production with an effective global effort to stay within the 1.5°C warming threshold.

1.7 “Canada’s Energy Regulator turns a blind eye to dangerous global warming”

On December 14, 2021, four of Canada's leading experts on climate policy and oil production published an article containing a devastating indictment of the irresponsible and misleading character of the CER's projections: see Kathryn Harrison (UBC), Mark Jaccard (Simon Fraser University), Nicholas Rivers, (University of Ottawa), and Angela Carter (University of Waterloo). It appeared under the title “Canada’s energy regulator turns a blind eye to dangerous global warming” just five days after the CER 2021 report was released:

<https://www.nationalobserver.com/2021/12/14/opinion/canadas-energy-regulator-turns-blind-eye-dangerous-global-warming>

The four authors begin by observing that the Canada Energy Agency's most recent report published on December 9, 2021, “offers reassurance” that “Canadian crude oil production levels are resilient through to 2050”. The CER's upbeat reassurance about the bountiful future of Canada's oil production levels, they make clear, is entirely unfounded if we are seriously aiming to transform our economy and to successfully adapt to what they describe as “a carbon constrained world”.

However, CER's report fails to examine a path to reduce greenhouse gas emissions to net-zero by 2050, consistent with the Canadian and international goal. In so doing, CER has understated risks to Canada's economy and failed to inform looming policy decisions”.

— “Canada’s Energy Regulator turns a blind eye to dangerous global warming”,
National Observer, December 9, 2021 (emphasis added)

That is a damning indictment of Canada's energy agency (the CER), which is supposed to be providing the Government of Canada with carefully prepared advice on the most consequential energy policy issues that any human society has ever had to face: what is an environmentally responsible and economically sound pathway for Canada's oil and gas production to get us through the next 30 years?

The authors observe that the CER's two new scenarios, both of which anticipate continued expansion of Canadian oil production, are associated with *higher levels of warming* “but CER does not highlight to what degree”. They point out that the CER's “Current Policies” forecast for Canadian fossil fuel production is roughly aligned with the IEA's recently published “Stated Policies Scenario”, which the authors explain “anticipates 2.6°C of warming, far beyond the Paris target”. They acknowledge that “To limit warming to 1.5°C requires a 45 per cent reduction globally by 2030 and net-zero by 2050”. And they state very clearly that the CER's Evolving Policies Scenario does “not align with Canada's new 2030 target and corresponding policy commitments”. They summarize their assessment of the CER's work this way:

The CER has simply ignored Canada's legally mandated goal of net-zero by 2050.

These four Canadian experts also include a brief but crushing commentary on Canada's ambitions to rely on large-scale deployment of expensive CCUS technology to capture emissions while we maintain high levels of oil production. One fatal problem, they say, is basic economics. Canada is a high-cost oil producer compared to other suppliers:

As global demand contracts, prices will fall. New investments in Canada's unconventional oil sands will be priced out of a shrinking market before other crude sources by virtue of relatively high productions costs.

They also refer specifically to the "IEA's Net-Zero Scenario" and explain that it provides no significant future role for CCUS technology in oil production:

IEA's net-zero scenario anticipates deep reductions in global consumption of all fossil fuels. Although the IEA projects significant carbon capture and sequestration (CCS), it is used primarily to offset emissions from hard-to-abate sectors, such as steel and cement. CCS does not save demand for fossil fuels because in a carbon constrained world, they can be replaced for most purposes more cheaply by renewables."

CCUS technology will not be economically viable in a world where oil prices fall as global demand contracts. The article by Kathryn Harrison, Mark Jaccard, Angela Carter and Nicholas Rivers concludes with a warning that the "IEA's report offers a sobering picture for Canada." The CER's report of December 9, 2021, is a betrayal of the public interest. It sedulously protects and advances the interests of the oil industry, which aims to maintain high production levels for another 20 or 30 years. But the CER has closed its eyes to the public interest.

1.8 The silence of Ministers and Members of Parliament

Neither the *Canada's Energy Future 2020* report nor the more promotional *Healthy Environment and a Healthy Economy* document published by the Liberal Government on December 11, 2020, (which was widely cited and promoted by Liberal Members of Parliament during the Federal election campaign in September 2021) discusses the incompatibility between the ongoing growth of Canada's oil sands production and the overwhelming scientific evidence that affirms the need for deep cuts in global oil consumption by 2030.

A brief statement toward the end of the CER's November 2020 document conceded that even the slower rate of growth in future oil sands production shown in the Evolving Scenario would not be sufficient to meet Canada's recently announced "net-zero by 2050" goal:

It is also clear that Canada's more ambitious goals, such as achieving net-zero by 2050, will require faster transition than we have witnessed historically and faster than is shown in the Evolving Scenario. Recognizing this fact, we have introduced a "Towards Net-zero" section in EF2020.

— CER 2020 Report, November 24, 2020, page 62 (emphasis added)

That was a clear, albeit very muted, acknowledgement by the Canada Energy Regulator in November 2020 that the *currently planned expansion of our oil sands production is inconsistent with limiting global warming to 1.5°C*. On that crucial point, the government, and in particular the Minister of Environment and Climate Change (then Jonathan Wilkinson)², have remained completely silent over the twelve months since the CER report was released on November 24, 2020. Government Ministers have offered no comment on how Canada’s current plans to continue oil sands expansion can be reconciled with the “net-zero by 2050” goal.

Indeed, when Wilkinson was asked by a knowledgeable interviewer during a Zoom online election campaign panel September 8, 2021, to explain how Canada’s new “Net-zero emissions by 2050” climate plan can be squared with continued oil sands expansion, his answer was evasive: he answered only that there will be “no significant further *expansion* of oil production in this country”.

On September 5, 2021, a few days prior to Wilkinson’s performance, Joyce Murray (Member of Parliament for Vancouver Quadra) during an online Zoom debate with Devyani Singh, the Green Party candidate, offered her own interpretation of how the Liberal government’s climate plan will approach the problem of oil production and emissions:

We are capping oil sands production and it will need to step down to net zero by 2050 ... a 5-year plan to reduce their production

Joyce Murray’s answer was unfortunate. There is no policy of a “cap” on Canada’s oil sands production. Murray surely mixed up her talking points. She could only have meant that the government plans to put an upper limit on the annual level of oil sands *emissions*. But for an MP who claims to be especially knowledgeable about climate change and climate policy, it was dismaying to watch her flounder – and mislead her constituents.

Having offered her audience a non-existent policy that would ostensibly *reduce* oil production, Murray avoided saying anything about how Canada’s well-documented plans to continue expanding our oil sands production to 2045 can be reconciled with “net-zero emissions by 2050”. She avoided the core question. Nor did she explain why we now need to complete the Trans Mountain Pipeline Expansion if production is going to “step down” at 5-year intervals.

Although the CER has admitted that Canada’s existing plans *exceed* the much lower trajectory for Canada’s future oil production that would be consistent with meeting the “more ambitious [Net-zero] goals” promised by the government, the energy agency has failed to offer any assessment of *how much lower future output levels* over the next thirty years would need to be to meet that goal. The report is silent on that question, which is fundamental to assessing what changes in Canada’s energy policy are required.

² In a cabinet shuffle on October 26, 2021, Wilkinson was replaced as Minister of Environment and Climate Change by Steven Guilbeault. Wilkinson has now become Canada’s Minister of Natural Resources. On October 27, the day after his appointment as Environment Minister, Guilbeault was asked about the oil and gas sector. He responded: “We are not trying to cap production. We will be capping the amount of pollution that comes from those sectors”.

SUMMARY:

Canada's current plan to continue to expand its oil production and maintain its existing high production levels for another 20 to 30 years cannot be reconciled with the available evidence, which shows unequivocally that global oil consumption must decline sharply by 2030 and be reduced in the order of 50% by 2040.

Canada's predicament is far more than an economic or policy dilemma that can be measured by data. The available evidence describes an axial moment that confronts us with a moral and ethical choice. Members of Parliament in all parties have a moral obligation to directly address the need to immediately begin *reducing Canada's oil production*.

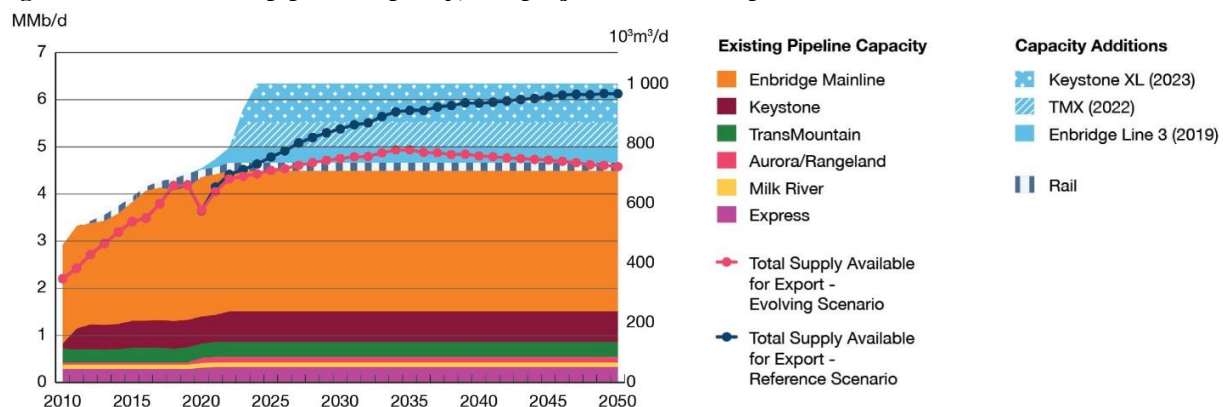
QUESTION:

1. Do you agree that all further *expansion* of oil sands production should end now, and that Canada must establish a plan that provides for a gradual reduction of Canada's total crude oil production to 2030 and deeper reductions to 2050, a plan aligned with the reduced levels of global oil output that over the next three decades will be essential to meet the net-zero emissions goal by 2050 and limit warming to 1.5°C?

2. CANCELLING THE TRANS MOUNTAIN PIPELINE PROJECT

One question, raised implicitly by the CER 2020 report a year ago (but not explicitly discussed at any length in the document), was whether Canada's newly promised "more ambitious" climate plan and specifically the commitment announced on November 19, 2020, (to achieve "net-zero" emissions by 2050) means that the additional pipeline capacity promised by the Trans Mountain project may not be required. The report included a graph we reproduce here as Figure G (it appears as Figure R.12 in the Canada Energy Agency's November 2020 report at page 44), which depicts Canada's existing and planned pipeline capacity and projected oil output to 2050.

Figure G: Planned new pipeline capacity, and projected future oil production to 2050



Source: *Canada's Energy Future 2020*, November 24, 2020, Figure R.12 at page 44

The three new pipelines are represented by the blue-coloured horizontal bands and would provide total new shipping capacity of 1.740 million bpd. Keystone XL is shown as the largest, at 830,000 barrels per day. That project, cancelled by President Obama in 2015 but then re-authorized by Trump in 2017, was again cancelled by the new Biden Administration on January 20, 2021. The Trans Mountain, presently under construction, if completed will provide 540,000 bpd of new capacity. Line 3 was still under construction a year ago, but it is now operational and provides 370,000 bpd of new shipping capacity.

The total supply of crude oil (including bitumen) *available for export* is less than Canada's total oil production, because a relatively small portion of Canada's total production is diverted for refining and domestic use in Canada. Figure G shows the available supply for export under the two scenarios. The Reference Case, shown by the top black dotted line, curves up to just above 6 million bpd of available supply by the mid- and late 2040s – and that level of available supply, according to the CER 2020 analysis, would utilize all the planned 1.740 million bpd of new pipeline capacity.

According to the Canada Energy Regulator's analysis in November 2020, if Canada's oil production were to be even modestly reduced over the coming decades in line with the Evolving Scenario, the proposed new capacity provided by both the Keystone XL and by the Trans Mountain project *would not be required*. The Evolving Scenario is depicted by the lower red dotted line, which more gently curves up to about 5 million bpd of available supply in 2035-2040. Under the Evolving Scenario, the 370,000 bpd of new capacity provided by Line 3 would be required but the other two projects will not be required.

The CER's revised Evolving Scenario published on December 9, 2021, shows a slightly faster reduction of Canada's oil production after 2032. Accordingly, after 2032 any need for additional pipeline capacity is even less compelling than it was a year ago.

The new CER report acknowledges the excess pipeline capacity issue, but it is equivocal on whether the new capacity provided by TMX will be required. It offers this caveat: "*EF2021 does not assess whether additional pipeline capacity would be required to avoid constraining Canadian crude oil production below levels projected in the Evolving Policies Scenario*". It adds a further comment in a sidebar on page 13:

Spare capacity provides producers and others in the marketplace with flexibility to access high value markets, and avoid the impacts of maintenance, unforeseen outages, and the higher costs of rail"

Higher pipeline capacity facilitates higher oil production levels. Shipping bitumen by pipeline is \$10 per barrel cheaper than rail transport: see *Review of Related Greenhouse Gas Emissions Estimates for the Trans Mountain Expansion Project*, November 25, 2016 (also referred to as the "upstream emissions assessment"). The assessment in 2016 acknowledged that at low oil prices, transporting crude oil by rail will not be economically viable. The new CER 2021 report in its Evolving Scenario projects future long-term oil prices of \$40 per barrel. In the absence of sufficient available pipeline capacity, especially if oil prices are in the range of \$40 per barrel, further expansion of oil sands production will not be economically viable. As the experts say,

further expansion will be “constrained” by the higher costs of rail transport. “Spare” pipeline capacity” will enable higher levels of production.

Six years ago, the additional pipeline capacity provided by the TMX project was deemed to be *essential* to accommodate the expected expansion of Canada’s oil production to 2040. Now this additional capacity is no longer essential. Any residual need for “spare capacity” is superfluous if production declines faster, as it must, to meet our 1.5°C goal. The only reason to proceed with TMX would be to enhance the “competitiveness” of the industry by offering, to Canada’s oil sands producers, additional pipeline capacity so they can avoid the “higher costs of rail” if they choose to continue increasing production. Cancelling TMX now will place an economic disincentive on oil producers who seek to further expand their production.

SUMMARY:

The Trans Mountain Pipeline is an infrastructure project that is not required to transport the existing levels of Canada’s oil production. Even when oil production “peaks” in 2032 at 5.8 million bpd (under the CER’s most recent “Evolving Policies Scenario” published in CER 2021), the additional shipping capacity provided by TMX will be “excess”. Accordingly, the completion of the project will only serve to make future higher production levels “competitive” because pipeline transport is cheaper than rail. Canceling the TMX aligns with Canada’s commitment to limit the future temperature increase to 1.5°C goal.

QUESTION:

2. **Do you agree that under the Evolving Policies Scenario the Trans Mountain Pipeline Expansion is not required? Do you agree the project should be cancelled?**

3. CANADA’S “NET-ZERO EMISSIONS BY 2050” PROMISE: AN EMPTY PROMISE

The *Canada’s Energy Future 2020* document tells us that “*reaching net-zero emissions does not necessarily require eliminating all emissions*” by 2050. It promises that by 2050, the ongoing level of Canada’s annual emissions (referred to as our “remaining emissions”) will be offset (“balanced”) by future technologies that it claims will have the capability to remove massive amounts of CO₂ from the atmosphere (“emissions removals”).

It is now more than a full year since the Liberal Government on November 19, 2020, announced this new “net-zero” goal. Since then, no further information has been revealed by the government about the actual share of Canada’s current emissions that would have to be eliminated by 2050 to successfully achieve this promised new goal. In the most recent national data, greenhouse gas emissions in all seven sectors of the Canadian economy in 2019 totalled 730 million tonnes (Mt) of CO₂eq. Canada’s new commitment under the 2015 Paris Agreement (our Nationally Determined Commitment or “NDC”) is to reduce our emissions 40% to 45% by 2030, below the 2005 level (the 2005 level was 738 Mt). The target for 2030 is therefore 401 Mt.

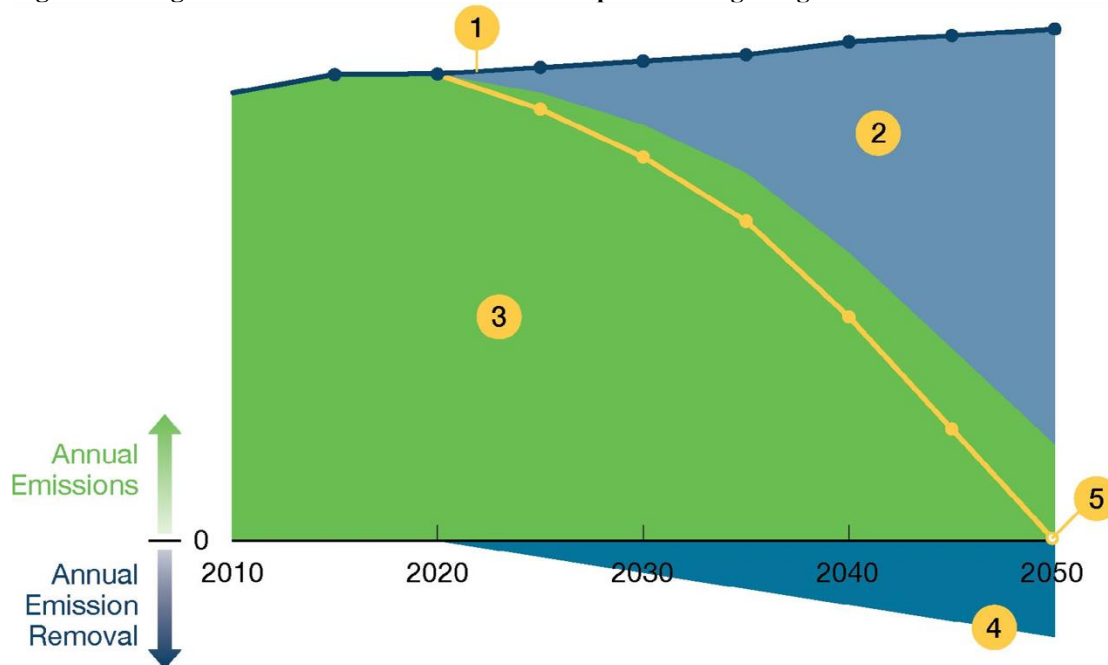
What exactly is the government promising we will do by 2050?

3.1 Canada's definition of what "Net-Zero emission by 2050" means

A key promise underlying Canada's new plan is that, in future, "negative emissions technologies" will be available that will allow us to effectively *remove* CO₂ from the atmosphere and do that on a sufficiently large scale to ensure that by 2050 all further emissions released by Canada into the atmosphere are "balanced" by "emissions removals". The goal is to ensure that the concentration of CO₂ in the atmosphere does not exceed the critical threshold that will lead to average global surface temperature far above 2°C. But the future availability of those technologies is a conjecture.

A graph published in the CER 2020 report explains the basic concept. It appears as Figure NZ.1, under the title "Illustrative Example, the GHG Emissions Remaining after Mitigation and Emissions Removal". We reproduce it below as Figure H.

Figure H: Diagram described as "Illustrative Example" showing mitigation and residual emissions



Source: Canada's Energy Future 2020, November 24, 2020, Figure NZ.1 at p. 67.

In the report, adjacent to the above diagram, a short paragraph tells us only this:

Reaching net-zero emissions does not necessarily require eliminating all emissions everywhere. Instead, residual emissions can be balanced by enhanced biological sinks and negative emissions technologies.

— Canada's Energy Future 2021 report, page 67 (emphasis added)

The vertical axis on the government's graph measures the level of Canada's annual emissions, depicted as starting to decline in 2020. But there is no scale or actual numbers to tell us what the reduced level of Canada's emissions is supposed to be by 2050 or, in the terminology of this

plan, what the projected amount of “residual emissions” might be in 2050. Nor does the diagram reveal anything about what the expected level of reduced emissions would have to be by 2030 or by 2040 to stay on this hypothetical downward trajectory. It is just a sketch of a concept.

The text of the document tells us that numeral 3 on the diagram represents “remaining emissions” (the same thing as “residual emissions”). As can be seen on the far right-hand side of the diagram, by 2050 a substantial but unspecified volume of emissions is still being released into the atmosphere. Hypothetically offsetting that volume of remaining emissions, an equivalent volume of “emissions removals” (represented on the graph by numeral 4) is assumed to be achieved in 2050 to ensure that the overall result for that year will be “net-zero”. Numeral 5 is said to represent zero “net emissions” because it assumes that “removals” by 2050 will balance remaining emissions.

Therefore, the sketch envisions that if we fail to adopt new policies within the next thirty years to achieve the needed deep reductions by 2050 (i.e., mitigation policies that allow us to massively reduce our emissions by ending our dependence on coal, oil, and natural gas) or if we choose not to do so, we can halt any further increases in the amount of CO₂ in the earth’s atmosphere by deploying new technologies that will have the capacity to actually *remove* CO₂ from the atmosphere.

The concept assumes, or promises, that large-scale installations of CDR (Carbon Dioxide Removal) technologies including CCUS and other future technologies which do not yet exist or now exist only in very small-scale experimental forms will allow us to declare, by 2050, that we have ceased “net additions” to the cumulative amount of carbon in the atmosphere. Meeting that promise, of course, is left to the world’s children and they will bear the burden of that.

A core feature of the scheme is the concept of “residual” or “remaining” emissions. That refers to the amount of annual CO₂ emissions and other greenhouse gases (i.e., methane and nitrous oxide, etc.) that will continue to be released into the atmosphere by 2050 and that will continue for decades after that.

In this scheme, the size of the “remaining emissions” by 2050 is a crucial “unknown” that will make the difference between a *possibly* viable outcome (if the remaining emissions are very small) and one that masks a pathway to catastrophic failure (if the remaining emissions are very large and beyond our capacity to remove). The outcome depends on the magnitude of the “remaining emissions” by 2050 and whether the promised “removal” technologies by then are viable.

If under this plan we allow relatively high levels of industrial emissions (including high levels of emissions from ongoing oil sands operations and other oil and gas sector activities) to continue to 2030 and beyond, then by 2050 the annual level of emissions in Canada could still be as high as 100 Mt or 200 Mt, or even 400 Mt (the level was 730 Mt in 2019). The CER 2020 report reveals nothing at all about what the level of “remaining emission” is expected to be 30 years from now.

Until the government tells us what the proposed target for “remaining emissions” is going to be, there is no plan. There is nothing to look at to decide whether it is a worthy or feasible plan.

If our elected politicians were to candidly tell us that their new plan envisions that Canada will still be releasing, for example, 300 Mt a year of “remaining emissions” by 2050, we would at least know exactly what “net-zero” means in this context. It would mean our children (and their children) are going to be responsible for figuring out how to remove 300 Mt of CO₂ from the atmosphere by using CDR technology, and to do that every year until Canada manages to reduce its “remaining emissions” down to zero.

3.2 Bill C-12 delays the public disclosure of key climate targets for many years

On June 30, 2021, Parliament passed into law the *Canadian Net-Zero Emissions Accountability Act* (Bill C-12). Section 7 of the new law sets certain deadlines for when the Minister of Environment and Climate Change must set a national greenhouse gas emissions target for each “milestone year”. Here is the specific provision that stipulates when the targets for the years after 2030 will be revealed:

7 (4) The Minister must set the national greenhouse gas target
for the 2035 milestone year, no later than December 1, 2024;
for the 2040 milestone year, no later than December 1, 2029;
for the 2045 milestone year, no later than December 1, 2034

Accordingly, the new law does not legally require that the government establish or disclose to Canadians any long-term target for the reduction of Canada’s emissions until December 1, 2034 – thirteen years from now. The government is free to delay telling us anything about the 2040 target until December 1, 2029. We will not get any information about the 2035 target until the end of 2024.

The law enables the government to conceal from the public for many more years the long-term emissions implications of Canada’s current plans to continue expanding oil and gas production to 2045.

The announcement of the “net-zero emissions by 2050” goal on November 19, 2020, does not provide a new climate plan for Canada. It is a communications plan. The new announcement appears to be designed to allow the Government of Canada more time to delay the day of candour – to delay a truthful accounting of the contradiction between Canada’s existing energy policies, which continue to facilitate the ongoing expansion of the oil and gas sector and delay the kind of action required within the next nine years to give us a realistic chance of avoiding a catastrophic outcome.

This plan, as it stands, gives the government a free licence to continue the currently planned expansion of Canada’s oil sands production, and other carbon-intensive industries (including LNG in B.C.) for another twenty-five years. Oil and gas sector emissions are the dominant source of our country’s emissions growth. The higher they go (and the longer we delay reversing this trend) the higher our “remaining emissions” will be in 2050 – and the higher the annual level of “emissions removals” would have to be after 2050 to meet “net-zero”. Under this scheme, the risk and loss and suffering will be shifted to the world’s children, in exchange for our own immediate financial gain.

Canada's "Net-Zero by 2050" plan provides nothing more than an empty promise that by 2050 Canada's annual level of emissions (the so-called "remaining emissions") will be fully offset by CDR technologies.

3.3 Undue reliance on future CDR technologies is "a dangerous trap"

Three of the world's leading climate scientists in April 2021 warned that the concept of net-zero, if it is used to justify the continued high-levels of oil, coal, and natural gas use, is "a dangerous trap": April 22, 2021, *Climate scientists: concept of net-zero is a dangerous trap*, James Dyke, Robert Watson, and Wolfgang Knorr (<https://theconversation.com/climate-scientists-concept-of-net-zero-is-a-dangerous-trap-157368>). Their article is an indication of the growing alarm among climate scientists that the term "net-zero" is becoming a mask for plans to continue expanding oil and natural gas production for another 20 or 30 years.

Between May 17 and June 22, 2021, the draft legislation for the *Canadian Net-Zero Emissions Accountability Act* (Bill C-12) was discussed by a committee of Parliament, called the Standing Committee on Environment and Sustainable Development. About 75 written submissions were filed by a range of groups and individuals from across Canada.

Canadian climate scientist Kirsten Zickfeld filed a written submission that clearly addressed the risks posed by building a climate plan that relies heavily on future "emissions removals": <https://www.ourcommons.ca/Content/Committee/432/ENVI/Brief/BR11354997/br-external/ZickfeldKirsten-e.pdf>. Kirsten Zickfeld was a lead author on the IPCC 2018 report. In a footnote (note 6) to her submission, Zickfeld cites a helpful article, *Beyond "Net-Zero": A Case for Separate Targets for Emissions Reduction and Negative Emissions*, Duncan P. McLaren, et al., *Front. Clim.*, 21 August 2019. The McLaren article is found at: <https://www.frontiersin.org/articles/10.3389/fclim.2019.00004/full>.

The McLaren article provides a comprehensive look at the risks of betting our children's future on the contingencies of future emissions removal technologies and explains why the prescribed target for actual reductions of emissions should be separate from a target that specifies the volume of "emissions removals" (i.e., using carbon removal technologies) that may be relied on to meet the over-all "net-zero" goal.

A comprehensive joint submission was also filed on May 28, 2021, by the Athabasca Chipewyan First Nation, the Baker Lake Cree Nation, and the Mikisew Cree First Nation. Their submission was entirely focused on this same issue, namely how large a share of the so-called "net-zero" emissions goal by 2050 should be designed to be achieved by actual reductions of emissions, and to what extent we can safely rely on promised future "emissions removals" from the atmosphere to meet that goal. Their proposal was that Bill C-12 be amended to stipulate that 90% of Canada's mitigation by 2050 must be achieved by the actual reduction of CO₂ emissions (permitting up to 10% of the total needed reductions to be met by CDR removals or by "offsets" and other schemes):

<https://www.ourcommons.ca/Content/Committee/432/ENVI/Brief/BR11369348/br-external/Jointly3-e.pdf>

The Parliamentary Committee rejected any proposed amendments to Bill C-12 that would have required the government to develop and publish targets specifying what Canada's projected "remaining emissions" are expected to be by 2050 and what the annual level of "emissions removals" is supposed to be by 2050. A proposed amendment of that kind was made by Green Party MP Elizabeth May, supported by the Bloc Quebecois MP who was a member of the Committee. The NDP Member of Parliament on the Committee did not support the amendment. The Committee refused to consider the issue – and did not even discuss whether the reliance of Bill C-12 on large-scale future emissions removals was a safe policy.

These issues are also discussed in a recent article by Marc Lee, *Dangerous Distractions: Canada's carbon emissions and the pathway to net-zero* (C.C.P.A., June 2021). In addition to his review of engineered carbon removals, Marc Lee at p. 8 – 11 also discusses the LULUCF sector, our unfounded reliance on forests as carbon sinks, and Canada's present accounting methodologies that *exclude* from counting, *inter alia*, emissions from forest fires: https://www.policyalternatives.ca/sites/default/files/uploads/publications/BC%20Office/2021/06/CCPA%20report_Dangerous%20Distractions%20Net%20Zero.pdf

Bill C-12 in the form it was enacted on June 30, 2021, enables the government to conceal from the public for many more years the long-term emissions implications of Canada's current plans to continue expanding oil and gas production to 2045.

SUMMARY:

Canada's "Net-Zero by 2050" plan consists of a bare promise that by 2050 "continuing emissions" (which are not quantified) will be "balanced" by "emissions removals". The promised future removals are contingent on technologies that either do not exist (direct air removal technology) or on CCUS which has never been deployed at scale.

Under this scheme, the crucial measure that defines our ultimate emissions reduction goal, namely the total amount of Canada's projected "remaining emissions" by 2050, is completely unknown. If we fail over the coming few years to impose effective emissions reduction policies in all of our seven economic sectors and if the anticipated level of Canada's "remaining emissions" by 2050 as a result escalates, a future government will be able to simply promise, as the government is promising now, that envisioned future technologies (which do not yet exist or are unproven at scale) will achieve ever larger undefined amounts of "emissions removals" sometime in the future.

Because of the delayed reporting requirement under section 7 of the Act, crucial information about the future long-term emissions implication of our current emissions-intensive oil and gas development plans will not be available to the public for another thirteen years, in the case of the 2045 target. By then it will be too late. Public accountability and absolute candour and timeliness in disclosure of material information to Canadians is a key principle that should inform the development and implementation of climate policy. The provisions of section 7 of the *Canadian Net-Zero Emissions Accountability Act* (Bill C-12) fail to meet that standard.

The CER's annual *Canada's Energy Future* reports publish oil and gas production data to 2050, but they do not include emissions data. Environment Canada's annual reports do not publish projected emissions beyond 2030.

The premise implicit in the Government of Canada's "Net-Zero by 2050" scheme is that our oil and gas industries will be permitted to continue expanding production and maintain high levels of production for another 20 to 30 years. In the case of our "upstream emissions", the promise is that the availability of CCUS and other technologies will reduce those emissions even as production levels remain high.

The government is entirely silent about the "downstream emissions" from our expanding oil production.

Canada's "Net-Zero by 2050" scheme shifts an unconscionable burden to the next generation. It places on them an enormous economic burden that will require them and their children, at pain of survival, to develop, construct, and operate forever a vast new industrial complex of carbon removal facilities. Worse, it places on them all the risk that these various technological schemes will not prove viable or will be woefully inadequate to achieve the huge scale of emissions removals that will be required.

QUESTIONS:

- 3.1 What is the government's number or measure that tells us what the estimated level of Canada's "remaining emissions" will be in 2050? No such number has been provided to Canadians. Alternatively, what is the government's currently available estimate of the annual level of "emissions removals" that will be feasible by 2050?
- 3.2 Do you know if the government has in fact developed any numbers or estimates?
- 3.3 Even if the government has no available data of that kind, do you as a Member of Parliament have any idea what the level of "remaining emissions" under Canada's new plan is expected to be by 2050?

4. CRUCIAL INFORMATION NOT REVEALED BY CANADA'S ENERGY REGULATOR

A deeply disturbing feature of the *Canada's Energy Future 2020* report released by the Canada Energy Regulator (CER) on November 24, 2020 is that although it refers repeatedly to the government's "Net-Zero emissions by 2050" goal (publicly announced by the Prime Minister on November 19, 2020), it did not provide any analysis or findings that would inform Canadian citizens about the projected future (lower) levels of Canada's oil production consistent with a 1.5°C world.

Scenarios that examine questions of that kind are not unusual. Recent examples on a global scale include the IEA's "Net-Zero by 2050" Scenario and its earlier "Sustainable Development Scenario" (November 2019). Those studies examine the future limits on global oil consumption that will be essential to meet future global warming limits. In the case of Canada, energy

economists can readily determine what levels of future oil sands production in Canada will be economically viable at the lower future crude oil prices that will prevail as global oil consumption declines to levels consistent with a 1.5°C world.

A study of that kind, addressing Canada's specific situation, would provide us with an honest assessment of what future oil sands production levels will be feasible and safe in a world committed to stay within the 1.5°C warming threshold.

The need for that kind of information about Canada's future oil production is even more acute in view of the IEA's new "*Net-Zero by 2050 Scenario*". We now know that a responsible and safe pathway for worldwide oil production requires a 50% reduction by 2040, and further very deep cuts by 2050. What production pathway does the government plan for Canada? It is essential that constituents be fully apprised of the answer.

It is inexplicable that Canada's own energy agency, or Environment Canada, or some other arm of the Government of Canada, has not developed and publicly released its own analysis of that kind. We are the world's third largest oil exporter. Over 80% of our production is consumed in foreign markets. Yet our national government has failed to conduct a study that would realistically inform Canadians of what the impact on the oil sands production will be, say by 2040, if the world's main industrial economies adopt strong climate policies to limit emissions. An alternative explanation is that Environment Canada (or the Department of Natural Resources and Canada's Energy Regulator) already possess analyses of that kind but refuse to disclose them publicly.

As we noted above, the CER 2020 report states merely that future production will have to be *some unspecified amount less than* the "Evolving Scenario":

It is also clear that Canada's more ambitious goals, such as achieving net-zero by 2050, will require faster transition than we have witnessed historically and faster than is shown in the Evolving Scenario. Recognizing this fact, we have introduced a "Towards Net-zero" section in EF2020.

— CER 2020 Report, page 62 (emphasis added)

The report tells us only that the needed reductions must be "faster" than the trajectory shown in the Evolving Scenario. It refuses to tell us *how much faster* our oil production must decline: what is the lower level for oil production in Canada required to be consistent with the "net-zero emissions by 2050" goal?

Without an answer to that question, Canadian citizens are denied any "accountability" (promised by the *Canadian Net-Zero Emissions Accountability Act* passed on June 30, 2021) on this most important issue. The choices we make about the future pathway of Canada's oil production to 2045 will be crucial in determining our country's ability to help keep the further heating of the earth to less than 1.5°C threshold, or within the 1.8°C or 2 °C limits.

On July 8, 2021, twenty-one energy economists and climate scientists, all deeply experienced and informed about Canada's oil production projections and the emissions implications of continued expansion, sent a letter to the Prime Minister citing the findings of the IEA's "Net-

Zero by 2050 Scenario” publicly released on May 18, 2021. They sent copies to Canada’s Minister of Environment and Climate Change, to the Minister of Natural Resources, and to the Chair and CEO of the Canada Energy Agency: <https://www.linkedin.com/pulse/canadas-energy-regulator-should-develop-net-zero-letter-mark-winfield>

In this unusual and important letter, these twenty-one leading experts make a demand that is explicit and clear. They acknowledge the importance of the IEA’s recent Net Zero by 2050 Scenario which they describe as “charting a path for the global energy sector to be in line with meeting the Paris Agreement’s ambition of limiting global temperature rise to 1.5°C above pre-industrial levels”.

They explicitly direct attention to the fact that Canada’s own energy agency (the CER) “does not currently model scenarios showing where Canada’s energy sector aligns with the government’s net-zero goal”. And they state: “*Specifically, we urge you to mandate that the Canadian Energy Regulator model scenarios consistent with the IEA’s Net Zero by 2050 report.*” In plain English, that means the government should immediately direct or instruct the CER to develop a scenario that will inform Canadians with complete honesty and candour what production levels for Canada’s oil production over the next 20 to 30 years would be safely aligned with an effective global effort to stay within the 1.5°C warming threshold.

That would provide Canadians with a first step towards real accountability. That has not yet happened. But belatedly, on December 16, 2021, the Minister of Natural Resources sent a letter to the CER that appears to instruct the agency to prepare a scenario study of that kind. The letter is found here: <https://www.cer-rec.gc.ca/en/about/news-room/whats-new/2021/canadas-energy-future-report-minister-letter-to-cer-16-december-2021.pdf> The details of the Minister’s instruction letter to the CER are discussed in Appendix II (see page 59 below).

SUMMARY:

In the absence of studies or scenarios that inform Canadian citizens about what future production levels for Canada’s oil sands industry over the next 10 to 30 years can be safely aligned with an effective global effort to stay within the 1.5°C warming threshold, Canadians have no ability to assess what future levels of oil production in Canada will be safe for their children, and safe for all the children in the world. In your capacity as Member of Parliament for Vancouver Quadra, it is your duty and ethical obligation to your constituents, and to their children, to support a demand that the Government of Canada develop scenarios for oil production in Canada that are consistent with an effective global effort to stay within the 1.5°C warming threshold. Without that information, you are in no position to assure your constituents that the government’s plan to continue expanding Canada’s oil production is a safe plan.

QUESTION:

- 4. Do you agree that it is essential that the Government of Canada, without further delay, should prepare and publicly disclose a scenarios analysis and studies showing the projected levels for Canada’s oil production to 2030, and over the next 30 years,**

that can be safely aligned with an effective global effort to stay within the 1.5°C warming threshold?

5. CARBON CAPTURE AND STORAGE (CCUS) TECHNOLOGY

One of the proposed solutions given prominence in the government’s December 11, 2020 document, *A Healthy Environment and a Healthy Economy*, and held out to Canadians as a key measure to achieve the government’s “more ambitious climate goals”, is reliance on large-scale deployment of Carbon Capture, Utilization, and Storage technology. In a section of the document devoted to the oil and gas sector and climate policy, the government makes this pledge:

“Develop a comprehensive carbon capture use and storage (CCUS) strategy and explore other opportunities to help keep Canada globally competitive in this growing industry.”

— *A Healthy Environment and a Healthy Economy*, page 38

The government’s promise is that, in the case of the oil and gas sector (Canada’s largest emitting sector), we can achieve what the report describes as “net-zero oil sands production” by relying on CCUS to effectively lower the amount of CO₂ released into the atmosphere during the extraction of each barrel of bitumen, while Canada continues to increase the total number of barrels we produce.

Indeed, *A Healthy Environment and a Healthy Economy* attests that the government’s strategy is to keep Canada globally competitive in this “growing industry”. The premise of Canada’s present climate policy is that global oil and gas production will continue to expand for many years to come.

But no amount of further technological improvements in the oil sands industry, not even large-scale adoption of Carbon Capture, Utilization, and Storage technology (CCUS) at oil sands production sites, will substantially lower the total amount of emissions that will be released into the atmosphere from oil sourced from Canada’s oil sands. Over 85% of the life-cycle emissions occur after the extraction process is completed. Our national emissions accounting (i.e., the numbers reported annually by the government to Canadians) does not count that 85%. Our politicians do not talk about that 85%. Environment Minister Jonathan Wilkinson (and now Minister Guilbeault) are silent about the “downstream emissions” from our oil exports.

All of the talk by politicians and oil industry representatives about reducing the “emissions intensity” of oil sands production relates solely to the volume of emissions per barrel released into the atmosphere at the extraction sites and initial processing in Alberta, before it is shipped by pipeline to the U.S. markets where most of the refining takes place, and where the refined products, gasoline and aviation fuel etc., are ultimately burned as fuel. The volume of emissions released at the extraction stage and during preliminary processing in Alberta (referred to as “upstream emissions”) is a relatively small share of the total “life-cycle emissions” of each barrel of oil that we produce and export.

Total life-cycle emissions for all types of oil produced around the world range from a low of about 450 kg CO₂ per barrel up to a high end of about 650 kg CO₂ per barrel. Canadian oil sands

are at the higher end of that range, above 550 kg CO₂ per barrel. Given that oil sands extraction emissions average 80 kg CO₂ per barrel, they account for less than 15% of the total life-cycle emissions released by each barrel we produce. They are a fraction of the total.

A discussion of the comparative importance of “upstream” and “downstream emissions” is set out in Appendix III (page 60 below), see “Oil sands production and carbon intensity per barrel”.

One of the new talking points coined by the Liberal Government and by the oil sands industry is “net-zero oil sands production” (the phrase appears prominently in the CER’s *Canada’s Energy Future 2020* report published on November 24, 2020). This concept envisions that, by 2050, all of the greenhouse gas emissions generated from the oil sands extraction process in Canada, which amounted to 83 Mt in 2019, will somehow be completely or substantially eliminated, or will be effectively “removed” by massive deployment of CCUS technology that will capture all the CO₂ generated at the production sites and sequester it deep underground. The carbon dioxide gas (compressed to an almost liquid form) would need to be safely confined for hundreds of years or a thousand years to prevent it from escaping back into the atmosphere.

In promoting this envisioned future that relies on CCUS, the government makes no commitment that there will be any *reduction in Canada’s oil production levels*. The aim of this proposed large-scale CCUS deployment appears to be to facilitate the continued expansion of oil sands production for another 10 to 20 years and maintain very high production levels through to 2050.

With respect to the details about this proposed major role for CCUS in Canada’s oil and gas sector, the government itself has released virtually no details about the scale of these plans or about funding. It is therefore helpful and necessary to refer here to media reports and to industry promotional material that have disclosed some information about the scheme.

Government subsidies for CCUS are already being solicited. The *Globe and Mail* reported on March 8, 2021, “Alberta is asking Ottawa to commit to \$30-billion in spending or tax incentives over the next decade to spur the building of large-scale industrial carbon capture projects”. A funding request was sent by the Alberta government to Ottawa in a confidential “discussion document” parts of which have now been published. According to *The Globe and Mail*, the Alberta government takes this position:

The provincial government says for Canada to meet climate goals, the country will have to fund a series of carbon capture, utilization and storage, or CCUS, facilities that force CO₂ emissions deep into the ground, and keep them out of the atmosphere. This is especially true in emissions-heavy Alberta.

“There isn’t a path to net-zero without carbon capture – globally, or in Canada, anywhere,” Alberta Energy Minister Sonya Savage said in an interview.

— *The Globe and Mail*, March 8, 2021 (emphasis added)

This stunningly negative assessment of our narrowing climate options to solve the rapidly unfolding climate catastrophe offered by the Alberta government is consistent with the prognosis given in the CER 2020 report. Both are saying it is too late to get to “net-zero by 2050” without

massive reliance on carbon capture and storage and on other future CDR technologies that do not yet exist.

Alberta and the Government of Canada are also saying, in their different ways, that despite the unspeakable dangers we face from the unfolding breakdown of the climate system, it is essential that we continue to *expand* crude oil production for another twenty years. The rationale for following this dangerous path is put this way:

CCUS, the report said, would protect high-value, difficult-to-replace industrial jobs: while also “greening” them and preserving valuable exports”. (emphasis added)

The *Globe* reported that Canada’s Natural Resources Minister had publicly embraced this plan:

Natural Resources Minister Seamus O’Regan told an oil and gas conference this month that CCUS technology will play a key role in lowering emissions in the oil sector.

CCUS may have the potential (if it is adopted on a very large scale in Canada’s oil sands industry) to lower emissions that are released into the atmosphere during bitumen extraction and processing activities *within Canada*. But those upstream emissions represent less than 15% of the total emissions associated with every barrel of oil we produce.

The CER 2020 report (and the CER’s more recent report published on December 9, 2021) ignores any discussion of the emissions impact of the “downstream” emissions from Canada’s growing oil production, namely the emissions released outside Canada’s borders after our bitumen is shipped to the U.S. or elsewhere where the oil is burned as fuel in vehicles and during the refining process. Those account for about 85% of all the emissions from every barrel of oil we extract. The government’s new climate plan is focused exclusively on Canada’s “upstream” emissions, namely the much smaller portion released during the bitumen extraction process within our borders.

CCUS is a prohibitively expensive technology. It has never yet, anywhere in the world, proved to be economically viable for large-scale, industry-wide installation. It would add massive additional costs to Alberta’s already high cost per barrel operations. A group of Canada’s five largest oil sands corporations recently claimed in a promotional brochure titled “Pathways to Net-Zero Initiative” (July 2021) that oil sands producers by 2050 will cut their annual emissions by 68 Mt, of which they say about 36 Mt will be “captured” by CCUS. Their plan will allow Canada’s oil sands producers to maintain high levels of oil sands production for another 30 years, while simultaneously dramatically reducing their emissions. Alberta has called for \$30 billion in Federal spending and tax incentives this decade to subsidize this CCUS scheme. Media articles report that oil sands producers themselves estimate the costs over the next 30 years to 2050 will be in the order of \$75 billion.

If that envisioned technological and financial re-structuring of the oil sands industry over the next 30 years has any air of reality, based on that vision by 2050 Canada will still be exporting to other countries 4.3 million bpd of oil sands production – 1.2 million bpd more than in 2019. We will still be exporting a full 85% of the total life-cycle emissions from our oil sands output. And our total crude oil production by 2050, including our expanded oil sands output, could increase to something in the order of 7.0 million bpd.

In contradiction to that view taken by our government and the oil sands industry, the *IEA's Net-Zero 2050* clearly explains that the future role for CCUS will be very limited in the oil sector.³

The IEA's analysis explains that the future role for CCUS must be limited to certain essential economic activities where it will be difficult to eliminate emissions entirely. Aviation, cement production, and iron and steel are industries that will continue to account for some residual emissions in 2050. One core objective of the IEA's "Net-Zero by 2050 Scenario" is to reduce global oil production 75% by 2050 below the current level, down to 24 million bpd. The IEA study explains that *70% of that remaining 24 million bpd of oil production* will have to be used in applications (i.e., chemical feedstocks) where the oil is not combusted and therefore does not release CO₂ emissions into the atmosphere.

Appendix IV (at page 62 below) provides additional background about the troubled history of CCUS in Alberta. A major effort to adopt the technology on a large scale in Alberta's oil sands industry was launched in 2008 and abandoned in 2014 because it was not economically viable.

SUMMARY:

The oil sands industry and the CER in its most recent report of December 9, 2021, envision continued high oil sands production levels for another 30 years premised on plans to achieve what the industry calls "net-zero oil sands production" by 2050. That plan rests on the assumed viability of large-scale deployment of CCUS technology and other envisioned future CDR technologies. The scheme, if implemented, will facilitate continuing high levels of oil sands production.

It is puzzling and deeply troubling that at this moment of imminent peril the Government of Canada would be actively promoting CCUS technology to give Canada's oil sands industry 20 or 30 more years to expand and maintain its high levels of production. Although under this scheme upstream emissions could be abated to some degree (depending on the viability of the technological solutions), *downstream emissions* (more than 85% of the total) will continue to be released into the atmosphere unabated.

The government's present plan to support large-scale deployment of CCUS is counter-productive to achieving any Net-Zero by 2050 goal that offers the next generations a realistic chance to keep the increase in the earth's average surfaced temperature within the 1.5°C or 2°C warming thresholds. The CCUS plan is aimed to facilitate the continued expansion of Canada's oil production, not to protect the next generation of children. Achieving inter-generational justice must be a guiding principle in the design and implementation of Canada's climate policy.

³ A January 19, 2022, letter signed by 400 Canadian climate scientists and scholars to the Ministers of Finance, Natural Resources, and Environment urges the government to abandon a planned investment tax credit that will support deployment of CCUS in the oil and gas industry. The letter explains the CCUS tax credit will subsidize and lock-in continued high levels of gas and oil production and does not ameliorate downstream emissions which comprise 80% of the emissions from our oil and gas: https://cehoicka.lab.yorku.ca/files/2022/01/Letter-from-Academics-re-CCUS-tax-investment-credit_January-2022-4.pdf?x98920

QUESTIONS:

- 5.1 Do you agree that recent proposals for large-scale deployment of CCUS technology in the oil sands industry do not in fact provide an effective means to significantly reduce the growing CO₂ emissions that will be released into the atmosphere by Canada's currently projected growth of oil production between now and 2050 ?**
- 5.2 Do you agree that there should be no subsidies or funding or tax incentives from the Federal Government to support the oil sands industry's plans to deploy CCUS?**
- 5.3 Would you support the creation of an independent public inquiry to examine the implications of large-scale deployment of CCUS in the oil sands industry? It would inform Canadians about the implications of this scheme, including the risks and long-term costs of the required underground sequestration of CO₂, which will have to be maintained securely for hundreds of years and will be a burden on our children.**

6. UNSUBSTANTIATED CLAIM: OIL AND GAS EMISSIONS CUT 56 MT BY 2030

During this past year the Government of Canada has twice announced new and ambitious emissions reduction targets for 2030. The first set of new emissions numbers was released on December 11, 2020, when the government published its 70-page booklet entitled *A Healthy Environment and a Healthy Economy*. It revealed very little quantitative information, but it made a bold claim that Canada's annual level of emissions would be reduced to 503 Mt by 2030. If successfully achieved, that would represent a 31% cut below the 2005 level.

An accompanying 9-page supplementary "Annex" document released on December 11, 2020, described as *Modelling and Analysis of a Healthy Environment and a Healthy Economy*, included two tables that provide us with some detailed quantitative information. This is still the most up to date information publicly available to Canadian citizens that tells us where, in terms of Canada's national emissions, we might be headed.

Four months after that, on April 22, 2021, the Liberal Government made a new announcement with an even more ambitious reduction goal. It declared, without providing any details, that by 2030 Canada will reduce its total emissions 40% to 45% below the 2005 level. A 45% reduction would require that we cut our emissions down to 401 Mt, within the next nine years. Our emissions in 2019 were 730 Mt.

It is helpful to begin by looking at the earlier information published on December 11, 2020. That information gives us a detailed context to appreciate the proportionate scale and importance of Canada's oil and gas sector emissions, and the seriousness of our predicament if we aim to achieve deep cuts of our total emissions by 2030. The oil and gas sector is our largest emitting sector and since 2005 has been the largest source of Canada's emissions growth.

The December 11, 2020 "Annex" document includes a projection of Canada's emissions to 2030, which purports to assess "*the impacts of all the currently announced initiatives*" (Annex, p. 3), which refers to the various new "initiatives" described in the *A Healthy Economy and*

Healthy Environment document. This new forecast (called the “With Initiatives” scenario) counts the promised benefits of additional proposed measures which have not yet been adopted and implemented by the Federal government or by provincial governments. This “With Initiatives” projection released on December 11, 2020, claims that by 2030 Canada’s total annual emissions will decline to 503 Mt. The data is reproduced below in Figure I:

Figure I: Canada’s projected emissions by economic sector to 2030 (Mt CO₂eq)

	2005	2010	2015	2018	2030		
					Reference Case	With Initiatives	Difference
Oil and Gas	158	159	191	193	194	138	-56
Electricity	119	96	81	64	21	11	-10
Transportation	161	168	172	186	178	151	-27
Heavy Industry	87	75	79	78	82	61	-21
Buildings	86	82	86	92	82	65	-17
Agriculture	72	68	71	73	77	74	-3
Waste & Others	46	42	41	42	41	31	-10
LULUCF, NBS, and Agricultural Measures	n/a	11	-8	-13	-17	-27	-10
Total (incl. LULUCF, etc.)	730	702	712	716	657	503	154

Source: Annex: Modelling and Analysis of a *Healthy Environment* etc., December 11, 2020, Table 3

The emissions numbers shown for 2005 to 2018 are historical data, setting out Canada’s actual emissions over that period. The columns on the right give us the government’s new emissions projections for 2030. The first column reproduces the government’s “Reference Case” projection for each sector based on carbon-reduction *policies already implemented* by the Federal government and provincial governments. Based on the Reference Case, Canada’s total emissions by 2030 are expected to be 657 Mt.

For the oil and gas sector, the Reference Case number is 194 Mt by 2030.

The significant new information published on December 11, 2020, is shown in the second column on the right. It shows the new projections for 2030 based on “the impacts of all the currently announced initiatives” which, as noted above, refer to initiatives discussed in general terms in the 79-page *Healthy Economy* document (those new “initiatives” had not been

implemented at the time the report was published). The government's promise is that they will reduce our total emissions to 503 Mt.

The final column in Figure I on the far right shows the difference between the projected 2030 emissions level for each sector based on the Reference Case and the reduced levels assuming all the promised "new initiatives" are fully implemented. The promised new initiatives are supposed to account for additional reductions of 154 Mt below the projected 657 Mt given in the Reference Case.

Figure I reveals the predicament we face in achieving any deep cuts by 2030. The transportation sector, Canada's second largest emitting sector, is expected (even with the benefit of all the new climate policy "initiatives" announced on December 11, 2020) to achieve only a 6% reduction by 2030, below the 2005 level. Agriculture shows no reduction at all below 2005. And while the anticipated emissions reductions in the electricity sector by 2030 are impressive (declining from 64 Mt down to a projected 11 Mt by 2030 under the "with initiatives" scenario), it is clear once the new "initiatives" are implemented we will have exhausted the prospects of obtaining any further deep cuts from the electricity sector. Since 2005 electricity generation has been the "low hanging fruit" that has furnished most of Canada's reductions to date. We will be forced to find any additional deep cuts in other sectors.

Figure I also includes what is called the "LULUCF" sector (which accounts for net emissions increases or reductions due to changes in Canada's forests, deforestation, and other changes in land use). The government's promise on December 11, 2020, was that with the benefit of proposed "new initiatives", the LULUCF sector will provide a net reduction of 27 Mt by 2030. The LULUCF deduction is discussed in more detail in Part 8 below, which addresses the problem of how we account for "wildfire" emissions.

In the case of oil and gas emissions, in its Reference Case released on December 11, 2020, the government says that total emissions in the oil and gas sector will decline to 194 Mt (well below the 213 Mt shown in the "Reference Case" published in January 2020 in the *Fourth Biennial Report*). But after counting the benefits of all the new "announced initiatives", the government's new claim is that oil and gas sector emissions will be further reduced to 138 Mt by 2030.

Compared to other government data and reports publicly released over the past five years, this promised 56 Mt reduction of oil and gas emissions down to 138 Mt by 2030 has no precedent. The record of the past 30 years, and especially since 2005, has conclusively shown that rising oil sands production has been accompanied by rising overall emissions.

No analysis is provided in the Annex, or in the *Healthy Economy* document, that furnishes us with any details of the specific new measures that are supposed to achieve that rapid and deep cut in oil and gas sector emissions. No information is revealed that allows us to see how this 56 Mt reduction has been calculated. Table 3 in the Annex document simply gives us the newly promised oil and gas emissions number for 2030 (138 Mt) without any analysis or accounting of what specific new policies or technologies explain this large 56 Mt reduction.

It is true that improvements in efficiency and the adoption of new methods of extraction since 2005 have reduced the *carbon intensity* of oil sands production (which refers to the volume of

greenhouse gas emissions released for each barrel extracted), but those reductions of emissions *per barrel* have been incremental and have consistently been offset by the rapid increases in the total number of barrels produced. If oil sands production is going to continue to rise to 2030 in line with the CER 2020 report's Reference Case projections, it is implausible that an unprecedented 56 Mt cut in oil and gas sector emissions can occur by 2030.

One sentence in the Annex document contains a very brief reference about “strengthening methane regulations”, without any quantitative discussion. But additional methane reductions cannot explain the 56 Mt reduction in the oil and gas sector.

It appears that the government's main new policy measure relied on to justify how continued expansion of oil sands production can occur while simultaneously achieving substantial emissions reductions rests on large-scale deployment of CCUS technology. The Annex document published with the government's *A Healthy Environment and a Healthy Economy* brochure on December 11, 2020, mentions “carbon capture utilization and storage” in a single generic sentence in the context of discussing “promising decarbonization technologies”. But the document offers no data or estimate of the share of the promised 56 Mt reduction that might be achieved by CCUS before 2030. The CER 2020 report contains numerous references extolling the future potential of CCUS technology. Neither source includes any discussion that gives details of how CCUS will be deployed in the oil sands or the timing of that, or details about the magnitude of potential reductions by CCUS. Important questions remain unanswered about the timeline for planning and completing the construction of CCUS installations at multiple oil sands operations on the scale required to achieve any significant emissions reduction by 2030.

If the government's promised 56 Mt reduction of oil and gas sector emissions by 2030 does depend on a plan to achieve large scale deployment of CCUS technology in the industry by that date, it also raises important and unanswered questions about the economic viability of CCUS in the oil sands and the extent of planned government subsidies.

And the overarching point remains that even if CCUS is deployed on any large scale by 2030 in Canada's oil sands industry, 85% of the emissions from every barrel of bitumen we produce will still be released into the atmosphere when the product is exported to foreign markets, refined, and burned as fuel.

SUMMARY:

Emissions reduction projections released by the government on December 11, 2020, promise Canadians that with the benefit of “new initiatives” total oil and gas sector emissions will by 2030 be reduced 56 Mt below the 2018 level.

This reduction with respect to the oil and gas sector emissions by 2030 is by far the largest sectoral cut promised in the *A Healthy Environment and a Healthy Economy* document. A full year has now passed since that reduction figure was published. Since then, no particulars have been publicly released that would enable Canadians to assess whether this promise relating to oil and gas sector emissions has any proper basis.

This unsubstantiated promise about oil and gas sector emissions is the keystone that holds together the government's overall reduction plan to 2030. Without the benefit of the government's analyses and data that might support this promised 56 Mt cut by 2030, Canadian citizens including constituents in Vancouver Quadra are denied any opportunity to make an informed assessment of whether this promised reduction is credible.

QUESTIONS:

- 6.1 Promised emissions reductions released by the government on December 11, 2020, claim that with “new initiatives” the total amount of Canada’s oil and gas sector emissions will, by 2030, be reduced 56 Mt below the 2018 level. Do you agree that neither the *Healthy Economy* document nor the Annex data provides any details of new measures or policies that could reduce oil and gas sector emissions on that scale by 2030 and provides no numerical analysis to show that this promised 56 Mt cut in oil and gas emissions within the next nine years is plausible?**
- 6.2 Are you aware of any document or report published by Canada or by any of the government’s departments or agencies that provides an analysis explaining how that 56 Mt reduction will be achieved?**
- 6.3 Do you as a Member of Parliament accept and believe that the promised reduction of Canada’s oil and gas sector emissions to 138 Mt by 2030, a cut of 56 Mt below the 2018, level is plausible? On what basis do you rest that belief?**

7. APRIL 2021 ANNOUNCEMENT

On April 22, 2021, the Liberal Government announced a new reduction target, declaring that by 2030 Canada will reduce its emissions 40% to 45% below the 2005 level. But the government has not revealed to Canadians any plan or analysis to explain how these massive additional cuts might be achieved. It merely announced a new number. A 45% reduction will mean that Canada’s total emissions must decline to 401 Mt by 2030. The annual level was 730 Mt in 2019.

The April announcement unfortunately sharpens the fundamental contradiction between Canada’s avowed climate policy, which promises deep emissions cuts by 2030, and Canada’s plans to continue to expand oil production to 2045.

One significant and troubling feature of the promised reductions published on December 11, 2020, is that the largest reduction of all (a massive 56 Mt cut of oil and gas emissions: see Question 6) was unsupported by any analysis or data to explain how that unprecedented, very large reduction could be achieved. Without achieving the promised 56 Mt cut in oil and gas emissions by 2030, the government’s entire scheme announced in December to lower Canada’s total emissions to 503 Mt appears to be untenable.

Now, given the April announcement, achieving the far more difficult 401Mt target will require obtaining an additional 102 Mt of emissions reductions from among our seven economic sectors, over and above the reductions promised in December 2020 to meet the 503 Mt target. Yet our

government has offered no analysis or report identifying which of Canada's sectors might have the capacity to contribute any significant part of the promised additional 102 Mt cuts.

The practical and serious question that now arises is, to what degree can this new 40% to 45% reduction commitment realistically be achieved between now and 2030? Where does this 102 Mt of the additional cut come from? Several of Canada's major economic sectors will not be able to contribute any meaningful additional share at all. As a result, a substantial portion of the additional reductions promised by 2030 will have to come from the oil and gas sector if we are going to have any realistic chance to meet the new 401 Mt reduction goal. But that would mean even deeper emissions cuts will be required in the oil and gas sector – much more than the 56 Mt cut promised in December 2020.

SUMMARY:

The government has not yet developed, or at least not yet revealed to the public, any projections, studies, or data that identify and quantify how the promised additional 102 Mt of emissions reductions by 2030 might be allocated between Canada's seven economic sectors and LULUCF. Proposed sectoral reductions for the 2030 target have not been disclosed to Canadian citizens.

The share of the proposed additional 102 Mt of emissions reductions to 2030 that are expected to be obtained from the *oil and gas sector* remains unknown. The policy measures expected to achieve those *additional cuts* in the oil and gas sector by 2030 remain unknown.

Until the government discloses analyses and data that provide answers to these questions, including crucial data showing projected sectoral emissions reductions to 2030, the Canadian public is denied any opportunity to assess the credibility and cogency of the government's emissions reduction promise made in April 2021.

QUESTIONS:

- 7.1 Has the Government, or any department or agency of the government, developed any projections, studies, or data that identify and quantify how the promised additional 102 Mt of emissions reductions by 2030 is allocated between Canada's seven economic sectors (or among the eight sectors including LULUCF)?**
- 7.2 Is any share of the proposed additional 102 Mt of emissions reductions to 2030 expected to be obtained from the oil and gas sector? What is the amount of the needed additional 102 Mt reduction that is attributed to the oil and gas sector, and what measures are expected to achieve those additional cuts in the oil and gas sector?**

8. EMISSIONS FROM CANADA'S FOREST LANDS

The Liberal Government's most recent report detailing how it plans to reduce Canada's total emissions to 503 Mt by 2030 (see Figure I on page 36) claims that based on promised "new

initiatives” a reduction of 27 million tonnes (Mt) of CO₂ will be achieved in the “LULUCF” (land use and land use changes and forestry) sector. That promised reduction accounts for 8% of the total 329 Mt of cuts we need to achieve within the next nine years.

That claim about the LULUCF sector unfortunately misleads Canadians. The 27 Mt amount is small, but it reveals a disturbing story about our forest-related emissions.

The LULUCF sector data calculates the extent to which Canada’s Forest Lands operate as a “carbon sink” that absorbs CO₂ from the atmosphere and therefore offsets a substantial portion of our industrial emissions. Historically, British Columbia’s richly endowed growing forests absorbed CO₂ from the atmosphere, making our forests carbon “sinks” that have accounted for vast “removals” of carbon. Conversely, the clearing of forest lands (to make way for agriculture and urban development, building dams, and the harvesting of wood products, including the destruction of our old growth forests) has reduced the capacity of B.C.’s forests to absorb carbon.

Up until about 2000, our province’s forests provided a net “sink”, taking more carbon out of the atmosphere than they released. However, over the past 20 years the ongoing advancement of logging and other economic development and the onset of pine beetle devastation (driven by warming temperatures) in the late 1990s dramatically reversed that pattern. Our forests became a net contributor to increasing global GHG emissions. In the 1990s, the share of B.C.’s annual emissions attributed to forest fires (called “wildfires” in the data tables) was still comparatively small, in the order of 2 Mt to 4 Mt annually. There have always been fires in B.C.’s vast forests. Dry summers brought fires. By about 2000 that began to worsen. In bad years (including 2003, 2010, and 2014), annual wildfire emissions increased to as much as 45 Mt and 60 Mt.

Everything changed in early July 2017. Fires exploded in the interior of B.C. By the summer’s end they had released 163 Mt of CO₂ and other GHGs into the atmosphere – almost three times the total annual emissions from all other economic sectors in B.C. (the province’s total emissions in 2019 were 68.6 Mt). In 2018, the wildfires occurred again, releasing another 195 Mt.

In a data “inventory” appended to B.C.’s *2020 Climate Change Accountability Report*, we find the government’s wildfire emissions (the data goes back to 1990) listed in an obscure section beneath the heading, “Emissions not included in inventory total”. B.C.’s growing wildfires are now the largest portion of our province’s emissions. But the provincial government has *entirely omitted them* from its calculation of our current emissions and projected emissions cuts by 2030.

The increasing frequency, size, and distribution of wildfires is being driven by rising surface temperatures and decreased precipitation, caused by our cumulative emissions. This is a classic and tragic case of a *feedback loop*. These fires themselves are now releasing vast amounts of additional emissions, which in turn will drive a whole new cycle of escalated warming, causing more fires and destruction of our natural systems. By choosing to exclude wildfire emissions in B.C. from our official emissions inventory, the government is hiding the gravity of our situation.

In the same way, the Government of Canada excludes wildfire emissions from its accounting of emissions at the national level. Our government explains that, by 2030, our forests will annually be absorbing 140 Mt CO₂ from the atmosphere (“carbon removals”). It acknowledges that the benefit of that natural sink will be offset by the harvesting of wood products (i.e., logging), by

the clearing of Forest Lands to make way for urban development or agriculture. Those offsetting activities reduce the capacity of Canada's forests to absorb carbon. The largest share of the offsetting amount, expected to be a negative 130 Mt CO₂ by 2030, represents emissions attributed to harvested wood products.

Based on that calculation, the Liberal Government is assuring Canadian citizens that by 2030 our Forest Lands will provide "net removals" of 27 Mt CO₂. But in making that calculation, the Federal Government (like B.C.) excludes wildfire emissions.

While it refuses to include wildfires in calculating Canada's total expected emissions by 2030, detailed information about wildfire emissions is available in some government reports. The government's *National Inventory Report* publishes data showing emissions from what it calls "natural disturbances". The largest reported category of natural disturbances is "Wildfires – immediate emissions", which amounted to 260 Mt in 2018. Total annual wildfire emissions were 250 Mt, 130 Mt, and 230 Mt in 2015, 2016, and 2017 respectively. Those are huge numbers.

Those numbers are excluded from the "net removals" calculation in the LULUCF sector. For example, in 2018 Canada's total reported emissions were 729 Mt. That year, emissions from wildfires in Canada released an additional 260 Mt CO₂, which were added to the world's cumulative emissions. But those were not counted in our reported 729 Mt.⁴

This exclusion has been carried out in plain sight. Canada's *Fourth Biennial Report* in Annex 2 at A2.4 affirms that emissions resulting from "*significant natural disturbances*" are "*excluded from the accounting*". Significant natural disturbances are defined to include "*wildfires and insect devastations*". At A2.6.4 the same report explains that in 2012 the government (the Conservative Government of Stephen Harper) informed the UNFCCC that Canada's accounting of GHG emissions towards its 2020 target would exclude "*natural disturbances*".

By excluding the impact of our "wildfires" from its LULUCF calculations, Canada is claiming the full benefit of our forest lands as a "carbon sink". The government claims to account for the loss of forest cover due to logging and other industrial activities that destroy forest lands. But it does not count the direct annual emissions caused by wildfires, which in 2018 reached 260 Mt. Counting our forest's natural "carbon removals" but excluding the growing annual emissions from forest fires grossly misrepresents the net impact of Canada's forests on global emissions.

In addition to the government's failure to count wildfire emissions, a new report examines other dimensions of Canada's failure to fully report forest sector emissions attributed to logging. *Missing the Forest: How Carbon Loopholes for Logging Hinder Canada's Climate Leadership* (October 2021, Natural Resource Defence Council, Nature Canada, Environmental Defence, and Nature Canada) explains how the Government of Canada is not accounting for the full emissions impact of our logging industry, which continues to cut more than 400,000 hectares of boreal forest each year. The conversion of our primary forests into second-growth forests, which store less carbon, is transferring large amounts of carbon into the atmosphere which are not properly

⁴ Carbon emissions from wildfires globally in 2021 amounted overall to 1,850 million tonnes CO₂, including massive fires in Siberia and the western U.S., Greece, Turkey, and Algeria: Copernicus Climate Change Service, January 10, 2022, <https://climate.copernicus.eu/copernicus-globally-seven-hottest-years-record-were-last-seven>. Canada's wildfire emissions are a significant share of the annual global number.

accounted for in the government's reporting (over and above the excluded wildfire emissions). The report also includes a discussion of the significance of the government's decision to exclude wildfire emissions from our national reporting: <https://naturecanada.ca/wp-content/uploads/2021/10/Missing-the-Forest.pdf>

SUMMARY:

The projection of future emissions reductions by 2030 described as “With Additional Initiatives” published by the government on December 11, 2020, promises that the LULUCF sector will contribute a net reduction of 27 Mt by the end of this decade. But that number does not account for wildfire emissions. By omitting wildfire emissions, the government's projections for 2030 grossly overstate the volume of emissions reductions attributed to LULUCF, and therefore seriously understates Canada's projected emissions to 2030.

QUESTION:

- 8. Do you agree that the Government of Canada should cease its current practice of excluding wildfire emissions from its calculations of LULUCF emissions which, at present, claim that Canada's Forest Lands by 2030 will contribute a net reduction of 27 Mt to Canada's total projected emissions?**

9. AN UNFORGIVING DEADLINE FOR EMISSIONS REDUCTIONS

The *UN Emissions Gap Report 2021* released on October 25, 2021, confronts us with the reality that, with only nine years remaining, the world's largest emitting countries are not remotely on track to achieve the very deep emissions reductions that are required by 2030 to avoid the gravest impacts of climate breakdown.

It was not until December 2015, when the Paris Agreement was negotiated, that countries, including Canada, agreed “to pursue efforts to limit the temperature increase to 1.5°C.” Recognizing that the newly stated 1.5°C goal would require much deeper and faster changes in energy policy, the parties to the Paris Agreement in 2015 requested that the IPCC prepare a Special Report on the impacts of warming to 1.5°C and on the measures needed to meet that goal. Three years later, on October 7, 2018, the *IPCC Special Report on Global Warming to 1.5°C* was published. It provided the results of comprehensive research about the magnitude of the emissions reductions that would be required to keep the warming increase to 1.5°C. The Canadian government expressly approved the language of the report's *Summary for Policy Makers* when the document was publicly released.

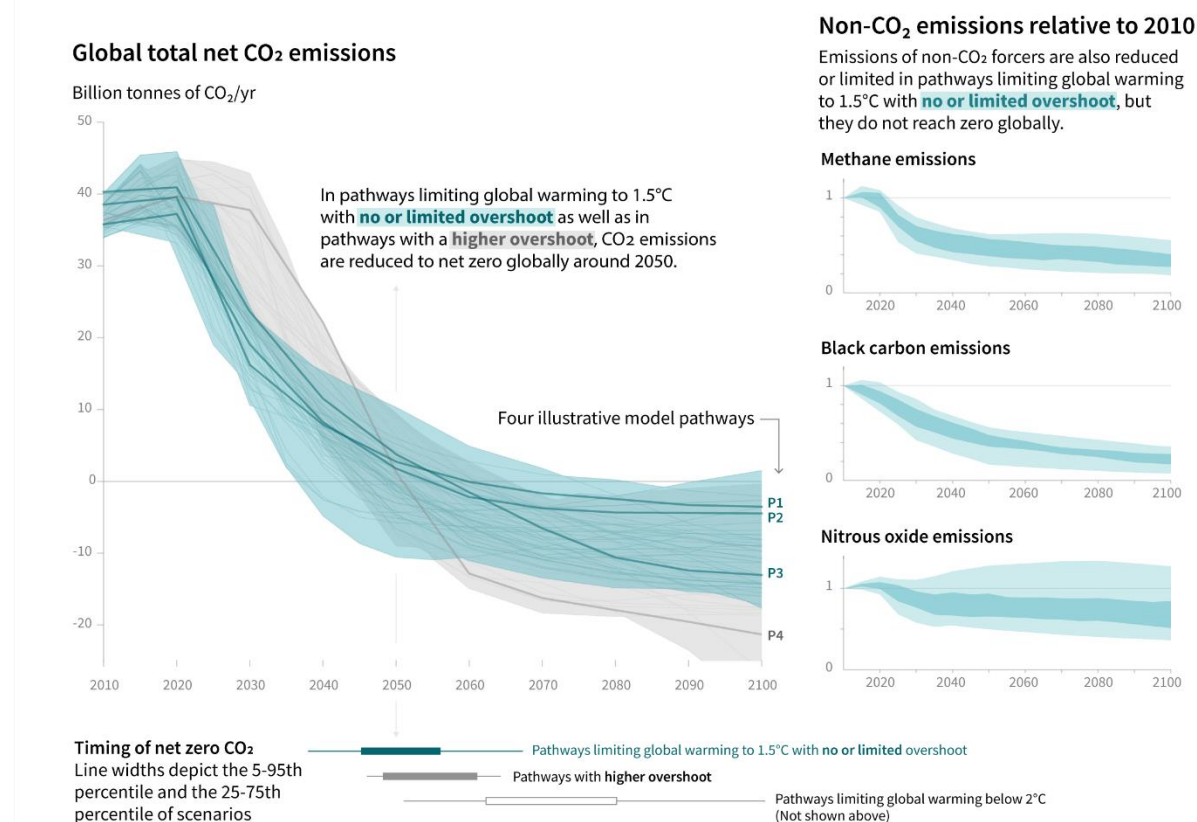
9.1 IPCC Special Report on Global Warming to 1.5°C

One core finding reported in the *Special Report* was that all releases of CO₂ into the atmosphere must reach “net-zero” by 2050 to give us a 66% chance of reaching the 1.5°C goal. “Net-zero” means that, beyond 2050, no additional CO₂ can be safely added to the *cumulative* amount of

CO₂ that by then will already have been released into the atmosphere. It is the cumulative emissions that are driving the heating of the earth.

A second core finding was that to give us a realistic chance to achieve the goal of net-zero by 2050, the annual level of global emissions must be reduced 50% below the 2018 level by 2030. The *Summary for Policy Makers* sets out the main findings of the report. It includes this helpful graph, which depicts the massive cuts required to avoid a catastrophic outcome, reproduced here as Figure J:

Figure J: Global emissions pathways



Source: IPCC Special Report on Global Warming of 1.5°C, figure SPM.3a.

The total annual level of global emissions is given on the vertical axis of the graph, measured in billions of tonnes of carbon dioxide per year (GtCO₂). The global total shown for 2020 is a little over 40 GtCO₂. The details provided in the *Summary* reported that total annual global CO₂ emissions in fact reached 42 GtCO₂ in 2018. Only carbon dioxide (CO₂) emissions are represented on the above graph. Non-CO₂ emissions are depicted separately on the right-hand side.

Total greenhouse gas emissions in 2019 were 51.5 GtCO₂eq. CO₂ accounts for most of human caused emissions, more than 70% of the total (the other approximate 30% of human caused emissions comprise methane and other GHGs). The CO₂ emissions are of paramount concern not only because of their scale, but because, unlike methane and some of the other GHGs, once CO₂

is released into the atmosphere it remains there for centuries. For that reason, in terms of what is in our power to control, the rising CO₂ atmospheric concentration is irreversible.

Four mitigation pathways are highlighted, which are identified as P.1, P.2, P.3. and P.4. Each offers a different combination of energy policy, technologies, and land use strategies to achieve the hoped-for “net-zero” outcome by 2050. Importantly, each of the depicted pathways relies on deploying Carbon Dioxide Removal methods (CDR) to a different degree. And while all four Pathways project an eventual decline in fossil fuel consumption, they envision markedly different rates of decline.

P.1 is described in the report as a mitigation plan aimed to reach “net-zero” by 2050 with minimal reliance on CDR technology. The *Summary Report* says this about the P.1 pathway: “Afforestation is the only CDR considered; neither fossil fuels with CCS nor BECCS are used” (emphasis added). “Afforestation” refers to very large-scale projects that plant new forests and expand existing forest cover, and includes other changes to land use, restoration of wetlands, and changes in agriculture that would enhance the natural capacity of the earth’s surface to absorb carbon from the atmosphere. P.1 does not depend on future large-scale deployment of other envisioned future CDR technologies, such as BECCS or other direct air removal schemes. And it does not contemplate that CCS (Carbon Capture and Storage) will be relied on to enable the ongoing use of fossil fuels.

If we fail to meet the 2030 target, or choose not to, our last resort will be to attempt later to use CDR technologies on a very large scale to remove the accumulated “residual emissions” from the atmosphere.

9.2 The significance of the atmospheric carbon concentration level

The *atmospheric carbon concentration level* is the metric that explains why the timeline to arrest the further expansion of oil production – and to achieve deep cuts in our consumption of oil, coal, and natural gas – is brief and unforgiving. It measures the rising concentration of CO₂ and other GHGs in the upper atmosphere that are driving the heating of the earth’s atmosphere. The accumulating concentration of CO₂ in the upper atmosphere is measured in parts per million (ppm), indicating the number of CO₂ molecules per million molecules of other gases.

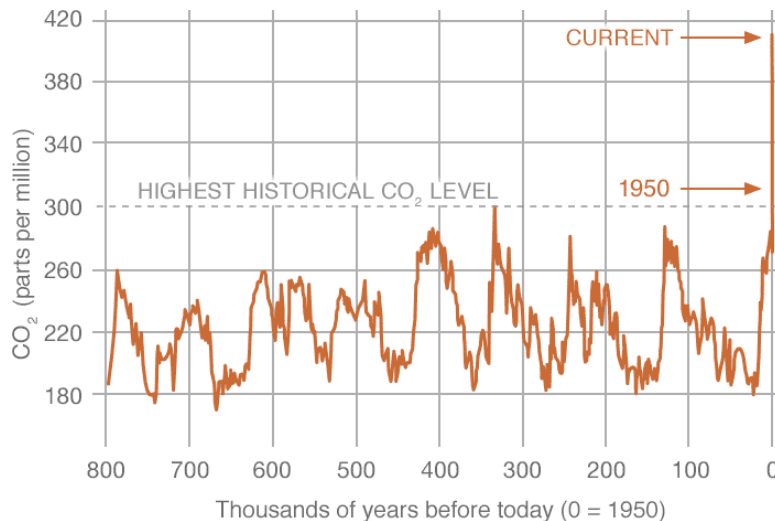
The most recent measurements of the atmospheric carbon concentration level warn us of the unforgiving timeline we face. Each year the atmospheric CO₂ concentration follows a cycle. April and May are the high points of the year, September the low. *But the annual averages are moving up every year.* On May 9, 2013, the Mauna Loa Observatory in Hawaii recorded for the first time a daily average reading showing that the amount of carbon dioxide in the atmosphere had exceeded 400 ppm, for a single day. The annual average for that year was 395.3 ppm.

The next year, in April 2014, Mauna Loa recorded a monthly average that exceeded 400 ppm. By 2016 the average for the entire year was above 400 ppm.

The annual average for 2020 was 413.2 ppm CO₂. In May 2021, the monthly average recorded at Mauna Loa reached 419 ppm. The daily and monthly averages in April and May are a harbinger of where we are going.

Figure K below represents the long-term record for the atmospheric carbon concentration over the past 800,000 years. It places our predicament in context. A concentration level above 400 ppm is entirely unprecedented over the time of human life on earth.

Figure K: Atmospheric carbon concentration level (proxy measurements)



Source: US National Aeronautics and Space Administration (NASA)

During the past 12,000 years from the end of the last Ice Age until the advent of the industrial age, the atmospheric carbon concentration was stable at about 280 ppm. By 1958, it was 315 ppm. Since then, it has risen by another 97.8 ppm. Back in 2014, when the Government of Canada's NEB began its two-year Trans Mountain pipeline expansion inquiry which ultimately recommended approval of the project, the atmospheric carbon concentration level was 397.2 ppm.

By 2020, it had increased to 413.2 ppm.

The rate of annual increase has been accelerating, reflecting the persistent annual growth in volume of global emissions from burning coal, oil, and natural gas. In the 1960s, the rate of growth of the atmospheric carbon concentration level was about 0.6 ppm per year. Just a decade ago in 2008 and 2009 the annual increases ranged between 1.59 ppm and 2.02 ppm. It is now rising at an average of 2.5 ppm every year. Even in 2020, a year when the extraordinary economic impact of COVID-19 temporarily reduced the annual level of emissions by about 5% to 6% worldwide, the concentration level increased by 2.3 ppm.

The scientific evidence establishes that to stay within the 2°C warming threshold, the atmospheric carbon concentration level must be kept below 450 ppm. The threshold for 1.5°C is 430 ppm. At the present rate of increase, which is now about 2.5 ppm every year, the atmospheric carbon concentration level will exceed 450 ppm CO₂ by about 2035. It is on track to rise above the 430 ppm level by the end of this decade, by about 2028.

The situation is even more pressing. In measuring the relationship between the rising concentration of all greenhouse gases (GHGs) and the heating of the earth's surface, scientists

add together the warming effect of all the GHGs, principally carbon dioxide, methane, and nitrous oxide. Of these, methane is a significant GHG released by oil and gas sector activities, especially in natural gas production and processing. The combined concentration is measured as “CO₂ equivalent” (CO₂eq). All these GHGs drive the warming of the atmosphere and in combination exacerbate the challenge we face.

The accelerating growth during the past 30 years in the amount of the annual incremental increases in the atmospheric carbon concentration has been driven by the growth in the annual level of emissions from industrial economies. Despite the solemn commitments by Canada and other industrial nations at Copenhagen in 2009 and again in Paris in 2015 to reduce their emissions, total global emissions continued from 2010 up to 2019 to expand at an annual rate of 1.3%.

Unfortunately, the evidence shows that even if deep emissions reductions were to be implemented on a vast scale starting in 2022, and if the annual level of global emissions could be massively reduced by 2030 (say by 50% or some substantial amount below the present level), our predicament is that additional CO₂ emissions, in gradually declining amounts, will continue to be released every year for another 30 or 40 years after that – until the world’s energy systems altogether cease to be overwhelmingly dependent on carbon-based fuels. Once we start deep cuts in global emissions, the *magnitude* of the annual increases in the carbon concentration level (now about 2.5 ppm every year) will start to decline. But the annual increases each year in the atmospheric concentration, although diminishing in size, will continue for another three decades at least.

That explains why emissions must be cut 50% by 2030. We are in a race to reduce the magnitude of the annual increases in the atmospheric carbon concentration. If we do not act now, it will continue to rise about 2.5 ppm every year for another nine years, and on into the next decade. Only massive reductions in the annual level of CO₂ emissions between 2022 and 2030 will allow us to dramatically slow down the rate at which the atmospheric carbon concentration is rising.

If we can successfully achieve a 50% cut of global emissions within the next nine years - or even if we can attain a substantial share of the needed reductions by 2030 - that would avoid, or at least vastly reduce, the terrible burden of future “emissions removals” that we are bequeathing to the world’s children after 2050.

The dilemma we face is that the annual increases in the concentration of CO₂ now occurring in the upper atmosphere are irreversible, unless CDR technologies (including direct air removal technologies) are developed in future that will give us the capability to remove CO₂ from the atmosphere on a massive scale. Every month, and every additional year we delay the start of deep cuts in oil production (and in coal and natural gas use) we are worsening humanity’s fateful dependence on the future viability of these vast technology schemes which at present do not exist or exist only in small scale experimental forms.

Appendix V (see page 65 below) refers in more detail to the findings in the October 2018 PCC *Special Report* which explain why a failure to achieve deep cuts in global oil, coal, and natural gas production by 2030 will condemn us to pathways that rely heavily on CDR technologies.

The evidence showing the extreme danger of our predicament is clear. The findings in the IEA's Net-Zero by 2050 study released on May 18, 2021, and confirmed in the IEA's *World Energy Outlook 2021* report of October 12, 2021, show that the massive overall emissions reductions required by 2030 cannot be achieved without deep cuts in global oil production within this decade. That assessment was confirmed by the *UN Production Gap Report* released on October 26, 2021.

SUMMARY:

It is the duty and responsibility of Members of Parliament to advise the government that policy measures directed to the oil and gas sector that focus solely on reducing emissions from upstream production cannot effectively mitigate the imminent climate peril, unless concurrent steps are taken to halt further expansion of Canada's oil production and without delay initiate a plan to reduce oil production

In the absence of a clear policy decision to halt the further expansion of Canada's oil production and to begin reducing production, measures that aim to reduce *emissions* during the extraction and processing will not address the unfolding crisis.

The time constraint that severely limits our remaining options for policy choices is indicated by the fact that the atmospheric carbon concentration level reached 413.2 ppm CO₂ in 2021. It is on track to exceed 450 ppm CO₂ by about 2035.

QUESTION:

- 9. The most recent *UN Emissions Gap Report* released on October 28, 2021, confirms that the projected annual level of global greenhouse gas emissions to 2030 is not expected to show any reduction at all below the 2019 level. Do you agree that this new information justifies an immediate reconsideration by Parliament of the government's current plans and policies that support the continued expansion of Canada's oil production to 2045?**

10. THE FEDERAL POWER TO CURB OIL AND GAS SECTOR EMISSIONS

It is frequently said that the development of natural resources falls exclusively within provincial jurisdiction. Some political leaders in Canada continue to assert that the Federal Government has no constitutional power to limit oil production by the provinces. But when it comes to the threat of climate change and the need to limit greenhouse gas emissions, the law is now clear: the Federal government's residuary powers under section 91 of the *Constitution Act* empowers the national government to regulate industries, including the oil and gas industry, where the substance or purpose of the Federal law is to curb greenhouse gas emissions.

On March 26, 2021, the Supreme Court of Canada (SCC) released its decision in the *Greenhouse Gas Pollution Pricing Act* (GGPPA) case ruling that the Liberal Government's new legislation imposing a carbon price across all provinces is properly within the constitutional powers of the

Federal government. A full reading of the lengthy written judgment explains why this legal decision can be said to have confirmed that, on matters related to escalating climate change threat and how to respond, the Federal Government has formidable powers to regulate oil and gas production.

10.1 Alberta Court of Appeal decision

Three provincial governments (Alberta, Saskatchewan, and Ontario) brought legal challenges, claiming that the Federal Government did not have any legal authority to impose a carbon price on industries within their provinces, particularly on resource industries like oil and gas. Under Canada's *Constitution Act*, provinces have "exclusive jurisdiction" over development of their natural resource.

Notwithstanding their own provincial government's strenuous political and legal opposition to the Federal Government's new *Gas Pollution Pricing Act* (GGPPA), the Courts of Appeal for both Ontario and Saskatchewan concluded that the new carbon pricing scheme is properly within Ottawa's constitutional powers. The only court in Canada that took the view that Canada did not have power to impose the carbon tax was the Alberta Court of Appeal, which ruled 4-1 that the carbon pricing law was unconstitutional.

Canada's highest court, the Supreme Court of Canada (SCC), ultimately ruled 6-3 that the carbon pricing law is indeed constitutional, and the Alberta Court of Appeal ruling was overturned. The SCC very forcefully explained in its judgment why the four Alberta judges were wrong, both in their understanding of the scientific evidence and in their ruling on the constitutional law issues.

To fully appreciate the strength of the legal powers that Canada's Federal Government possesses to curb and regulate major industrial activities that are driving our carbon emissions, it is helpful to first look closely at the Alberta court decision – and then see how completely the SCC rejected the reasoning of the four Alberta judges.

On February 24, 2020, a panel of five judges in the Alberta Court of Appeal delivered their judgments in *Reference re Greenhouse Gas Pollution Pricing Act*, ruling by a 4 –1 majority that the Federal Government's carbon pricing scheme is unconstitutional. A single judge (Justice Kevin Feehan) dissented. Of the majority, who all concluded that the law is beyond the powers of the Federal Government, three of them issued a single written decision that gives their joint ruling and reasons. The fourth judge who agreed that the law is unconstitutional issued his own separate judgment.

Three of the judges in the Alberta Court of Appeal (Catherine Fraser, Jack Watson, and Elizabeth Hughes) wrote as follows (at para. 324):

Further, factually, in any event, there is no evidence on this record that anything one province does or does not do with respect to the regulation of GHG emissions is going to cause any measurable harm to any other province now or in the foreseeable future. The scale and proportionality of GHG emissions differ from the immediacy of harm from a toxic chemical. The atmosphere that surrounds us all is affected largely by what is being done, or not being done, in other countries. Four large countries or groups of countries,

the United States, China, India, and the European Union generate, cumulatively, 55.5% of the world's GHG emissions. Canada, given its northern climate, vast geography and comparatively small population, generates 1.8% [204]. (emphasis added)

A fourth judge, Thomas Wakeling, makes the identical claim (at para. 852):

The failure of Alberta, Saskatchewan, Ontario, or any other province or territory to implement greenhouse gas emissions reduction measures that satisfy the federal cabinet will have no impact whatsoever on the climates or environments of other parts of Canada, or any part of the world. [840] What happens in China, [841] the United States, the European Union, India, and the Russian Federation seals the fate of the planet. These five states are responsible for over sixty per cent of global greenhouse gas emissions in 2014 [842]. (emphasis added)

The substance of these two statements is that the failure of provinces to implement emissions reductions will have no impact whatsoever on any effort to keep the increase in atmospheric warming to less than 1.5°C or 2°C. In other words, if provinces do nothing to limit their emissions it does not matter because no amount of emissions reductions by Canadian provinces, individually or in combination, will make any difference to the outcome.

10.2 Decision by the Supreme Court of Canada

The majority judgment in the SCC (in paragraph para 187 of their judgment) decided that the Alberta judges had reached their decision on a fundamentally mistaken understanding of the scientific evidence. Emissions in any one province will add to, and exacerbate, the warming of the atmosphere (and impacts of climate change) that are being experienced in all the other provinces. The SCC accepts that a refusal by one province to curb its emissions would have “grave consequences for extra-provincial interests (i.e. grave impacts on people in other provinces):

It is also an uncontested fact that ... every province's GHG emissions contribute to climate change, the consequences of which will be borne extra-provincially across Canada and around the world. And it is well-established that climate change is causing significant environmental, economic and human harm nationally and internationally, with especially high impacts in the Canadian Arctic, in coastal regions and on Indigenous peoples. This includes increases in average temperatures and in the frequency and severity of heat waves, extreme weather events like floods and forest fires, significant reductions in sea ice and sea level rises, the spread of life-threatening diseases like Lyme disease and West Nile virus ...

The SCC (at paras 190-193) concludes that provinces *if left to protect themselves* will be unable to do so, because individual provinces have no legal means to compel other provinces to curb or reduce their emissions. That vulnerability or inability to protect themselves against an external danger, referred to as “provincial inability” in the terminology of the legal analysis, had been proven. Therefore, there was a compelling role for the Federal Government to intervene and exercise its law-making authority to limit the emissions of all provinces:

“As well, federal jurisdiction is necessitated by the provinces’ inability to address the matter as a whole through co-operation, which exposes each province to grave harm that it is unable to prevent.”

The ruling on the concept of “provincial inability” required an in-depth assessment of the scientific evidence, which guided the court to an understanding that atmospheric warming is being caused by cumulative global emissions. A unique feature of the threat is that it is being driven by the combined effect of multiples sources, and each source is adding to the problem.

In a lengthy discussion of that evidence in paragraph 189 of his judgment (which represents the view of the six out of the nine SCC judges who heard the case), Canada’s Chief Justice (Wagner CJ) referred to the decisions in two other leading cases which have considered the same issues – the decision of the Supreme Court of the Netherlands in *Urgenda Foundation v State of the Netherlands* (January 2020) and a decision in an Australian case, *Gloucester Resources Limited v. Minister for Planning* (2019). Both of those decisions (both leading foreign cases addressing climate change) support the crucial point that even a proportionately small emitting country or one significant emitting activity will materially contribute to global climate change. Canada’s Chief Justice comments on that crucial point addressed in these two recent cases:

... the Supreme Court of the Netherlands upheld findings of The Hague District Court and The Hague Court of Appeal that “[e]very emission of greenhouse gases leads to an increase in the concentration of greenhouse gases in the atmosphere” and thus contributes to the global harms of climate change: para. 4.6. The Hague District Court’s finding that “any anthropogenic greenhouse gas emission, no matter how minor, contributes to . . . hazardous climate change” was thus confirmed on appeal: Stichting Urgenda v. The State of the Netherlands (Ministry of Infrastructure and the Environment), ECLI:NL:RBDHA:2015:7196, at para. 4.79. In Gloucester Resources Limited v. Minister for Planning, [2019] N.S.W.L.E.C. 7, a New South Wales court rejected an argument of a coal mining project’s proponent that the project’s GHG emissions would not make a meaningful contribution to climate change. The court noted that many courts have recognized that “climate change is caused by cumulative emissions from a myriad of individual sources, each proportionally small relative to the global total of GHG emissions, and will be solved by abatement of the GHG emissions from these myriad of individual sources.”

That conclusion, arrived at in both the Dutch and the Australian cases, was based on the scientific evidence that was presented to the courts in those cases. Expert scientific evidence on the same point was presented to the Canadian judges in the Carbon Pricing Case in Canada. Indeed, one of the principal sources of expert evidence on that precise point, which was included in evidence presented to the SCC, is the IPCC 2018 *Special Report* published on October 7, 2018. The IPCC *Special Report* also formed a central part of the evidence relied on by the Supreme Court of the Netherlands in the pathbreaking *Urgenda Foundation* case.

The SCC has therefore accepted that every *emission of greenhouse gases, no matter how minor, leads to an increase in the concentration of greenhouse gases in the atmosphere*. In turn, that increase in the atmospheric concentration leads to an increase in warming everywhere, not just in the province where the emissions occurred. Therefore, no province acting alone can protect its

own population from the impacts of rising emissions in other provinces. For that reason, the SCC concluded (by a majority of 6-3) that due to the extraordinary threat of climate change this is a proper case where the Federal Government's residual law-making power applies.

Appendix VI (see page 67 below) provides a more detailed discussion of reasoning followed by the Supreme Court of Canada.

SUMMARY:

The SCC has agreed in unqualified terms that climate change is a “threat to the future of humanity”; that the impacts of the continued release of CO₂ into the atmosphere will be “irreversible”; that the impacts are already severe within Canada; and that the heating of the earth’s atmosphere is caused by “a myriad of individual sources” all of which are, in a legal sense, causative of the harm.

The untrammelled ability of individual provinces to continue to produce and export rising volumes of crude oil leads to increasing volumes of “upstream emissions” and also causes increasing “downstream emissions” from the oil we produce and export. The CO₂ released into the atmosphere when our oil is combusted as fuel in other countries is directly driving the worsening impacts of climate change on people everywhere in the world, including populations living within the borders of all Canadian provinces, not just in the province that chooses to produce and export that oil.

Based on this important legal decision by the SCC, it is now entirely within the power of the Federal Government to substantially *increase* the existing carbon price that applies to oil and gas production and processing facilities across Canada. At present, the carbon price that applies to these facilities under Part 2 of the Act is, *as a matter of deliberate government policy, set at an exceptionally low level to protect the “competitiveness” of our oil and gas producers* so that the industry will be able continue to compete against low-cost foreign producers and maintain and increase their existing high production levels.

Appendix VII (see page 72 below) examines the Federal Government’s rationale for maintaining a very low carbon price on Canada’s oil production. The government acknowledges that the objective of that policy is to increase the level of Canada’s oil production. The Federal Government has the legal power and constitutional authority to end that policy.

An immediate rise in the carbon price applicable to the oil sands industry, and successive increases over time aimed to more accurately reflect the massive and tragic economic and social costs that inevitably accompany the emissions from the extraction and burning of this carbon-based fuel, will curb Canada’s oil production. What is missing is not constitutional power, but political will and candour.

QUESTION:

10. **Do you accept that the Federal Government has the lawful constitutional power to impose a carbon price on oil and gas industry operations in all provinces, including in the oil sands sub-sector and on natural gas production and processing, and that it has a wide discretion to increase the carbon price substantially above the present levels set by the government?**

SIX YEARS AGO: SUBORNING THE ENVIRONMENTAL REVIEW PROCESS

The crucial questions we are now asking our Members of Parliament could have been fully answered six years ago, before the Liberal government approved two major pipelines, the Trans Mountain Pipeline Expansion Project (TMX) and Line 3, on November 29, 2016.

By late 2023, when these two lines are both completed (the construction of Line 3 was completed in 2021), they will provide 910,000 bpd of new shipping capacity. The government based its authorization of the TMX project on a multi-volume report by the National Energy Board (NEB), which recommended on May 19, 2016, that the project proceed. The NEB's report was portrayed to the Canadian public as a thorough environmental review. It did examine the risks of oil spills in B.C.'s tidal waters and the threats to salmon at river crossings, etc. It claimed to be exhaustive, and Canadians were assured the project was safe. But it *did not look at climate and the emissions implications*. It was clear then that TMX would operate for 40 years.

The approval process for the project by the National Energy Board (its name has since been changed to Canada Energy Regulator) was started by the Harper government in 2013, but when the Liberals took power in late 2015 the hearings had not been completed.

The NEB issued its final report recommending approval of the Trans Mountain expansion project on May 19, 2016, after a lengthy inquiry through 2014 and 2015 which was continuing when the Liberal Government took power following the October 2015 election. The NEB inquiry was a public hearing process and it had full powers to call evidence. However, the NEB took the view that "upstream emissions" released into the atmosphere at oil sands production sites in Alberta did not fall within the scope of the inquiry. Accordingly, the inquiry excluded all evidence about greenhouse gas emissions from expanding oil sands production in Alberta – and excluded all scientific evidence about the impact of emissions on the climate system.

Two years earlier, in April 2014, when it issued the Hearing Order for the Project which included the "List of Issues", the NEB *excluded* from the List of Issues the environmental effects associated with upstream activities and development of the oil sands, including greenhouse gas emissions. The City of Vancouver at that time applied for an order expanding the List to include those issues. Other intervenors made submissions supporting the City of Vancouver's motion.

The NEB panel in a ruling on July 23, 2014 (NEB Ruling 25) rejected the application by the City of Vancouver to expand the List of Issues, which would have permitted intervenors to call expert evidence about emissions and climate change. The substance of the ruling is that environmental impacts of that kind are not "directly related" to the Project:

The Project does not include upstream production and is not dependent on any particular upstream development and, therefore, any link to environmental changes caused by such upstream production is indirect and not necessarily incidental to Project approval.

— NEB Ruling 25, July 23, 2014, p. 3

The City appealed the NEB refusal, but the Federal Court of Appeal dismissed Vancouver's appeal on July 23, 2014.⁵

As a result, the NEB during its inquiry did not consider at all the emissions implications of the additional volume of oil sands production that would be facilitated by its construction. It excluded all evidence about climate science and climate change. The final report released on May 17, 2016, was silent on those questions.

Yet, we have all known since early 2016 everything we needed to know about the massive increase of Canada's oil production expected over the next 20 to 30 years.

The scale of the expected future growth of Canada's oil sands production was set out in a report published by the National Energy Board (NEB) on January 27, 2016, *Canada's Energy Future 2016: Energy Supply and Demand Projections to 2040*. The NEB concluded that global oil consumption, especially in Asia, would likely continue to grow for at least another twenty-five years. Based on that projection of increasing oil demand worldwide for several more decades, the NEB forecast that Canada's oil sands production would increase from the 2014 level of 2.4 million barrels per day (bpd) to 4.8 million bpd by 2040 – an expected doubling of production.

In October 2016, the NEB published an update (titled *Canada's Energy Future 2016 Update*) that lowered the NEB's projections due to some uncertainty at that time about future oil prices. The *Update* forecast that Canada's oil sands production would reach 4.3 million bpd (instead of 4.8) by 2040, which was nevertheless a 72% increase above the 2015 level of 2.5 million bpd. Taking into account an additional 1.4 million bpd of conventional oil production, the *Update* projected that Canada's total crude oil output would reach 5.7 million bpd by 2040, up from 4.0 million bpd in 2015.

The October 2016 *Update* report estimated that by 2030 oil sands production would reach 3.967 million bpd (almost exactly identical to the projected 3.936 million given in the CER's recent November 24, 2020 report). For six years this Liberal government and the Canadian oil industry have consistently based the claim that TMX is necessary on the grounds that global oil demand will continue to grow to 2040 and beyond, and that Canada's oil production will grow.

The final version of the “upstream emissions assessment” for the Trans Mountain pipeline released on November 25, 2016 (*Review of Related Greenhouse Gas Emissions Estimates for the Trans Mountain Expansion Project*) adopted the NEB's October 2016 *Update* forecast that oil

⁵ The Federal Court of Appeal decided that the NEB's jurisdiction did not require that it examine the emissions implications of the pipeline. The very limited scope of the NEB's environmental examination of the pipeline project (allowing it to exclude climate science) was the deliberate choice of the Trudeau Government. After assuming power from the Harper Government in October 2015, the Trudeau Government had the full opportunity and the legislative power to amend the law to require that the NEB look at emissions and climate before the inquiry ended. It chose not to do so.

sands production will increase from the 2014 level of 2.3 million bpd to 3.967 million bpd by 2030, and to 4.3 million bpd by 2040: see *Report*, November 25, 2016, s. B.2.1 at p. 21, “Canadian Oil Supply Growth.” The *Review* document was cited and relied on by the Trudeau cabinet when it approved the construction of the TMX project on November 29, 2016.

When it was approved in 2016, the entire rationale for the TMX project, economically, politically, and legally (in the text of the formal Order-in-Council that authorized the project) was based on the premise of growing world oil demand to 2040 and beyond.

But it was approved without any inquiry into the emissions implications – and the climate implications – of approving a project that would facilitate the continued growth of our oil sands production for another 30 years.

Let us remember, it was the Trudeau Government six years ago that made the fateful decision that the “upstream emissions” released into the atmosphere at oil sands production sites in Alberta (as well as the much larger volumes of “downstream emissions” released after our oil is exported and burned as fuel in foreign markets) should not be addressed by the NEB inquiry. Accordingly, the inquiry excluded all the scientific evidence, then readily available, about the climate implications of continuing to increase Canada’s oil sands production to 2040. That planned future expansion of our oil production was the rationale for building the TMX project and Line 3, which runs south into the U.S.

Both pipeline projects were approved without answering the fundamental questions.

LETHAL NEGLECT: POLITICAL SILENCE

Canada is the world’s 4th largest oil producer, accounting for 4.9 million bpd in 2019. The Canada Energy Regulator’s most recent “Evolving Scenario” published on December 9, 2021, tells us that Canada’s oil production is expected to increase by 19% to 5.8 million bpd by 2032, and our production is then projected to decline by an identical 19% to 2050, down to 4.8 million – no significant reduction at all from where we were in 2019.

Canada’s role as an oil producer is our country’s most salient economic activity driving global emissions.

To have any realistic chance of achieving net-zero global emissions by 2050, global emissions need to be cut 50% by 2030. Deep reductions on a global scale will have to be repeated every year for another 20 years after that. That means ongoing absolute reductions in global oil production. Lower by 2030 and lower again by 2040.

The world is presently on a path which, if not fundamentally altered before 2030, will commit us to warming of 2.7°C. Of that increase, 1.1°C has already occurred – more than two thirds of that since 1970 – already bringing monumental destruction to the natural world, and to the natural systems that support human life. In July 2021, wildfires were unleashed again in British Columbia (following upon the horrific fires in 2017 and 2018) and erupted down the entire length of the Pacific coast in Washington, Oregon, and California – and across the world, in Siberia, Greece and on the islands in the Aegean, and through Turkey and Algeria.

The extreme danger of our present path has been obscured because the government has been able to successfully project to the Canadian public a positive story about its ambitious plans to expand oil production for another 20 or 30 years, shorn of any context that sets out the severe and unforgiving global limits that are upon us.

A plan that accommodates and supports the continued expansion of Canada's oil production for another 20 to 30 years, and that assures Canadians that we can rely on future large-scale deployment of "emissions removal technologies" to offset the massive volumes of CO₂ emissions that will inevitably be released into the atmosphere, is unconscionable.

If Ministers and elected Members of Parliament, when making statements to the public about Canada's planned oil production and about future emissions reductions, withhold (by calculated silences) crucial information which, if candidly disclosed, would fundamentally alter the public's understanding of the danger of our situation, that is fraud.

In a relationship of trust, choosing to remain silent about the most material and consequential information is deceit.

Rebecca Solnit, quoting writer Sissela Bok, explains how completely deceit can destroy human agency: "Deceit and violence – these are two forms of deliberate assault on human beings. Both can coerce people into acting against their will. Most harm that can befall through violence can come to them also through deceit. But deceit controls more subtly, for it works on belief as well as action".⁶

Three crucial points reveal the extreme danger of our position. First, a defining measure of our proximity to extreme danger is the level of atmospheric carbon concentration level and its current rate of annual incremental rise (about 2.5 ppm CO₂ every year). Without massive reductions in global emissions, which will require deep cuts in oil consumption within the next nine years, the atmospheric carbon concentration level will almost certainly exceed 450 ppm CO₂ by about 2035. It will have passed the 430 ppm CO₂ level by 2028.

A second measure of our extreme danger is that the world's major oil producers (including Canada) are currently planning to produce by 2030 around 30 million to 40 million bpd more oil than would be consistent with the 1.5°C pathway.

A third defining measure of our danger is the global "emissions gap". An emissions gap of 13 GtCO₂eq must be closed within the next nine years to meet the 2°C goal. To stay on a pathway to limit the warming increase to 1.5°C means we have nine years to close an emissions gap of 28 GtCO₂eq. Closing either of those emissions gaps will require an epochal change of course. Full achievement of either one of those goals by 2030 may now be beyond our reach because we have waited too long. If so, that means even faster and deeper cuts will be required in the years immediately after 2030.

⁶ Rebecca Solnit, *Orwell's Roses*, New York: Viking 2021, at page 223. Solnit quotes Sissela Bok, *Lying*, New York, Vintage, 1999.

During the Federal election campaign leading up to September 20, 2021, neither the Liberals, nor the NDP Party, nor the Conservatives questioned Canada's plans to continue expanding our oil sands production to 2045.

None of the responsible Ministries or government agencies (ECCC, the CER, or the Ministry of Natural Resources) have disclosed to the Canadian public any modelling or any scenario showing the much lower future levels of oil production in Canada that will be required to align our country with an effective global effort to stay within the 1.5°C warming threshold. The CER's most recent report published on December 9, 2021, is silent on that point.

Members of Parliament have a crucial role and ethical obligation to end this silence.

CONCLUSION: FAILURE TO "CONSULT THE VOICE OF CONSCIENCE"

Canada is currently on a pathway to continue increasing our oil sands production to 2032 and maintain high production levels through to 2050. After his six years of silence, Canada's Environment Minister (now promoted to his new role as Minister of Natural Resources) in September 2021 furtively uttered the words that there will be "no further significant increase of oil production". But there remains a complete absence of any acknowledgement by Wilkinson, or by any of his cabinet colleagues, or by the Liberal MPs who support this government, that a very deep decline of global oil consumption (and a deep decline of Canada's share of the world's oil production) must occur by 2030, and that much deeper reductions will have to be repeated every year for another 20 years after that. Soft promises that there will be "no further significant increase" will not help us. Without acknowledging the truth, all the talk about "net-zero by 2050" is a delusion and it is deceitful.

The purpose of the Trans Mountain Pipeline Expansion project is to provide 540,000 bpd of additional shipping capacity to supply global oil demand, which our government leaders continue to insist will remain at high levels for "another 20 or 30 years". None of these people have the courage to say we can't continue to do this for another 20 or 30 years.

Hannah Arendt, in her 1963 book on the Eichmann trial subtitled *A Report on the Banality of Evil*, examined the coded language and evasive usages (she called them "language rules") that facilitated and eased the participation of otherwise ordinary people in the commission of terrible crimes against humanity. She revealed the euphemisms, the code words, the strategic evasions, and the silence that shrouded the great crime.

Arendt of course does not suggest evasive language itself explains the crime. Evasive language helps block our compassion and understanding. The explanation, she wrote, lies in the "sheer thoughtlessness – something by no means identical with stupidity". In part, she writes, it was "a lack of imagination", an unwillingness or inability to see the implications of our individual actions. There was a "reluctance to make judgments in terms of individual moral responsibility". A failure "to consult the voice of conscience". She observes "such remoteness from reality and such thoughtlessness can wreck more havoc than all the evil instincts taken together."

APPENDICES

APPENDIX I: IEA's "Sustainable Development Scenario" (November 9, 2019)

The IEA's earlier scenario, the "Sustainable Development Scenario" ("SDS") was published on November 8, 2019, in its annual report, *World Energy Outlook 2019*: see Table 3.1 p. 132 and Annex A.1 p. 672-673. The scenario was designed to calculate how much global oil consumption must decline below existing production levels to give us a realistic chance to limit the further increase in the earth's average surface temperature to less than 1.8°C:

The Sustainable Development Scenario is constructed on the basis of limiting the temperature rise to below 1.8°C with a 66% probability without the implied reliance on global net-negative CO₂ emissions, or 1.65°C with a 50% probability.

— *World Energy Outlook 2019*, section 2.4 at page 88 (emphasis added)

In the above quote, "without implied reliance on net-negative CO₂ emissions" means that the SDS Scenario in estimating the reductions in fossil fuel use required to stay within the 1.8°C limit does not assume that, in future, viable technologies will be developed and deployed that will have the capacity to extract CO₂ from the atmosphere (technologies of that kind do not yet exist except in very small experimental schemes). Accordingly, the assumptions in the IEA's SDS Scenario are comparatively realistic and do not depend on conjecture about future carbon-removal technologies. One consequence of that realism, it will be noted, is that the IEA in this scenario did not promise any chance that its proposed reductions of global oil consumption can limit warming to below 1.5°C. It just offers a chance to keep warming to less than 1.8°C.

Based on that realistic assumption about future technology, the IEA's SDS Scenario concludes that to have a 66% chance of limiting warming to 1.8°C, global oil consumption would have to decline from the 2018 level of 97.7 million bpd down to 87.1 million bpd by 2030, and further decline to 66.9 million bpd by 2040. That would require a 31% cut in global oil consumption over the next 20 years, with an initial 10% cut within the next decade (and even deeper cuts in global coal burning over the same period).

The *World Energy Outlook 2019* report also included two other scenarios that provide baseline projections showing the expected growth of global oil production up to 2030 and 2040. Baseline projections, also referred to as "business as usual" studies, calculate future demand for crude oil on the assumption that the world's economies continue to grow using currently existing energy systems and policies, i.e., assuming our present dependency on oil, coal, and natural gas remains substantially unchanged. The IEA's "Current Policies Scenario" assumed there will be no significant changes that will impede the growth of oil demand:

"The Current Policies Scenario shows what happens if the world continues along its current path, without any additional changes in policy. In this scenario, energy demand rises by 1.3% each year to 2040, with increasing demand for energy services unconstrained by further efforts to achieve efficiency."

— *WEO 2019*, Executive Summary p. 23

The IEA’s “Stated Policies Scenario” published in November 2019 showed a much slower rate of growth in oil consumption, compared to the Current Policies Scenario. It is based on existing policies already implemented, but it also took into account *additional measures announced but not yet implemented* that were expected to moderate the growing demand for oil over the next two decades. Despite that, global oil demand was projected to grow to 105.4 million bpd by 2030. Figure L summarizes the oil production data for each of the three scenarios:

Figure L: World Energy Outlook 2019: oil production scenarios: projections (in millions bpd)

	2017	2018	2025	2030	2035	2040
Current Policies Scenario				111.5		121.0
Stated Policies Scenario	95.1	97.7	103.5	105.4	106.0	106.4
Sustainable Development Scenario				87.1		66.9

Source: *World Energy Outlook 2019*, Table 3.1, p. 132 and Annex A, Table A.1, p. 672–673.

The IEA’s most recent *World Energy Outlook 2021* report only slightly lowers that growth projection. In 2019, world production reached 97.9 million bpd. As a result of the impact of Covid-19, consumption dropped to 90 million bpd in 2020. However, the new report released on October 12, 2021, forecasts that *based on existing energy policies* demand will move back up to 98 million bpd by 2023 and reach 103 million bpd by 2030 and will remain at that level to 2050.

APPENDIX II: Minister’s letter December 16, 2021, to Canada Energy Regulator

On December 16, 2021, the Minister of Natural Resources, Jonathan Wilkinson, sent a letter to the Canada Energy Agency (CER) requesting that it “undertake scenario analysis” relating to Canada’s future oil production. The letter is equivocal about the precise scope and nature of the requested analysis. It is clear that this request by the Minister has been made in response to recent severe criticism by many of Canada’s leading energy economists and climate policy experts about of the inadequacy of the CER’s projections (see Parts 1.4, 1.7, and Part 4). The key section of the Minister’s letter begins as follows:

... I am requesting, as the Minister responsible for the CER, that your organization undertake scenario analysis consistent with Canada achieving net-zero emissions by 2050 as soon as possible. This includes fully modelled scenarios of supply and demand of all energy commodities in Canada, including clean fuels, electricity, and oil and gas.

That part of the request, by itself, does not address the problem. A scenario “consistent with Canada achieving net-zero emissions by 2050” merely requires that our domestic emissions be reduced to “zero” by that date, which in theory could be achieved by relying on CCUS technology and other envisioned future technologies to “remove” the upstream emissions from our continuing high levels of oil production. That outcome would not require any reduction of our existing high levels of oil output. It would not be consistent with *the world* reaching net-zero by 2050. The first part of the letter does not indicate any departure from Canada’s existing

policy which is to continue indefinitely our high levels of production, 80% of which is for export.

However, the final sentence of Wilkinson's letter to the CER appears to focus the request on the essential global dimension of the problem, although that is not entirely clear:

The modelling should reflect a global context in which the world achieves its Paris Accord goal of limiting warming to 1.5 degrees C, and should consider relevant uncertainties, including future trends in low-carbon technology and energy markets.

The above sentence appears to be specifying that the requested scenario modelling should examine not only what future levels of oil production in Canada would be consistent with a “*net-zero emissions*” outcome in Canada (which counts only upstream emissions from our oil production activities in Canada), but that the CER must also take into account the future decline in global oil consumption that will be essential to meet the global goal of limiting warming to 1.5°C. In that case, any new scenario for Canada will show rapidly declining oil production to 2040 and be aligned with the IEA “Net-Zero by 2050” Scenario. But the Minister's proviso that the scenario modelling should consider “relevant uncertainties” and “future trends in low-carbon technology” may imply that the CER should look for justifications why Canada's oil production will remain at higher levels. It is tragic and shameful that this request was not made six years ago, before the Liberal Government in November 2016 approved two major pipeline expansions, TMX and Line 3, which together add 910,000 bpd of additional shipping capacity and are designed to facilitate the continued expansion of Canada's oil production to 2040 and beyond.

APPENDIX III: Oil sands production: emissions intensity per barrel and the significance of “downstream emissions”

Carbon intensity is a metric commonly used to measure the amount of GHGs emitted through a portion of the oil supply chain (i.e. used to measure emissions that occur during the extraction process alone, or covering both extraction and refining, etc.). It is also used to calculate a total life-cycle emissions analysis of the fuel, including extraction emissions, refining, shipping (pipelines, rail, marine), and the emissions from the fuel's combustion in vehicle engines (the full life cycle is called a “well-to-wheels” analysis). It is measured in kilograms of carbon dioxide per barrel of crude oil (kg CO₂).

Life cycle emissions

It is true that oil sands emissions intensity during the oil sands extraction process in Canada has declined since 1990 from 119 kg CO₂ per barrel to 78 kg CO₂ per barrel in 2018 (those are averages for all oil sands producers): see *National Inventory Report*, April 15, 2021, at pp. 54 – 55). Extraction emissions (referred to as “upstream emissions” and accounted for in Canada's annual reports that tabulate our total national emissions), however, are less than 15% of the total well-to-wheels emissions released from each barrel of oil refined from Canada's oil sands and ultimately burned as fuel. Comprehensive studies have examined the emissions intensity of oil from many different world oil producers. See, for example, *The oilsands in a carbon-constrained Canada*, Pembina Institute, Benjamin Israel et al., February 2020. The Pembina report shows that “well-to-wheels” emissions for all types of oil range from a low of about 450 kg CO₂ per

barrel up to a high end of about 650 kg CO₂ per barrel. Canadian oil sands production is at the higher end of that range, above 550 kg CO₂. Given that oil sands extraction emissions average 80 kg CO₂ per barrel, they account for less than 15% of the total life-cycle emissions released by each barrel Canada produces.

The same point was demonstrated seven years ago, when the U.S. government completed its *Final Supplemental Environmental Impact Statement* (SEIS) on the proposed Keystone XL pipeline, designed to carry 830,000 bpd of oil sands crude to the U.S. market. Chapter 4 of the U.S. study in 2012 examined the carbon intensity of Canada's oil sands production compared to four global sources, including a "U.S. Average" (emissions per barrel data is found in Table 4.14-3 at page 4.14-29 of that report). In the U.S. study, extraction emissions intensity for Canada's oil sands was found to be 74 – 105 kg CO₂ per barrel and overall well-to-wheels emissions were 533 – 568 CO₂ per barrel. While oil sands extraction emissions are now in the lower range of 67 – 80 kg CO₂ per barrel, the basic point is that emissions from the production process in Alberta are about 15% or less of the overall total.

The "downstream emissions" are in the order of 470 kg CO₂ per barrel for every barrel of oil we export. We export 80% of our total production.

Technological innovation and the past record of improvements in emissions

The record of the past 30 years shows that the comparatively small "gains" in the reduction of the amount of CO₂ per barrel (for example 22% over the 1990 – 2005 period) has never resulted in any absolute reduction in the total amount of emissions in Canada from the expanding industry. The gains in intensity per barrel have been more than offset by the huge increase in the number of barrels produced. Between 1990 and 2005, production quadrupled from 400,000 bpd to 1.7 million. Despite the documented reduction in carbon intensity per barrel over that period, total oil sands emissions more than doubled between 1990 and 2005, from 15 Mt to 37 Mt. Again, between 2005 and 2018, oil sands carbon intensity per barrel continued to decline, down from 97 kg CO₂eq per barrel in 2005 to 78 kg CO₂eq per barrel by 2018: *National Inventory Report*, April 15, 2021, at page 54 and Figure 2-25, p. 55. But as a result of continuing growth in production, the oil sands emissions more than doubled in that 13-year period, rising from an annual level of 37 Mt in 2005 to 84 Mt in 2018 (and those are just the "upstream emissions"). Improvements in carbon intensity have not halted the growth of total oil sands emissions.

Technological promises: reducing the carbon-intensity of production in the oil sands

With respect to the promise that technology will solve the problem of oil sands emissions, the government's *Fourth Biennial Report*, released on January 2, 2020, acknowledges that over the period to 2030 further reductions in carbon intensity per barrel from emerging technologies will at least to some degree be offset by other factors:

In the forecast, several factors could lead to increasing intensity in the oil sands subsector, such as declining reservoir quality, aging of existing facilities, and shifts from mining operations to more emissions-intensive in situ extraction processes. On the other hand, the deployment of emerging technologies in the oil sands could lead to significant emissions intensity reductions in the subsector. Considering the uncertainties associated

with these counterbalancing trends in oil sands emissions intensities, the projections keep the emissions intensities of future oil sands productions at the level of existing technologies.

— *Fourth Biennial Report*, section A2.1.2.1.1, p. 120 (emphasis added)

The available evidence does not support any expectation that significant reductions of oil sands emissions will be achieved by 2030, and especially if production continues to grow in line with the “Evolving Policies Scenario” released by the CER on December 9, 2021. As the government’s *Fourth Biennial Report* stated, a number of important factors will have the effect of increasing emissions intensity in the oil sands subsector.

APPENDIX IV: Carbon Capture, Utilization, and Storage technology

The *Canada’s Energy Future 2020* report promotes Carbon Capture, Utilization, and Storage (CCUS) as a technological pathway for “deep decarbonization” of oil sands production:

CCUS offers an opportunity to capture CO₂ for geological storage and utilization. In some cases, the captured CO₂ can also be used for Enhanced Oil recovery, increasing the production of crude oil by injecting it into active production fields. CCUS is already in use in the oil sands. The Shell Quest CCS facility, in operation since 2015, has been able to store over four million tonnes of CO₂ from the Scotford bitumen upgrader. Approximately 35% of the facility’s annual CO₂ emissions have been successfully captured and stored by this technology. CCUS could be combined with cogeneration, or direct air capture, for additional reductions and/or use opportunities”.

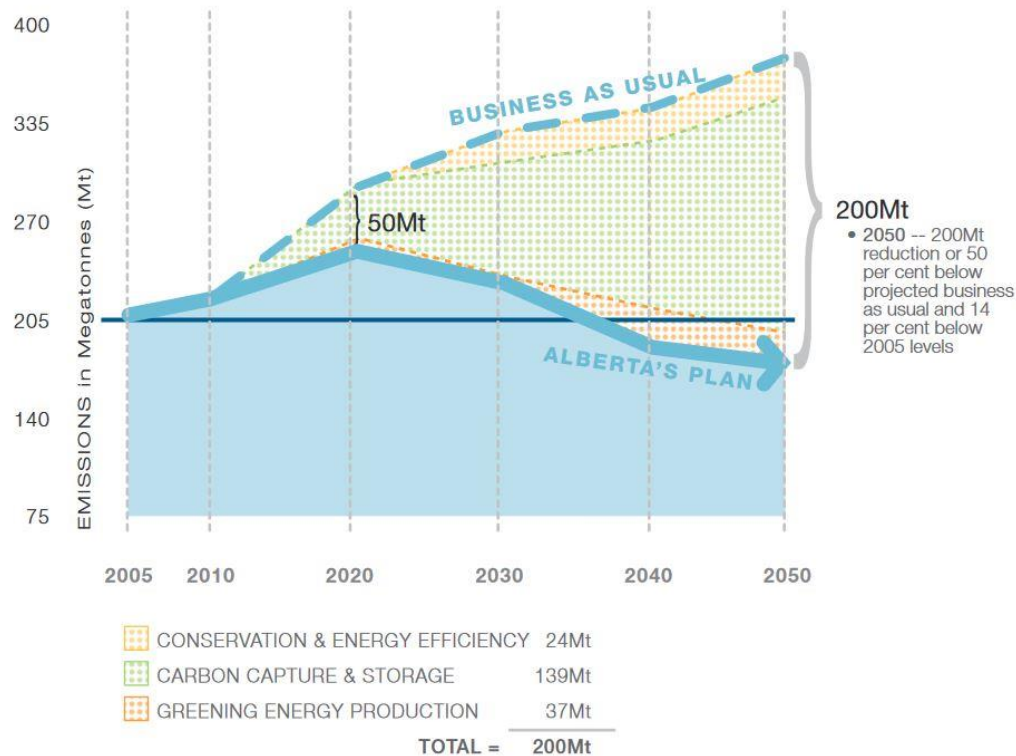
— *Canada’s Energy Future 2020*, page 81 (emphasis added)

The CER 2020 report omits any reference to the troubled history of CCUS in Alberta.

A major effort was undertaken by the Alberta government between 2008 and 2014 to initiate large scale installations of CCUS at oil sands operations (at that time it was referred to as carbon capture and storage or “CCS”). It failed principally because it proved to be too costly. Measured by the cost of removing each tonne of CO₂ at an industrial operation, the technology was not economically viable.

Figure M reproduces a graph published in 2008 by the Province of Alberta in a document called *Alberta’s 2008 Climate Change Strategy*, when the province launched what it described as the renewal of its climate change policy. At the core of that ambitious new plan was a commitment to deploy CCUS technology on a very large scale. The premise of that plan was that bitumen production would be able to continue to expand without increasing emissions.

Figure M: Graph representing Alberta's 2008 emissions reduction plan



Source: Alberta's 2008 Climate Change Strategy, p. 24.

The dotted top line in Figure M represented the pathway of Alberta's "business as usual" emissions: it depicted the projected level of CO₂ emissions that, according to the Alberta government, would be produced in the province in the absence of any new carbon-reduction policies. In the 2008 plan, the projection for Alberta's "business as usual" emissions by 2050 was about 384 Mt: that estimate of the annual emissions level by 2050 was largely driven by the continued expansion of oil sands production up to 2050.

The bottom line on the graph shows that under Alberta's putative 2008 plan, total emissions by 2050 were anticipated to be only 194 Mt – an astonishing 200 Mt less than the business-as-usual outcome. Most significantly, the graph shows that by 2050, 139 Mt of that reduction of CO₂ emissions would be achieved by the large-scale implementation of CCUS.

At the heart of Alberta's 2008 plan was the ambition to continue expanding oil sands production, with the declared expectation that by 2020 the installation of CCUS would avoid any further increase in the annual level of emissions in the industry. The graph shows total emissions in Alberta were expected to begin to decline rapidly after 2020 (see the distinct bend downwards in the bottom line on the graph just above the year 2020). The plan also promised a 50 Mt cut below the baseline projection as early as 2020 of which more than 30 Mt was expected to be achieved before 2020 *by new CCUS technology installations*.

In 2014, the government of Alberta quietly abandoned its entire CCUS strategy. By then, seven years had passed since the Alberta plan was unveiled. Four carbon capture projects in Alberta were originally announced. Two were later cancelled. On July 18, 2014, *The Globe and Mail* published an article headlined “Alberta leadership hopeful Prentice lets carbon capture go”. Jim Prentice, a former federal cabinet minister then campaigning to become the new leader of Alberta’s governing Conservative Party, was quoted as follows:

“I don’t believe carbon capture and storage is the panacea,” he said. “It’s not capable of achieving the reductions in emissions that are required, and it is expensive, and in certain contexts, it’s quite unproven.”

— *The Globe and Mail*, July 18, 2014 (emphasis added)

Prentice described CCUS as a “science experiment.” He declared that if he became premier of Alberta, his government would discontinue any further financial support for CCUS. CCUS technology was the sole foundation for achieving 70% of Alberta’s planned carbon reductions over the next 35 years.

In September 2014, Mr. Prentice became premier of Alberta. He confirmed that CCUS technology no longer had government support in Alberta. Soon after, Premier Prentice called a provincial election, held in May 2015. By that time, the provincial economy in Alberta had been badly weakened by the deep fall in world oil prices, which began in July 2014. A new NDP majority government took power, under Rachel Notley. During the provincial election the NDP promised to end the government’s “costly and ineffective carbon capture experiment” and reinvest the funding in public transit. In that way, Alberta’s entire CCUS strategy ceased to exist.

Today in the oil sands there are only two existing CCUS projects. One of them, highlighted in the CER 2020 report, is the “Quest Project” located at Shell Canada’s Scotford Upgrader near Edmonton. Designed to capture and inject underground 1.2 Mt of CO₂ every year, it became operational in November 2015. That amount represents 35% of the total CO₂ emitted annually from the upgrader’s steam methane units, which produce hydrogen for upgrading bitumen. The capital cost was about \$1.35 billion, two-thirds paid for by the Canadian and Alberta taxpayers.

Canada Energy Future 2020 claims that Shell’s Scotford upgrader has successfully stored 4 million tonnes of CO₂ since it began operating in late 2015. To place the Shell Quest Project in context, that 4 Mt amount represents the approximate 1.2 Mt collected each year over that four-year period. In the same period between 2015 to 2019, the oil sands industry released a cumulative 309 Mt of CO₂ into the atmosphere from its operations in Alberta (including 83 Mt in 2019): *National Inventory Report*, April 2021, Table 2-12, p.75. *Report*. Several billion dollars of public money was spent to collect 4 Mt – which is slightly more than 1% of the total released in Canada from oil sands extraction and processing activities during those four years.

Alberta’s goal, announced in 2008, was to install enough CCUS to achieve a 30 Mt cut in the province’s annual level of emissions by 2020 (a target that applied to all kinds of large-scale emitting sources in Alberta, including oil sands facilities). To meet that goal, the province would have needed to complete about 24 Quest-sized installations, all by 2020. The only other CCUS project is the Alberta Carbon Trunk Line, a 240-km pipeline that will transport CO₂ from a fertilizer plant and a bitumen refinery located near Edmonton.

At present, CCUS is the only available technology that can separate and remove industrial CO₂ gas and prevent it from entering the atmosphere, albeit at enormous cost. In the case of the oil sands, CCUS would capture CO₂ emissions from the flue gases where the fuel for the extraction process is combusted (at the bitumen sites and at processing facilities where natural gas is burned to generate heat and steam) and thus prevent the gases from being released into the atmosphere. The captured CO₂ would be compressed into an almost liquid form, then transported by pipeline and injected deep underground for permanent storage. The technology is very costly. The captured CO₂ must be safely sequestered underground for hundreds of years.

The 2015 Technology Prospects Report

Not long after Alberta confirmed in 2014 that it was dropping support for CCUS, a panel of experts on technological innovation in the oil sands industry completed a major report called *Technological Prospects for Reducing the Environmental Footprint of Canadian Oil Sands* (referred to below as “*Technological Prospects*”). The study was originally commissioned by Natural Resources Canada, with the support of Environment Canada. The panel of twelve leading engineers and other experts, the majority from Alberta and experienced in oil sands extraction and processing, were appointed to examine whether technological innovation has the potential to significantly reduce the environmental footprint of oil sands development: <https://cca-reports.ca/reports/technological-prospects-for-reducing-the-environmental-footprint-of-canadian-oil-sands/>

The resulting report, released on May 26, 2015, reviewed the entire range of carbon reduction technologies then available or under development, including technologies then still at the experimental stage that could become commercially available within the next 15 years. One section of the report (section 6.2) deals specifically with CCUS. It identifies the high cost of carbon capture technology as the principal barrier to any large-scale adoption of the technology.

The *Technological Prospects* report noted that because of the enormous cost of a single CCUS installation, it was unlikely that the technology would be economically viable at “in situ” facilities (which are now the dominant method of extraction in the oil sands) because in situ sites are smaller in scale and do not offer the high volume of emissions at a single location to justify the costs.

The panel’s overall conclusion, addressing the full range of potential technological options, was that if oil sands production continues to expand in line with the industry’s growth forecasts outlined in 2014, none of the existing or emerging technologies (including CCUS) have the capability to lower CO₂ emissions per barrel enough to substantially reduce the ongoing increase of emissions in the oil sands industry, at least not for another decade or longer. In the case of CCUS, the panel concluded that for reasons of economic cost the technology would have no large role in the oil sands even over the longer term.

APPENDIX V: Unforgiving timeline: the irreversible character of the rising atmospheric carbon concentration level.

A characteristic of CO₂ – unlike, for example, methane – is that once the gas is released into the upper atmosphere it does not break down. It has an effective atmospheric residence time of

centuries to millennia (IPCC 2018, Chapter 1 at 1-23). It is only removed from the atmosphere when it is absorbed by the earth's surface by dissolving into the upper ocean (and slowly into the deep ocean) or by biological uptake into forests and plants. The problem is that we keep releasing more CO₂ into the atmosphere every year, in amounts so large that they far exceed the capacity of the natural carbon "sinks" on the earth's surface (the forests and plants and the oceans) to absorb them. For that reason, the atmospheric carbon concentration level continues to rise (now at an annual rate of about 2.5 ppm CO₂).

When substantial human-caused emissions finally cease altogether (or when all remaining amounts of human-caused CO₂ emissions can eventually be fully "balanced" by means of "emissions removals" relying on future Carbon Dioxide Removal (CDR) technologies, as envisioned in theoretical "Net-Zero by 2050" schemes), the atmospheric CO₂ concentration will stop increasing and begin to decline, albeit very slowly – but only over centuries. From the perspective of the time frame that concerns us (and that concerns our children and their children), the incremental increases in the concentration of CO₂ now occurring in the upper atmosphere are irreversible, unless technologies are developed in future that give us the capability to remove CO₂ from the atmosphere on a massive scale.

In the case of P.1 (see the graph in Figure J at page 44 above) which relies to the smallest degree on future Carbon Dioxide Removal (CDR) technology, total CO₂ emissions must decline to an annual level of about 20 GtCO₂ by 2030 (down from 42 GtCO₂ in 2018) to give us a realistic chance to keep warming within the 1.5°C limit. That is a massive and unprecedented undertaking. Because total CO₂ emissions must be cut down to about 20 GtCO₂ *within the next nine years*, that requires rapidly winding down the consumption of oil, coal, and natural gas within the next nine years.

In Pathway P.1, the consumption of oil is rapidly and very substantially curtailed by 2030. At present, fossil fuels account for over 80% of all primary energy (the remainder is hydroelectric, nuclear, wind, and solar). The IPCC 2018 report explains that, under Pathway P.1, oil's share of the world's primary energy supply by 2030 would decline 37% below the 2010 level. By 2050, oil's share of final energy demand would be reduced by 87% (those numbers are set out in Figure SPM.3b in the *Summary for Policy Makers* in the IPCC *Special Report*). In the case of coal, under P.1 the decline in its share of primary energy supply is much faster and deeper. Coal is down 78% by 2030 compared to 2010, and down 97% by 2050.

In contrast, under Pathways P2, P3, and P4, which are all premised on much greater reliance on the future viability of CDR technology (including CCUS), the envisioned reductions in oil, coal, and natural gas consumption to 2030 and to 2050 are more gradual.

In the case of P.4, the start of any deep emissions cuts is deferred until after 2030. That delay is "compensated" for by very heavy reliance on CDR technology by 2050 and after. P.4 assumes that carbon dioxide "removals" in the order of 1200 GtCO₂ will be successfully achieved after 2050 (at present the *annual level* of carbon dioxide emissions is about 42 GtCO₂). P.4 imagines removing from the atmosphere sometime in the future about 30 years of our current emissions. It can only be described as delusory.

APPENDIX VI: The Federal Government's constitutional power to curb emissions

On March 29, 2021, the Supreme Court of Canada (SCC) released its decision in the case known as the *References re Greenhouse Gas Pollution Pricing Act*, ruling that the Liberal Government's legislation imposing a carbon price across all provinces is properly within the constitutional powers of the Federal government. This Appendix shows in more detail why this legal decision can be said to have confirmed that, on matters related to escalating climate change threat and how to respond, the Federal Government has formidable powers to regulate oil and gas production.

Threshold test: the nature of the threat posed by climate change

The Federal Government was required to prove that it has the constitutional power to impose a carbon price on virtually all economic activity in all provinces (including over the oil and gas industry). The government relied on what is called the “national concern” doctrine, which recognizes that where there is a broadly shared problem or threat in Canada which is beyond the powers of the individual provinces to solve, the national government has authority to act based on the residuary power consigned to the Federal Government in section 91 of the Constitution.

To successfully invoke the “national concern” doctrine, the SCC had to be satisfied, after examining the scientific evidence presented to the Court about the seriousness of the threat posed by climate change, that there was enough evidence to show that the need for a minimum carbon price that would apply across all provinces “*was of sufficient concern to the country as a whole*” to justify a full and detailed examination by the Court of whether the proposed carbon pricing law could fall within the constitutional powers of the Federal Government.

That was the threshold test. The SCC examined the record of scientific evidence, which included the *Summary for Policy Makers* from the October 7, 2018, *IPCC Special Report on Global Warming to 1.5°C* and other documents setting out the findings of climate scientists addressing the causes of climate change, to make a judicial finding about the gravity of the threat. The SCC ruled overwhelmingly in favour of the Federal Government on that first issue, agreeing that the grave seriousness of the threat had been established. Here is Wagner CJ's ruling on that issue:

[167] To begin, this matter's importance to Canada as a whole must be understood in light of the seriousness of the underlying problem. All parties to this proceeding agree that climate change is an existential challenge. It is a threat of the highest order to the country, and indeed to the world. This context, on its own, provides some assurance that in the case at bar, Canada is not seeking to invoke the national concern doctrine too lightly. The undisputed existence of a threat to the future of humanity cannot be ignored.

The SCC decided that the case clearly met the threshold test.

“Provincial inability” to effectively address the climate threat

The second issue that had to be decided by the SCC concerned whether the provinces, individually or acting voluntarily together, could protect their populations from the threat of climate change. The “national concern” doctrine cannot be invoked by the Federal Government

if the provinces, using their own lawmaking powers, could protect their populations from the dangers and risks of harm posed by climate change.

The Federal Government can only rely on the “national concern” doctrine if it can show what is referred to as “provincial inability”. The Federal Government would not have constitutional power to impose a minimum carbon price on the provinces unless the Federal Government could successfully prove (as it did in this case) that efforts to control and limit rising carbon emissions cannot be effective if left entirely to the provinces themselves, either acting separately or acting in combination by means of voluntary co-operation among the provinces.

Based on the evidence presented to the Court, the majority of the SCC judges agreed that the refusal of just one or two provinces to co-operate in developing a carbon price to curb and reduce emissions would prevent any successful effort by the remaining provinces to avoid the harm that will be caused by rising emissions. Therefore, achieving a solution by means of voluntary co-operation between the provinces was not possible.

To decide this issue of “provincial inability”, the Court was required (paras 181- 192) to deal directly with some of the most complex features of greenhouse gases and the phenomena of warming that explain why the ongoing increases in emissions in any one province (or in several provinces) are material and present a danger to all other provinces, and to other countries.

A key element of that evidence is the relationship (it is a linear relationship) between cumulative emissions and the heating of the earth. That proposition provided an essential framework for dealing with the provincial inability issue. The SCC accepted that “a failure to include one province in the scheme would jeopardize its success in the rest of Canada” (para 183).

In para 187 the judgment accepts that a refusal to co-operate by one province would have “grave consequences for extra-provincial interests”:

It is also an uncontested fact that ... every province’s GHG emissions contribute to climate change, the consequences of which will be borne extra-provincially across Canada and around the world. And it is well-established that climate change is causing significant environmental, economic and human harm nationally and internationally, with especially high impacts in the Canadian Arctic, in coastal regions and on Indigenous peoples. This includes increases in average temperatures and in the frequency and severity of heat waves, extreme weather events like floods and forest fires, significant reductions in sea ice and sea level rises, the spread of life-threatening diseases like Lyme disease and West Nile virus ...

The SCC (at paras 190-193) concludes that “provincial inability” has been proven:

“As well, federal jurisdiction is necessitated by the provinces’ inability to address the matter as a whole through co-operation, which exposes each province to grave harm that it is unable to prevent.”

The ruling on the concept of “provincial inability” required an in-depth assessment of the scientific evidence, which guided the court to an understanding that atmospheric warming is

being caused by cumulative global emissions. A unique feature of the threat is that it is being driven by the combined effect of multiples sources, and each source is adding to the problem.

In a lengthy continuation of that analysis in paragraph 189, Wagner CJ discusses the decision of the Supreme Court of the Netherlands in *Urgenda Foundation v State of the Netherlands* (January 2020) and a decision in an Australian case, *Gloucester Resources Limited v. Minister for Planning* (2019). Both of those decisions support the crucial point that even a proportionately small emitting country or one significant emitting activity will materially contribute to global climate change:

... the Supreme Court of the Netherlands upheld findings of The Hague District Court and The Hague Court of Appeal that “[e]very emission of greenhouse gases leads to an increase in the concentration of greenhouse gases in the atmosphere” and thus contributes to the global harms of climate change: para. 4.6. The Hague District Court’s finding that “any anthropogenic greenhouse gas emission, no matter how minor, contributes to . . . hazardous climate change” ... In Gloucester Resources Limited v. Minister for Planning ... a New South Wales court rejected an argument of a coal mining project’s proponent that the project’s GHG emissions would not make a meaningful contribution to climate change. The court noted that many courts have recognized that “climate change is caused by cumulative emissions from a myriad of individual sources, each proportionally small relative to the global total of GHG emissions, and will be solved by abatement of the GHG emissions from these myriad of individual sources.”

That conclusion was based on the scientific evidence that was presented in those two cases. Expert scientific evidence on the same point was presented to the Canadian courts in the Carbon Pricing Case in Canada. Indeed, one of the principal sources of expert evidence on that point cited in the SCC (the IPCC 2018 *Special Report* published on October 7, 2018) also formed a central part of the evidence in the Supreme Court of the Netherlands. The SCC has therefore accepted that every *emission of greenhouse gases, no matter how minor, leads to an increase in the concentration of greenhouse gases in the atmosphere*. In turn, that increase in the atmospheric concentration leads to an increase in warming everywhere, not just in the province where the emissions occurred. Therefore, no province acting alone can protect its own population.

The “balancing test”: is the scale of impact on provincial jurisdiction acceptable?

The “provincial inability” test was clearly established. But that, by itself, was not sufficient under Canadian constitutional law to show that the Federal Government was therefore empowered to impose its own laws on the provinces to curb their emissions within their provincial jurisdictions. Just because “provincial inability” has been demonstrated, that does not necessarily mean the Federal Government can use its residual power (under the “national concern” doctrine) to infringe on areas of exclusive provincial jurisdiction in an unlimited way.

Established principles of Canadian constitutional law have long protected provincial autonomy from undue Federal intrusion. In that context, the exclusive constitutional powers that provinces have with respect to control of the development of their own natural resources has been jealously protected.

In the *Carbon Pricing Reference Case*, the majority judgment acknowledged that the new Federal carbon pricing law “will have a clear impact on provincial jurisdiction”. There will indeed be some interference with the provinces’ lawful range of authority under their own constitutional powers. The question the Supreme Court of Canada had to decide was whether that “interference” would be so invasive as to significantly undermine provincial autonomy in the constitutional sense.

The final test, in view of the Court’s significant finding that there will be *some clear impact* (on the provinces’ exclusive powers) was to determine “*whether the matter’s scale of impact on provincial jurisdiction is acceptable having regard to the impact on the interests that will be affected if parliament is unable to address the matter at a national level*” (para 196 of the judgment, our emphasis added). The final step therefore required a “balancing process” that must ask: in view of the undisputed evidence about the advance of climate change and its gravity, what will be the impact if the Federal Government is unable to implement a carbon price that applies to all provinces?

Therefore, the final question that had to be decided by the Supreme Court of Canada was whether the consequences are “acceptable” if the Federal Government is unable to act. The majority provided an emphatic answer in paragraphs 205 and 206 of the majority judgment:

In summary, although the matter has a clear impact on provincial jurisdiction, its impact on the provinces’ freedom to legislate and on areas of provincial life that would fall under provincial heads of power is qualified and limited.

I am of the view that the scale of impact of this matter of national concern on provincial jurisdiction is reconcilable with the fundamental distribution of legislative power under the Constitution. ... Emitting provinces retain the ability to legislate, without any federal supervision, in relation to all methods of regulating GHG emissions that do not involve pricing. They are free to design any GHG pricing system they choose as long as they meet the federal government’s outcome-based targets. ... Although this restriction may interfere with a province’s preferred balance between economic and environmental considerations, it is necessary to consider the interests that would be harmed — owing to irreversible consequences for the environment, for human health and safety and for the economy — if Parliament were unable to constitutionally address the matter at a national level. This irreversible harm would be felt across the country and would be borne disproportionately by vulnerable communities and regions, with profound effects on Indigenous peoples, on the Canadian Arctic and on Canada’s coastal regions. In my view, the impact on those interests justifies the limited constitutional impact on provincial jurisdiction.

The above two paragraphs comprise a robust statement summarizing the judicial analysis that underlines the strength of the Federal Government’s legal position. Given the unprecedented character of the climate change threat (clearly accepted by the SCC judges) and given the clear inability of provinces acting alone to effectively protect their populations from that worsening threat, the Court emphatically stated that the alternative of preventing the Federal Government from acting (“if parliament is unable to address the matter at a national level”, para. 196) was unacceptable.

This reference to a province’s “*preferred balance between economic and environmental considerations*” touches directly on the heart of the matter. The Supreme Court is saying that while the new national carbon pricing law will have a “limited” impact on provincial powers, the Court is acknowledging that in the many areas of economic decision-making, the imposition of the Federal Government’s Carbon Price will alter that balance in the provinces – and may significantly intrude on the powers of a province that, for example, would prefer to pursue more rapid development of its emissions-intensive resource industries. In their development of natural resources, individual provinces may well be compelled to accept that priority must be given to environmental considerations.

The majority of the Supreme Court of Canada decided⁷ that the adverse impacts of the Federal Carbon Pricing legislation on the provinces’ constitutional powers to make their own choices on that balance (thus limiting a province’s ability to exercise exclusive jurisdiction over natural resources) is outweighed by “the irreversible harm across the country” that would occur from climate change if the federal government was unable to implement a minimum carbon tax on all provinces.

On that basis, the SCC ruled that the *Greenhouse Gas Pollution Pricing Act* (GGPPA) is within the constitutional powers of Parliament based on the “national concern” doctrine.

On this final point, in deciding whether the “scale of impact” of the new Federal law on the provinces’ freedom to legislate is “acceptable” (the SCC majority agreed that it is acceptable), the Court’s grasp of the full gravity and finality of the scientific evidence about climate change finds its clearest expression. The record of scientific evidence presented to the Court convinced the judges, and rightly so, that the inability of the Federal Government to use its law-making powers to curb emissions would be unacceptable.

The Federal Carbon Pricing will indeed have a clear impact on provincial autonomy. But that impact must be “balanced” against the irrevocable impacts on human life that will occur if Federal measures that can curb emissions across all provinces are not allowed to proceed.

This enormously important decision by the Supreme Court of Canada on March 26, 2021, is a complete answer to claims by some politicians that the Federal Government lacks the constitutional power to regulate or curb the development of oil and gas resources by the provinces. In instances where future resource development “*leads to an increase in the concentration of greenhouse gases in the atmosphere*”, the government’s power to act is now clearly established and has been articulated and explained by Canada’s highest court.

⁷ The majority judgment by the Supreme Court of Canada (6-3) concurred on all the key issues that decided the case and reflects a broad acceptance and understanding of the scientific evidence. In fact, *seven* out of the nine justices agreed on those crucial points. The seventh judge, Justice Côté, agreed with the other six judges on all those important issues but did not agree that the legislation was constitutional because, in her judgment, under Part 2 of the Act the *delegation* of discretionary powers to government Ministers (and bureaucrats) to decide the details of carbon prices applicable to specific industries was excessive. In her view, far-reaching decision making of that kind should be made by Parliament itself, not delegated. The dissent by Côté J. therefore relates solely to a difference about how carbon prices under Part 2 of the Act should be set. Seven judges agreed that *Parliament* has the constitutional power to impose these carbon prices.

The emergency power under Canada's constitution

Other potential constitutional powers, not discussed above, are also available to the Federal Government. One is the criminal law power. A second potential very powerful ground is the “emergency power” which, like the “national concern” doctrine, is a residuary power available to the Federal Government in circumstances that present an extreme threat. In this case, the Federal Government did not formally present an argument to the Court that the *Greenhouse Gas Pollution Pricing Act* should be found to be constitutional based on the emergency power. Nor did it present the additional evidence required to support that position. It sought to add the emergency power argument, in an *ad hoc* way, when the Supreme Court of Canada proceeding was already far advanced, but the Court rejected it. The Federal Government never prepared a serious case based on the emergency power. That would have required the government to fully disclose to the Court detailed evidence about the extremely short timeline remaining to avoid the worst impacts of climate change. The government did not do that.

APPENDIX VII: Canada's output-based pricing system: the rationale for a very low carbon price on Canada's oil production

The Federal Government's approach to imposing a carbon price on GHG emissions released at major industrial sites across Canada, including at oil sands production sites, is detailed in the *Output-Based Pricing System Regulations*, published June 28, 2019. The 147-page document sets out the key features of this pricing scheme and explains the government's rationale for adopting it: <https://gazette.gc.ca/rp-pr/p2/2019/2019-07-10/html/sor-dors266-eng.html>.

The rationale for the low carbon price on oil production

An explanatory note that accompanies the formal text of the Regulations (starting at page 101) provides the government's explanation for why the carbon pricing system that applies to Canada's most emissions-intensive industries is designed the way it is. It begins with a very brief statement that describes, in an understated way, why rising emissions are a problem:

Greenhouse gas (GHG) emissions are contributing to a global warming trend that is associated with climate change, which will lead to changes in average climate conditions and extreme weather events. It is widely recognized that economy-wide carbon pollution pricing is the most efficient way to reduce GHG emissions.

The explanatory note continues:

However, not all jurisdictions around the world are putting an equivalent price on carbon pollution. This creates a risk for industrial facilities that are emissions-intensive and that compete in international markets. If these Canadian facilities face costs on their GHG emissions that their international competitors do not, they may lose market share to facilities in other jurisdictions with lower carbon-related costs.

This can result in a phenomenon known as carbon leakage, in which production is simply displaced to another location, with domestic emissions “leaking” out of Canada to other jurisdictions. Without appropriate measures for industrial facilities, it is also likely that

competitiveness impacts and carbon leakage leading to production losses could lead to corresponding impacts on the welfare of Canadian households.

The government's explanatory note adds that if oil producers in Canada lose their "competitiveness" due to their increased costs of production per barrel (because of the additional carbon price costs imposed on producers in Canada), oil producers in other countries may increase their production to displace our "market share". As a result, "*global GHG emissions may not decrease, undermining the purpose of the carbon pollution pricing policy.*" Following that logic, the government's answer is to set the carbon price that applies to oil producers at a very low level, so that the Canadian oil industry does not lose any market share.

The output-based pricing system

The *Greenhouse Gas Pollution Pricing Act*, which the Supreme Court of Canada on March 25, 2021, upheld as fully within the constitutional authority of the Federal Government, comprises two different schemes that empower the government to impose a carbon price on Canadians, including on large-scale industrial emitters. In this discussion, the focus is on how the Act applies to the oil and gas sector.

The main part of the Act in Part 1 establishes the "fuel charge" against producers, distributors, and importers of various greenhouse gas ("GHG") producing fuels (and on virtually all other kinds of economic activity that release GHGs). The fuel charge covers distribution to consumers, including retail gasoline sales. The fuel charge under Part 1 is scheduled to rise to \$50 per tonne by 2022. It has been rising since 2018 by increments of \$10 per year and will in 2023 and after increase by \$15 annually and rise to \$170 per tonne by 2030.

Part 2 of the Act allows the executive (the cabinet) to designate a facility (for example, an oil sands extraction operation or a natural gas producer) as a "covered facility", thus exempting it from paying the fuel charge. Similarly, the Act allows the government to exempt a long list of other kinds of industrial activities (fertilizer producers, iron and steel production, chemicals, cement, etc.) from the "fuel charge" provisions. To qualify for that exemption, those industries must demonstrate that their operations are "emissions-intensive"; that they are dependent on exporting their products to foreign markets (or are exposed to competition from low-cost foreign imports); and that if they are obliged to pay the full amount of the "fuel charge" prescribed under Part 1, they will become less "competitive" and are at risk of "losing market share".

Therefore, Part 2 creates an alternate carbon pricing scheme for these "trade-exposed" industries. It dramatically lowers the carbon price that would otherwise be applicable to their operations under Part 1. This alternate carbon price scheme is called the "output-based pricing system" ("OBPS"). Under the OBPS scheme, an oil producer is assigned an "annual facility emissions limit". It pays no carbon price at all on the portion of its emissions that fall within its allowed emissions limit. Subject to the specific features of an individual facility that make its emissions higher or lower than the industry average, this scheme exempts about 80% of the facility's entire emissions from any need to pay a carbon price. Here is how it works:

First, the government calculates the average emissions intensity for all the production facilities involved in that specific industry. In the case of heavy oil producers, emissions intensity is

measured in kilograms of carbon dioxide per barrel of crude oil (kg CO₂). For heavy oil production, the average was determined to be about 68 kg CO₂ per barrel). The actual level varies significantly between producers. For one company, it might be higher at 80 kg CO₂ per barrel or lower at around 50 kg CO₂ per barrel.

The government then establishes a “performance standard” or numerical “*output-based standard*” for that industry. For the heavy oil industry, it is set at 80% of the industry average, that is at a level 20% below the average emissions intensity for that industry (the performance standard for most industries in Canada is also set at 80% of the average for the industry).

Under Part 2 of the *Greenhouse Gas Pollution Pricing Act* and the current regulations, the “output-based standard” for heavy oil/bitumen is currently set at 54.4 kg CO₂ per barrel. Accordingly, an oil sands facility that operates with a *higher level of emissions intensity*, for example if it operates at the industry average of about 68 kg CO₂ per barrel, it will be obliged to pay the carbon price, which is currently \$50 per tonne (or \$50 per 1000 kg), but in that example it pays the carbon price only on the 14 kg CO₂ by which its emissions per barrel exceed the “output-based standard”.

In that example, the operator would pay a carbon price of 70 cents on that barrel, which covers just the 14 kg CO₂ (calculated using the current \$50 price per tonne). If the same operator were obliged to pay the full carbon charge on the entire 68 kg CO₂ emitted during the production of that barrel, it would pay \$3.40. Under the OBPS scheme about 80% of the facility’s emissions are “free of charge”.

For each operator, its “annual facility emissions limit” is calculated based on the facility’s total production multiplied by the applicable output-based standard. It pays the reduced carbon price on the amount by which its total annual emissions exceed its annual facility limit. A typical oil sands facility may produce 50,000 or 150,000 barrels per day (bpd). Given those numbers, the difference between paying 70 cents and \$3.40 on each barrel is enormous.

The government’s calculation of the economic benefits of setting a lower carbon price

The explanatory note (page 102 of the Regulations) provides us with the results of the government’s “cost-benefit analysis”, which justifies adopting the lower carbon price:

The objective of the Regulations is to retain a price on carbon pollution that creates an incentive for emissions-intensive and trade-exposed facilities to reduce emissions per unit, while mitigating the risk of decreased domestic production and of carbon leakage to other jurisdictions.

The government acknowledges that the OBPS imposes a comparatively low carbon price on oil producers in Canada. But the justification offered by our government is that this will ensure that Canada can maintain higher production levels:

However, by imposing a smaller total cost, the OBPS results in higher domestic production. This in turn increases household income, allowing households to increase their consumption to maximize welfare. Increased domestic production also results in slightly more domestic GHG emissions than would have occurred under the fuel charge

only scenario. These domestic emissions are expected to be offset by a reduced risk of Canadian production shifting to other jurisdictions and creating carbon leakage.

It is essentially a treadmill argument. We are on a treadmill and cannot get off. If we decrease our oil production, other countries will increase theirs, we are told. So, we must keep increasing oil production in Canada. And the government's cost-benefit analysis says this will deliver economic benefits to all Canadians:

By 2030, when compared to the Baseline Scenario, the Regulations are estimated to result in an increase in welfare valued at \$3.2 billion. Cumulative foregone domestic GHG emissions reductions are estimated to amount to 22 Mt CO₂eq, valued at \$916 million. ... The monetized net benefits of the Regulations to Canadians are estimated to be \$2.15 billion.

— Output-Based Pricing System Regulations, *Canada Gazette*, June 28, 2019, p. 102

“Foregone domestic GHG emissions reductions” means that, due to the lower carbon price, Canada's emissions will be higher. Based on the government's analysis, the future cost of the higher emissions is “valued” at a modest \$916 million⁸. That number is based on a government formula, referred to as the “Social Cost of Carbon” (“SCC”), which according to the government “measures the incremental additional damages that are expected from a small increase in CO₂ emissions (or conversely, the avoided damages from a decrease in CO₂ emissions)”. The value of incremental damages used in the government's 2019 analysis is about \$50 per tonne of CO₂.

The Social Cost of Carbon valuation

The gist of the government's 2019 analysis, described in detail under the heading “Regulatory Impact Analysis Statement”, is that if we keep producing and exporting higher levels of oil and other emissions-intensive industrial products for another decade, Canadians collectively have \$3.2 billion more to spend on consumption, and we will enjoy a “net-benefit” of \$2.15 billion.

The Social Cost of Carbon (SCC) methodology⁹ used to provide a monetary valuation of the future damages attributed to our planned greenhouse gas emissions (in this case about \$50 per tonne of CO₂) was adopted by Canada in 2011 from research developed by the U.S. government. In assessing the environmental impact of the expected emissions from a particular industrial project, the SCC calculation is used by governments and industry to argue that the increased future emissions are “acceptable”, or can be “justified”, in return for increased economic benefits offered by that project. The future impact of the emissions is conveniently converted into a dollar amount. Government then declares that the project will provide a “net-benefit”.

⁸ This \$916 million is a composite number that represents the increased loss and damages that will be caused by the cumulative amount of all the increased emissions (22 Mt) emitted between 2020 and 2030 by all the emissions-intensive industries in Canada exempted from the higher carbon price, not just increased emissions from the oil industry. The oil industry's share of the \$916 million includes only the estimated additional damages caused by increased “upstream emissions” but excludes additional damages that will be caused by “downstream emissions”.

⁹ See *Technical Update to Environment and Climate Change Canada's Social Costs of Greenhouse Gas Estimates*, March 2016, https://publications.gc.ca/collections/collection_2016/eccc/En14-202-2016-eng.pdf.

Serious questions have long been asked about the adequacy and reality of the assigned SCC valuations, which are low. But now there are far more serious reasons to reject this simplistic and reductive kind of economic analysis, where everything including the peril of imminent climate breakdown is “monetized”. Any government analysis that assumes we can still, in 2019 or 2022, make a rational choice (a “trade-off”) to accept a higher level of future emissions in return for a promise of “higher household income” from expanding oil production is ignoring the scientific evidence. We have run out of time to keep trading higher emissions for immediate economic gain. The most recent scientific findings about the existential implications of the rising trajectory of global emissions and the escalating destruction of climate events belie that illusion. The promised economic gains now will be swallowed by catastrophic future losses.

The *IPCC Special Report on Global Warming to 1.5°C* warned on October 7, 2018, that the remaining carbon budget to stay within the 1.5°C will be entirely exhausted before 2030. The annual *UN Emissions Gap* reports since at least 2017 have explained the massive scale of the emissions cuts that must be achieved by 2030 to give us a realistic chance to keep warming within the 1.5°C or 2°C limits. The IEA warned on May 18, 2021, that we need a 25% cut in global oil consumption by 2030 to stay on a path to meet the 1.5°C goal. If we do not achieve those reductions within the next nine years, warming will irreversibly exceed those limits.

The government’s “cost benefit analysis” was wholly inadequate

The government’s 2019 cost-benefit analysis purported to provide an analysis and comparison of the benefits and costs between two scenarios. One option (the chosen path) was that (A) Canada imposes a much lower carbon price on our oil producers using the “output-based pricing system” (the government called that the “Regulatory Scenario”). The second option was that (B) Canada’s oil industry be compelled to pay the full amount of the “fuel charge” under Part 1 of the Act (which it calls the “Baseline Scenario”). The analysis is clear (at page 125) that, for the purpose of its comparison, the underlying assumption was that Canada’s future oil output over the years 2020-2030 will follow the projections published by the National Energy Board (now re-named Canada Energy Regulator) in its 2017 *Canada’s Energy Future* report.

The analysis therefore compared two scenarios, both of which assume Canada will maintain its current high level of oil production to 2030 and will continue to increase its total oil production for another 25 years. The *Canada’s Energy Future 2017* data showed that Canada’s total oil production was projected to *increase* from 4 million bpd in 2016 to 5.8 million bpd by 2030, and further increase to 6.2 million bpd by 2040.

But what was missing from the comparative analysis is an alternate assumption - an entirely different option or scenario - that would show us a much lower production level for Canada’s oil production over the next 25 years that would be consistent with a successful global effort to keep the heating of the earth’s surface to within the 1.5°C threshold.

It is well established that higher levels of oil production are associated with higher levels of emissions, and higher levels of emissions with higher levels of warming. But the NEB in 2017 did not publish any information about warming. It has never done so. It has always been silent about any recognition of the warming implications of rising oil production. After the Canada Energy Regulator (CER) released its most recent *Canada’s Energy Future 2021* report on

December 9, 2021, four of Canada's leading experts on oil production and climate change pointedly criticized the CER on that point: "*Scenarios that anticipate growing Canadian production are associated with higher levels of warming, but CER does not highlight to what degree.*" When the government used the NEB's 2017 oil production forecast to carry out its cost-benefit analysis, it did not include any information about the higher levels of global warming that would accompany that increasing level of oil production in Canada. The government has calculated the increased economic growth and consumption that would be generated by the projected bountiful expansion of Canada's oil output, but it told us nothing about the associated warming – and provided no analysis of the escalating loss and damages that would be caused by that warming. An increase in the volume of emissions released into the atmosphere during this decade to 2030 will have a major climate impact for multiple decades after that.

The growth of Canada's oil production to 2030 depicted in the NEB's 2017 report, adopted by the government to conduct its 2019 cost-benefit analysis, is consistent with global warming of about 2.7°C, a catastrophic level of warming. In its analysis, the government is silent about that.

What would an honest cost-benefit analysis look like?

An honest cost-benefit analysis would require that the government compare the difference in warming outcomes and the consequential damages and loss between a future in which Canada's oil production continues to increase in line with our government's most recent (CER 2021) projections (which shows that even by 2050 our total oil production remains at a very high level, only 2% below the 2019 level), and the much lower production level needed to align our output with a scenario that offers even a 50-50 chance to limit warming to 1.5°C. The IEA's "Net-Zero by 2050 Scenario" requires a 25% reduction in global oil production between 2019 and 2030 to meet the 1.5°C goal, followed by a deeper 50% production cut by 2040, and a 75% cut by 2050.

Based on a comparison of that kind, if in Canada we follow the pathway of lower oil production we will, not surprisingly, receive over the next nine years significantly lower economic benefits (less economic growth and less "consumption" from oil-related economic activities) compared to the path of higher oil production. But on the "cost" side, based on a calculation of future climate related damage and loss, the outcome under the lower oil production pathway would be superior by far. We will have a chance to limit long-term warming to 1.5 degrees. In contrast, under the pathway of high-level oil production we get warming of 2.7°C.

Calculating the real loss and damage from climate change impacts

The government's cost-benefit analysis released on June 23, 2019, which is used to justify its decision to place a very low carbon price on oil production, claimed that the cost of adverse future climate impacts (from choosing the much lower carbon price) would be only \$916 million.

That \$916 million is not remotely a true measure of the loss and damages that will be caused by our continued high levels of oil production, and nor did the government's analysis even pretend that it was. Our continued high levels of oil production places us on a path to warming of about 2.7°C. The government's "cost-benefits analysis" does not disclose, or even mention in general terms, the horrendous destruction and scale of costs that will occur as warming exceeds 1.5°C then rises far above 2°C.

The government's analysis is merely telling us that by setting a very low carbon price on our oil producers (and therefore encouraging or permitting a higher level of production), the total amount of financial loss and damage from the increased emissions *will be \$916 million greater* than if we were to impose a higher carbon price. But \$916 million greater than what? The analysis provides us with no information about the total volume of cumulative emissions that will be released into the atmosphere from the extraction process in Canada and from burning the projected high levels of oil production we will export to 2030, or about the total amount of damages and loss that will be caused by future climate impacts due to those emissions.

We are not told anything about the lower oil production level that would be consistent with 1.5°C and there is no examination of how much that would reduce the damages. We are not given any indication of the total magnitude of the losses from climate breakdown if we continue to pursue this short-term oil production bonanza.

To the extent this unfolding horror can be calculated in money ("monetized" is the word our hapless government uses), it is sobering to note that the National Oceanic and Atmospheric Administration (NOAA) in its annual report January 11, 2022, has published an estimate of the damages from the 20 most costly climate-related disasters in the U.S. during 2021. The total for that one single year is around US \$145 billion, the third-costliest extreme weather year on record in the U.S. Those events included wildfires, extreme freezing temperatures and hailstorms that destroyed crops, tornadoes in the south-east, and tropical storms on the east coast. During July 2021, in the province of Henan in China, extreme rainfall brought US\$17.7 billion of economic loss. In B.C. alone, during 2021 about 10,000 square kilometres of forest burned in wildfires (the losses were even larger in 2017 and 2019). Fire-fighting costs in B.C. were about \$565 million in 2021. The insured loss of property was another \$150 million from the summer fires. During an extraordinary period of extreme heat in B.C. between June 25 and July 1, referred to as the "heat dome", there were 526 heat-related deaths (which cannot be "monetized"). Record-breaking rains and flooding in Southern B.C. followed in November, causing an additional \$450 million in insured losses. The cost of repairing B.C. highways and bridges destroyed by that event is an estimated further \$170 to \$220 million. That is just one year.

The intensity and frequency of these destructive events will keep getting worse every year until we stop extracting and burning oil, natural gas, and coal. Every tonne of CO₂ we release into the atmosphere from our ongoing high levels of oil production in Canada adds to the cumulative amount of the atmospheric carbon concentration, which drives up the warming level and which in turn drives up this cycle of loss and suffering. Yet the Trudeau Government in its cost-benefit analysis justifying the lowest possible carbon price on our oil sands industry has assured Canadians that by continuing to increase our oil production we will enjoy a \$2.15 billion "net benefit" over the next nine years.

The phantom argument: "carbon leakage" and Canada's increasing oil production

The "carbon leakage" argument has never once been scrutinized by any independent science-based public inquiry in Canada. Yet it surfaces, again and again, in Federal Government documents. Six years ago, the Federal Government's *Review of Related Upstream Greenhouse Gas Emissions Estimates* (which was not an independent inquiry, but an internal review by the government known as the "upstream emissions assessment") declared in the draft version of its

report published on May 19, 2016, that even if Canada were to curb the expansion of its oil sands production, “*investments would be made in other jurisdictions and global oil consumption would be materially unchanged in the long term...*”¹⁰

The truth is that if the world’s major oil producing countries that have large enough oil reserves to substantially increase their production levels during the next 10 or 20 years all decide to do so (there are about six very large producers including Canada that have the capability to do that) the world will have no chance of keeping the increase in global temperature below the 2°C threshold, let alone the 1.5°C limit. If global oil consumption remains “*materially unchanged in the long term*”, or even if it remains materially unchanged just for another nine years, we will forever lose the chance to limit the heating of the earth’s surface to less than 1.5°C limit.

Climate scientist Simon Donner directly challenged the government’s argument about “carbon leakage” in his submission to the Ministerial Panel. In its report published on November 1, 2016, the panel summarized Simon Donner’s submission: “*Donner described this as typical of the tragedy-of-the-commons analysis in which, if everyone in the world decides that the impact of their contribution is irrelevant in a global context, then everyone will continue to expand.*”¹¹

The Ministerial Panel was appointed by the Federal Minister of Natural Resources in May 2016. It was an unusual kind of public consultation. It did not have any powers to call evidence, or make findings, or draw conclusions. The Ministerial Panel’s only mandate was to listen to members of the public – including some of Canada’s leading experts on emissions who volunteered to make submissions. The Ministerial Panel had no power to adjudicate which view should be accepted. All it could do was report the conflicting information to the Minister of Natural Resources in Ottawa. The panel released its report on November 1, 2016.

One of the most significant divergences the Ministerial Panel identified was a fundamental difference between two visions about the future path of global oil demand. The panel summarized the views of presenters in Alberta (people who made submissions were called “presenters”, not witnesses, because the Ministerial Panel had no judicial powers). The panel recounted the submissions during the hearings in Alberta about the future of global oil demand:

There was no campaign of denial. At the same time, presenters pointed to domestic and international energy industry projections that show a rising need for hydrocarbon-based sources during a period of transition to renewable forms of energy. The question, they said, is not whether Canada, and the world, should be shifting to clean energy; rather, it’s a matter of how quickly that conversion can occur. The presenters who appeared

¹⁰ Trans Mountain Pipeline ULC – Trans Mountain Expansion Project Review of Related Upstream Greenhouse Gas Emissions Estimates, Draft for Public Comments, ENV’T & CLIMATE CHANGE CAN. 33, 35 (May 19, 2016), <https://www.ceaa-acee.gc.ca/050/documents/p80061/114550E.pdf>. When the final text of the report was released on November 25, 2016, it contained a revised wording of the government’s “carbon leakage” argument, but the substance of the government’s claim remained unchanged: see final report B.4.5 and Conclusion, pp.40-43: <https://iaac-aeic.gc.ca/050/documents/p80061/116524E.pdf>. When the Ministerial Panel published its report on November 1, 2016, the final version of upstream emissions assessment report with its slightly altered version of the “carbon leakage” narrative had not been released. It quoted the wording in the draft text, reproduced above.

¹¹ Ministerial Panel, *Report from the Ministerial Panel for the Trans Mountain Expansion Project*, NAT. RES. CAN. 33 (Nov. 1, 2016), https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/files/pdf/16-011_TMX%20Full%20Report-en_nov2-11-30am.pdf (emphasis in original).

before us in Calgary suggested a transitional timeline in the order of 30 to 50 years. ...they said that Canada should be prepared in the meantime to compete ... for international market share; Canada should not restrain its energy production at the expense of the country's economic potential or living standard"¹²

In direct contradiction to that view, the Ministerial Panel quotes several leading climate researchers, including Simon Donner, who in their submissions explained the consequences of allowing Canadian oil and gas production to grow. They explained that Canada's plans to continue expansion of its oil production were incompatible with our overriding commitment to keep warming below 2°C.

The Panel stated that "Our role was not to propose solutions, but to identify important questions that, in the circumstances, remain unanswered". The first "high-level question" that "remains unanswered", according to the three panel members, is whether the then planned increase in Canada's oil production (that justified building the Trans Mountain Expansion) could be reconciled with Canada's climate change commitments. The panel framed the question this way:

Can construction of a new Trans Mountain Pipeline be reconciled with Canada's climate change commitments?

The panel unanimously concluded that this is one of the important questions that "remain unanswered". The Ministerial Panel's report was delivered to the government on November 1, 2016. The government did not respond. Four weeks later, the cabinet announced its decision approving the two pipelines – without any public comment on the unanswered question.

In its June 28, 2019, explanatory statement and "cost-benefit analysis" used to justify the *Output-Based Pricing System Regulations*, the Trudeau Government again refused to address the same fundamental point: can the planned expansion of Canada's oil production be reconciled with our commitment to limit warming to 1.5°C? The available evidence shows unequivocally that the answer to that question is no. The government's analysis gave false assurances to Canadians that continuing to expand our oil production will provide "net benefits".

A higher carbon price on Canada's oil producers will make a difference

The government's cost-benefit analysis concluded that imposing a higher carbon price on Canada's heavy oil producers will not make any appreciable difference in the outcome. It would, according to the analysis, only marginally reduce Canada total cumulative emissions to 2030 and it would result in reduced economic "welfare" of \$2.15 billion.

But since that analysis was done in 2019, the government announced in December 2021 the fuel charge under Part 1 of the Act will increase well above \$50 a tonne, moving up in increments of \$15 a year to \$170 a tonne by 2030. In addition, the Supreme Court of Canada on March 26, 2021, affirmed that the Federal Government has the constitutional power to impose a carbon price across Canada including on resource industries. The government has a wide discretion to

¹² Ministerial Panel, *Report from the Ministerial Panel for the Trans Mountain Expansion Project*, NAT. RES. CAN. 10 (Nov. 1, 2016), https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/files/pdf/16-011_TM%20Full%20Report-en_nov2-11-30am.pdf (emphasis added).

determine the appropriate “performance standard” for industries that seek to be exempted from the full amount of the fuel charge (it will rise to \$170 a tonne by 2030) under Part 1 of the Act.

If the Federal Government increases the carbon price that applies to the oil industry by imposing the full fuel charge rate (which is currently \$50 per tonne of CO₂), the carbon price per barrel would rise to \$3.40 (compared to the present price of 70 cents per barrel). And as the fuel charge rises to \$100 per tonne and then to \$170 per tonne through this decade, the applicable carbon price would quickly rise to \$10 per barrel of oil and above that. That would curb the rising level of oil production level in Canada. The Federal Government has the full constitutional authority and discretion to increase the carbon price, and even to set a higher carbon price for heavy oil production than, for example, for iron and steel, zinc, or cement production.

A carbon price of \$10 per barrel (and by the end of this decade rising well above \$10) offers a real chance that Canada’s overall oil production will begin to decline. Not fast enough perhaps to fully align with the IEA’s “net-Zero by 2050 Scenario”, but that would be a promising start to mitigate the reckless path we are presently following, which poses the certainty of massive future losses from worsening climate impacts.

The Federal Government must increase the carbon price on oil production, and it has the constitutional power to do so

The ongoing expansion of Canada’s oil production for another 10 years and continued high levels of production to 2050 is *incompatible with retaining any chance to avoid a world of catastrophic climate change*. It is no answer to say that we must keep doing this because if we reduce Canada’s oil production, other countries will increase their production.

The “carbon leakage” argument might have had some merit twenty years ago, when there still remained time to attempt to persuade all the major oil producing countries to act together. But that did not happen. Instead, Canada moved aggressively to increase its own oil production from 2.6 million bpd in 2005 to 4.9 million bpd by 2019. There is now no prospect at all, no plausible chance, of any immediate or early commitment by all the world’s large oil producers to jointly agree to reduce their oil production levels. In several oil producing jurisdictions (Norway and the UK, and some states in the U.S.) there does exist some serious political support advocating that their countries impose curbs on their own production. Other policy tools are available to act against recalcitrant producers, including tariffs or carbon prices imposed on oil imports from non-cooperating states. But there is no time to wait for others to act.

The Government of Canada has the undoubted constitutional power to very substantially increase the carbon price that applies to our oil production under the provisions of Part 2 of the *Greenhouse Gas Pollution Pricing Act*. That would halt the currently projected expansion of Canada’s oil production, which is on a path to increase 19% by 2032 above the 2019 level.

We are now down to a handful of years left to avert a terrible outcome. Every six months counts now. Continuing along the present path, frozen into inaction by the “carbon leakage” argument, is a pathway to monumental self-destruction.

David Gooderham practiced law in Vancouver for thirty-five years in civil litigation, retiring at the end of 2012. He attended the University of Toronto taking an honours degree in economics and political science and a LLB from the University of Toronto Law School in 1970. Since 2013 he has been engaged in challenging the Government of Canada's approval process for the Trans Mountain Pipeline expansion project (TMX) in a number of forums, including written submissions to Environment Canada in June 2016 critiquing the government's May 19, 2016 draft report for the *Review of Related Upstream Greenhouse Gas Emissions Estimate*, and oral and written submissions to the Ministerial Panel in August 2016.

In November 2018, together with science educator Jennifer Nathan, he began a lengthy judicial challenge in the Supreme Court of British Columbia based on the common law defence of necessity (see dagooderham.com/legalaction). Both were arrested in 2018 after peacefully and deliberately disobeying an injunction relating to the construction of the Trans Mountain pipeline expansion. During two years of litigation, they presented the Court with a detailed evidentiary record based on climate science showing the incompatibility between Canada's increasing oil production and the very short time remaining to achieve the deep emissions reductions needed by 2030 to limit warming to 1.5°C or 2°C. Following a trial and subsequent appeal, their necessity defence case was dismissed by the B.C. Court of Appeal in September 2020, after the three appeal judges refused to consider any of the evidence on climate science and emissions presented to the Court.

In May 2021, with Jennifer Nathan, he made [a written submission](#) to the Parliamentary Committee reviewing the draft legislation for the *Canadian Net-Zero Emissions Accountability Act* (Bill C-12), and more recently they filed [a submission with the government's Net-Zero Advisory Body](#) with respect to the recent announcement by the government that it plans to legislate a "cap" on oil and gas sector emissions.