

# THE CANADA ENERGY REGULATOR'S FORTHCOMING NEW REPORT ON THE FUTURE PATH OF OUR OIL PRODUCTION: WHAT IS AT STAKE?

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Canada is the world's 4<sup>th</sup> largest oil producer. When our national energy agency, the Canada Energy Regulator (CER), published its most recent report on December 9, 2021, projecting the future path of Canada's oil and gas production to 2050, it showed that our oil production will continue to expand to 2040, with no significant decline over the next thirty years.

No environmental assessment or public inquiry process of any kind in Canada has ever answered the crucial question, which is whether the planned growth of Canada's oil production to 2030 and 2040 is compatible with keeping increased warming to 1.5°C. For the past nine years the Canada Energy Regulator has turned a blind eye to that fundamental question, which remains unanswered.

After mounting criticism from a number of Canada's leading energy economists and climate scientists, on December 16, 2021, the Federal Minister of Natural Resources belatedly instructed the CER to conduct an internal study to determine what future level of oil production in Canada would be safely aligned with a global effort to limit warming to 1.5°C.

The CER's study has not yet been released to the public. It may become available within the next week or two. This discussion paper looks at the overwhelming importance of the issues and what is at stake for all of us.

## 1. The deeply flawed role of the Canada Energy Regulator

The CER is the Federal Government's energy agency. Since 2013, in its annual reports entitled *Canada's Energy Future*, the CER has routinely published analyses and projections showing the expected future levels of Canada's oil productions, along with information about other aspects of energy supply and demand in Canada. On the eve of the Federal Government's approval of the TMX pipeline expansion project in 2015 and 2016, the CER (then known as the National Energy Board) was projecting very substantial ongoing expansion of oil production in Canada to 2040. At that time, its forecasts did not provide any data beyond 2040.

Although Canada became a signatory to the Paris Agreement in December 2015, making a solemn commitment to take action to limit the increase in global average temperature "*to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C*", the CER has consistently failed during all the years since then to examine the much

lower and declining future levels of oil production in Canada that could be safely aligned with a 1.5°C or 2°C world. The CER in its annual reports since 2015 has never examined that question.

In its most recent projection of Canada's future oil production levels up to 2050 released on December 9, 2021, the CER was again silent on that question.

Facing sharp public criticism from leading Canadian energy economists and climate scientists for that ongoing failure, the Minister of Natural Resources on December 18, 2021, instructed<sup>1</sup> the CER to conduct an internal study to determine what future level of oil production in Canada would be safely aligned with a global effort to limit warming to 1.5°C.

The government's *Emissions Reduction Plan* published on March 29, 2022, informed Canadians only that the Minister of Natural Resources has sent a letter to the CER asking that it conduct a new scenario analysis:

*On December 16, 2021, Natural Resources Minister Jonathan Wilkinson, wrote to the Chairperson of the CER's Board of Directors Cassie Doyle, to request that the CER produce fully modelled net-zero scenarios consistent with 1.5 degrees of warming under the Paris Agreement. The 1.5-aligned Scenario Analyses will include fully modelled scenarios of supply and demand of all energy commodities in Canada, including clean fuels, electricity, and oil and gas. This modelling will also include the future trends in low-carbon technology and energy markets, to provide Canadians with information they need to better understand the future energy transition.*

— *Emissions Reduction Plan*, March 29, 2022

But that “modelling” has not yet been released to the Canadian public.

In the meantime, our government has been justifying decisions to expand our oil production (decisions that involve projects and infrastructure that will have an operating lifetime of 30 to 40 years) based on the existing CER projections which are not remotely aligned with 1.5°C or 2°C. The *Emissions Reduction Plan* document, released by the government on March 29, 2022, acknowledges that it is continuing to use the CER's existing projections as a “framework” to approve projects and that the Canadian oil industry is using the currently available CER projections “to make investment decisions.”

On April 6, 2022, the Federal Government announced the approval of a major new offshore oil field in Newfoundland which is expected to come into production by 2028. Known as Bay du Nord, it will contribute an additional 200,000 to 300,000 barrels per day (bpd) to Canada's oil production level. The approval came just one week after the *Emissions Reduction Plan* was published.

Even when the CER's promised new analysis is released, we have no assurance that it will give us a reliable answer. The forthcoming CER analysis will not be the result of an independent

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<sup>1</sup> Letter sent December 16, 2021 by the Minister of Natural Resources to the CER requesting that it “undertake scenario analysis” relating to Canada's future oil production: <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>

inquiry process. The CER process is entirely closed to public access. There have been no public hearings, no media access, and there is no public record of the information being considered by CER staff members. The CER is quietly deciding in secrecy what evidence it will look at, and what lines of inquiry it will ignore.

## 2. The International Energy Agency's Net-Zero by 2050 Scenario

The International Energy Agency's "Net-Zero by 2050 Scenario" (NZE), first published on May 18, 2021, is the leading international study that has examined the magnitude of the reductions in oil production that will be required on a global scale to avoid a catastrophic climate outcome.

The most important contribution of the IEA study was its candid warning about the *immediacy* of the need to halt any further expansions of oil production, and its detailed conclusions about the rapid pace and severity of the deep cuts in oil use needed by 2030 and by 2040 to give the world *even a 50-50 chance* to keep the heating of the earth to within the 1.5°C threshold.

Most significantly, it determined that within this decade a *25% reduction* in global oil production would be required by 2030, down to 72 million barrels per day (bpd), and that a 50% cut to 44 million bpd must be achieved by 2040. At present, after a brief production decline in 2020 due to Covid, global oil production is now about 100 million bpd.

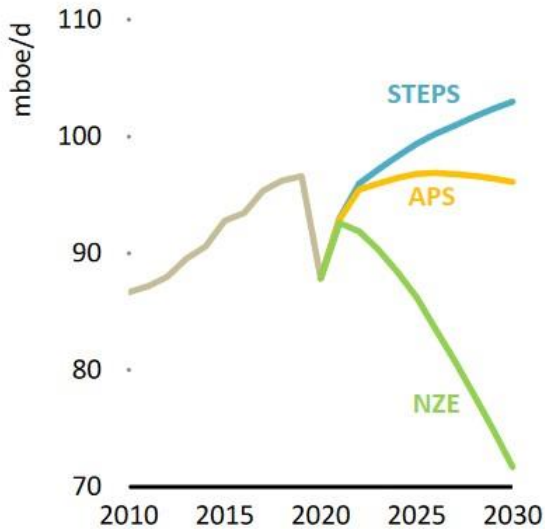
The IEA's NZE study concluded that global production must further decline to 24 million bpd by 2050 (a 75% reduction) to align with 1.5°C. Furthermore, to meet that goal, 70% of the remaining 24 million bpd of oil production by 2050 will have to be used in applications where *the fuel is not combusted and so does not result in any direct CO<sub>2</sub> 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. Canada's current plan is to continue *increasing* our oil production to 2030 and 2040.

The complete divide between the present intentions of our governments and what human beings need to do within the next eight years is depicted in Figure A. It shows the path of oil demand under each of the IEA's three Scenarios. The top blue line on the graph ("STEPS", which refers to the IEA's "Stated Policies Scenario") 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 "APS" Scenario shows the expected path of global oil production based on "promised" additional future policies and goals by some countries which, if fully implemented and successful, would significantly reduce global oil consumption. But the APS Scenario is highly speculative because it is based on promised future measures that have not yet been developed, or funded, or enacted by regulations, and it therefore remains aspirational. The APS scenario shows that even the most informal promises of future action fall far short of what is required.

The sharply declining green line ("NZE") shows the magnitude of the cuts in overall world oil production that would be needed by 2030 to give us a 50-50 chance of being able to limit global heating to less than 1.5°C.

**Figure A: Projected Oil Demand to 2050**  
**Oil demand**



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

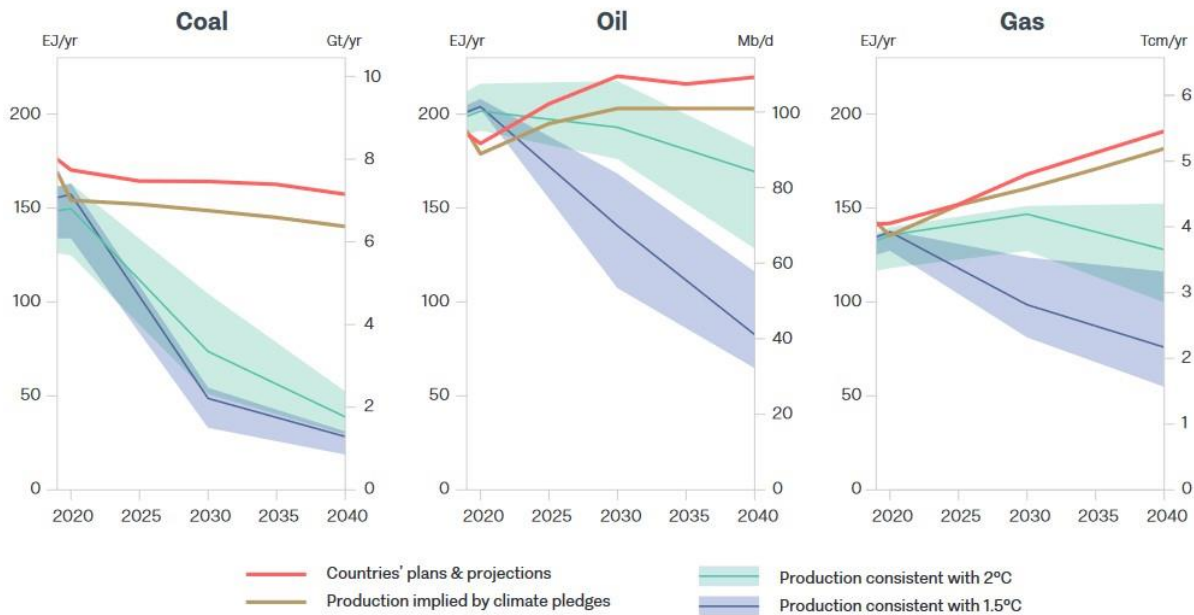
Another clear warning was given on October 20, 2021, when the UN Environmental Programme and the Stockholm Environmental Institute released their *Production Gap Report 2021*, which confirms the tragic disconnect between existing plans by the world’s major fossil fuel producing countries (including Canada) to continue increasing their oil production levels and the desperate need to start reductions. The *Production Gap Report* concluded 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. 15C

In the case of oil production, the center graph in Figure B below shows that based on oil producing countries’ current plans, 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).

**Figure B: projected coal, oil, and gas production to 2030 and 2040**



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

The most recent updated version of the International Energy Agency’s “Net-Zero by 2050 Scenario” is found in the IEA’s annual report, *World Energy Outlook 2022*, released on October 27, 2022.<sup>2</sup>

### 3. Canada’s plan is to continue expanding our oil production to 2040

When the Federal Government on March 29, 2022, released its most recent climate policy statement called the *2030 Emissions Reduction Plan* (ERP), the 233-page document included a detailed plan to *continue increasing Canada’s oil production to 2030* and maintain high production levels for another 20 years after that. The plan envisions no significant reduction in Canada’s oil production levels before 2050.

Table 6.2 at page 213 of Canada’s *Emissions Reduction Plan* shows a 26% increase in our oil sands and conventional oil production this decade, rising from 4.411 million barrels per day (bpd) in 2019 to 5.567 million by 2030. Those numbers are taken directly from the *Canada’s Energy Future 2021* report, published by the Canada Energy Regulator (CER) on December 9, 2021. The CER every year releases an updated version of its *Canada’s Energy Future* report with detailed projections of Canada’s oil production to 2040 and 2050. The ERP document adopts the production numbers shown in the CER’s “Current Policies Scenario”, but re-names it

<sup>2</sup> *World Energy Outlook 2022*, IEA, October 27, 2022: <https://iea.blob.core.windows.net/assets/830fe099-5530-48f2-a7c1-11f35d510983/WorldEnergyOutlook2022.pdf>

the “Reference Case”. Here are the CER’s most recent numbers, published in its December 9, 2021 report (in 2022 the CER did not release a report):

**Figure C: Future oil production – conventional oil and oil sands, millions of barrels per day (bpd)**

|                            | 2019 | 2030 | 2040 | 2050 |
|----------------------------|------|------|------|------|
| Current Policies Scenario  | 4.4  | 5.4  | 5.7  | 5.5  |
| Evolving Policies Scenario | 4.4  | 5.0  | 4.6  | 4.0  |

**Source: *Canada’s Energy Future 2021*, Canada Energy Regulator, December 9, 2021.**

The CER 2021 report explains that its “Current Policies Scenario” assumes “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, and projects Canada’s oil production will continue to grow to 2040. The CER acknowledges that its scenarios do not model the lower oil production levels that would be required to meet the climate goal agreed to in the Paris Agreement in 2015:

*The Evolving and Current Policies scenarios do not explicitly model climate goals or targets ... the Current Policies Scenario is extremely unlikely to lead to the significant reductions needed to meet Canada’s Paris commitments. In the Evolving Policies Scenario, significant emissions reductions will be realized, but ambitious goals such as net-zero by 2050 are unlikely to be met.*

— *Canada’s Energy Future 2021*, p. 19

In stating that these two scenarios do not “explicitly model climate goals”, the CER was admitting that the scenarios it has publicly released (the “Current Policies” and “Evolving” Scenarios) do not identify the much lower and declining oil production levels in Canada over the next 20 to 30 years required to safely align our production with an effective global effort to stay within the 1.5°C warming threshold or within the 2°C warming threshold. If the CER has in fact developed other scenarios that do model oil production levels aligned with a 1.5°C world, it has never disclosed them to the Canadian public.

At a press conference on April 4, 2022, Canada’s Minister of Environment Steven Guilbeault confirmed that Canada’s new climate plan is “based on” increasing oil production:

*... the plan we presented last week, the Emissions Reduction Plan, was based on the Canadian Energy Regulator projections that oil and gas production would increase in Canada between now and 2030 ...*

The ERP document portrays the CER as playing an important and responsible role in advising government and industry to ensure that Canada’s oil and gas production is safely developed in a way that is consistent with meeting the 1.5°C goal. The ERP (in a box on page 213) declares:

*... a key objective of the 2015 Paris Agreement is to hold the increase in global average surface temperature to well below 2 degrees Celsius while pursuing efforts to limit the increase to 1.5 degrees above pre-industrial levels.*

It goes on to say that Canada has adopted a goal of “net-zero emissions by 2050”, and continues:

*The Canada Energy Regulator’s Canada Energy Future reports provide a framework for businesses to make investment decisions in the energy sector. Its projections are important for ensuring Canadian businesses are making investments consistent with a transition to cleaner energy sources.*

— 2030 Emissions Reduction Plan, Environment Canada, p. 213

The above statement is grossly misleading. The CER 2021 report published on December 9, 2021, offered no analysis at all that explains the massive discrepancy between Canada’s current plan to continue expanding our oil production to 2030 and 2040 and the deep and rapid reductions that would be required to align our output to the 1.5°C goal. Even the CER’s “Evolving Scenario”, supposedly reflecting some eventual decline in global oil demand in response to future climate measures, forecasts that Canada’s oil production in 2040 will still be higher than it was in 2019 (see Figure C above).

Canada’s *Emissions Reduction Plan* released on March 29, 2022, acknowledged (at page 48) that the IEA’s “net-Zero by 2050 Scenario” requires a 75% reduction of global oil consumption by 2050 (which is an accurate statement of the IEA’s conclusion about what must be done by 2050), but the ERP document *omits any mention of the 50% reduction required by 2040 or 25% cut needed by 2030*. Accordingly, it excluded any discussion of the near-term need to sharply reduce oil production by Canada and the world’s major producers.

Canadian experts and leading international scholars, energy economists and climate scientists, have repeatedly warned that Canada’s current plan to continue increasing its oil production to 2040 is incompatible with meeting those goals.

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.<sup>3</sup> It cited in detail the findings of the IEA’s May 18, 2021 “Net-Zero Emissions by 2050 Scenario”, and was copied to the Minister of Environment and Climate Change, and to the Minister of Natural Resources, and to the Chair and CEO of the Canada Energy Regulator. They wrote: “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 meant the government should immediately direct or instruct the CER to develop scenarios that will identify the much lower and declining oil production levels in Canada over the next 20 to 30 years that would be safely aligned with an effective global effort

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<sup>3</sup> Letter July 8, 2021, sent by twenty-one energy economists and climate scientists to the Prime Minister, the Minister of Environment, Minister of Natural Resources, and to the Canada Energy Regulator: <https://www.linkedin.com/pulse/canadas-energy-regulator-should-develop-net-zero-letter-mark-winfield>



to stay within the 1.5°C warming threshold. The government and Ministers offered no public comment or response.

Six months later, on December 9, the CER published its new report *Canada's Energy Future 2021*, releasing its most recent projections showing Canada's oil production to 2030, 2040, and 2050. Again, the CER excluded any scenario examining the lower and declining levels of Canada's oil production that would be required to meet our 1.5°C or 2°C commitment under the Paris Agreement.

On December 14, 2021, just five days after the CER 2021 report was released, four of Canada's leading experts on climate policy and oil production published an article<sup>4</sup> containing a devastating indictment of the irresponsible and misleading character of the CER's new projections: "Canada's energy regulator turns a blind eye to dangerous global warming". They stated that the report has "failed to inform looming policy decisions". The authors pointed out that the CER's new "Current Policies" forecast for Canadian fossil fuel production (now enshrined in Canada's ERP) is roughly aligned with the IEA's recently published "Stated Policies Scenario" which, as the authors explain, "anticipates 2.6°C of warming, far beyond the Paris target".

#### 4. The Federal Government's promised "cap" on emissions is not a solution; what we need is a cap on Canada's oil production

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. What Trudeau did not tell the assembled leaders is that Canada, the world's fourth largest oil producer, intends to continue expanding its oil production. The promised "cap" relates only to the volume of emissions released into the atmosphere from oil extraction and processing activities within Canada.

The Federal Government has confirmed that none of the government's proposed new policies, including plans to subsidize large-scale deployment of Carbon Capture, Utilization, and Storage (CCUS) technology in the oil sands industry, are intended to bring about any decline in the currently projected growth of Canada's oil production. Indeed, the text of the government's most recent *Emissions Reduction Plan* (ERP) affirms that the aim of government policy will be to continue to maximize production:

*The government will work closely with the provinces and the sector to manage competitiveness challenges, remain attuned to evolving energy security and climate risk considerations, maximize opportunities for ongoing investment in the sector, and minimize the risk of carbon leakage. The intent of the cap is not to bring reductions in*

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<sup>4</sup> "Canada's energy regulator turns a blind eye to dangerous global warming", Kathryn Harrison, Mark Jaccard, Nicholas Rivers, and Angela Carter, December 14, 2021: <https://www.nationalobserver.com/2021/12/14/opinion/canadas-energy-regulator-turns-blind-eye-dangerous-global-warming>



*production that are not driven by declines in global demand. Mechanisms like the CCUS investment tax credit will help support decarbonization.*

— 2030 Emissions Reduction Plan, March 29, 2022, p.53 (emphasis added)

The government’s plan is clear: Canada’s oil production will continue to increase until – and if – other countries eventually begin to consume less oil. In the meantime, Canada’s production levels will be guided solely by “global demand”.

But no amount of further technological improvements in the oil sands industry aimed to “cap” and reduce emissions during extraction activities, not even large-scale adoption of CCUS at oil sands production sites, will significantly lower the total amount of emissions that will be released into the atmosphere from oil sourced from Canada’s oil sands. Our predicament is that over 85% of the life-cycle emissions of every barrel of oil we produce occur *after the extraction process is completed*, after we export our oil, when it is burned as fuel in cars and trucks (“downstream emissions”) and released into the atmosphere as tailpipe emissions.

### The significance of “downstream emissions” from Canada’s oil production

The total amount of emissions released during the oil production process within Canada’s borders in 2019 was 118 Mt (83 Mt in the oil sands industry and 35 Mt in conventional oil production, not including additional emissions from petroleum refining in Canada). Those are just the “upstream emissions”. By far the largest share of the emissions released by oil produced in Canada occurs when it is consumed as fuel in foreign markets. Those emissions, which occur after the oil extraction production process is completed and after we export our oil, are referred to as “downstream emissions” (or “Scope 3 emissions”).

Carbon intensity is the metric used to measure the amount of GHGs emitted through a portion of the oil supply chain. It is used, for example, to measure the emissions that occur during the extraction process alone. It is also used to calculate a *total life-cycle emissions* analysis of the fuel, including extraction emissions, refining, shipping (pipelines, rail, and marine), and the emissions from the fuel’s combustion in vehicle engines (the full life cycle is also called a “well-to-wheels” analysis). It is measured in kilograms of carbon dioxide per barrel of crude oil (kg CO<sub>2</sub>).

Oil sands emissions intensity during the oil sands extraction process in Canada has declined since 1990, down from 116 kg CO<sub>2</sub> per barrel in 1990 to 80 kg CO<sub>2</sub> per barrel in 2019 (those are averages for all oil sands producers): see *National Inventory Report*, April 15, 2021, pp. 55-56).

Extraction emissions, however, are less than 15% of the total well-to-wheels emissions released by each barrel of oil 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 CO<sub>2</sub> per barrel up to a high end of about 650 kg CO<sub>2</sub> per barrel. Canadian oil sands production is at the higher end of that range, about 550 kg CO<sub>2</sub> per barrel and above that. Given that oil sands extraction emissions average 80 kg CO<sub>2</sub> per

barrel, they account for less than 15% of the total life-cycle emissions released by each barrel of oil Canada produces.

The same point was demonstrated seven years ago, when the U.S. government completed its *Final Supplemental Environmental Impact Statement (SEIS)* relating to 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” (the 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 CO<sub>2</sub> per barrel and overall well-to-wheels emissions were 533 – 568 CO<sub>2</sub> per barrel.

While oil sands extraction emissions are now in the lower range of 67 – 80 kg CO<sub>2</sub> per barrel, the downstream emissions per barrel (which are mainly released during combustion of the fuel in vehicle engines) remain at around 470 kg CO<sub>2</sub> per barrel. The basic point is that the emissions from the production process (the upstream emissions) in Alberta are only about 15% or less of the total emissions from each barrel of oil we produce.

Over 85% of the total life-cycle emissions released by the oil we produce occurs after the extraction process is completed. Canada’s national emissions accounting (i.e., the emissions data reported annually by the government to Canadians) does not include that 85%.

Promised future technological innovation and improved efficiency in Canada’s oil sands industry at production sites may well further reduce *emissions per barrel* at the extraction stage in Alberta. But no amount of further technological improvements in the oil sands industry (not even large-scale adoption of CCUS at oil sands production sites) will significantly lower the total life-cycle emissions from oil sourced from Canada’s oil sands. The largest share of the total emissions from every barrel we produce occurs after we export our oil. Those downstream emission will continue to rise in step with our production.

The government does not publicly disclose official data about the amount of the downstream emissions released every year by our exported oil. But energy economists can readily calculate that number based on available data about the extraction emissions (within Canada) and the total life-cycle emissions (which include the emissions from shipping, refining, and combustion of the exported fuel in vehicles). In the case of oil from the oil sands, the downstream emissions are about 6-times greater than the production process emissions.

Recently, in response to a petition by the environmental law organisation Ecojustice Canada, Environment Canada disclosed data showing the annual level of emissions from the combustion of our exported oil over the period 2016–2019:

**Figure D: Downstream Emissions from Canada’s oil production**

|      |          |
|------|----------|
| 2016 | 577 Mt   |
| 2017 | 601.5 Mt |

|      |          |
|------|----------|
| 2018 | 682.4 Mt |
| 2019 | 706.9 Mt |

**Source:** Ecojustice Canada, “To avoid climate catastrophe, Canada must account for its hidden emissions”, Fraser Thompson (<https://ecojustice.ca/to-avoid-climate-catastrophe-canada-must-account-for-its-hidden-emissions/>); also (<https://www.nationalobserver.com/2021/07/27/opinion/canada-hidden-fossil-fuel-emissions-avoid-climate-catastrophe>). Ecojustice posted that data on June 30, 2021.

These numbers reveal, for example, that driven by Canada’s increasing oil production between 2016 and 2019 the annual level of our downstream emissions increased 129.9 Mt CO<sub>2</sub>eq during those three years.

The annual level of the downstream emissions from our exported oil are almost equivalent to the total volume of emissions released by all emitting activities of every kind within Canada’s borders, i.e., all our domestic transportation (including all heavy trucks and passenger vehicles, trains, marine, and aviation), all heavy industry, heating buildings, agriculture, and land use and forests, as well as the emissions released by all oil and gas production activities. In 2019, Canada’s total domestic emissions reached 738 Mt. The “downstream emissions” from our oil amount to ‘another Canada’, a kind of transnational emitting twin for which we take no responsibility.

If Canada’s oil production expands by another 26% by 2030 above the 2019 level, as currently projected in the government’s *2030 Emissions Reduction Plan* (ERP) published on March 29, 2022, the annual volume of Canada’s “exported emissions” from our oil production will rise proportionately, from 706 Mt in 2019 to approximately 850 Mt by 2030. That is about a 150 Mt increase by the end of this decade above the 2019 level. That increase in the downstream emissions will more than offset the relatively modest reduction in “upstream emissions” that might be achieved by the government’s promised “cap” on emissions during the oil production process in Canada.

## 5. Relying on CCUS technology is not a solution

Promises by Canada’s oil sands industry to deploy Carbon Capture and Storage (CCUS) technology at bitumen extraction sites and production-related operations in Alberta will not in any significant way curb the rising volume of greenhouse gas emissions contributed by Canada’s oil production if we continue expanding production to 2030 and 2040.

Very recently, on October 14, 2022, a consortium of the largest nine oil sands producers (an industry group who call themselves the “Pathways Alliance” and account for 90% of Canada’s oil sands production) announced that a total of \$24.1 billion will be spent between now and 2030 on emissions reduction projects in the oil sands: see <https://pathwaysalliance.ca/news-release-22oct14/>. Of that amount, the largest share of \$16.5 billion will be allocated to the deployment of carbon capture and storage (CCUS) technology at production sites (almost half of which, \$7.1 billion, will in fact be funded by Canadian taxpayers through subsidies paid by the Federal

Government). The companies promise they will spend another \$7.6 billion on the development of other technologies.

At present, the only existing technology that can separate and remove CO<sub>2</sub> gas at industrial sites and prevent it from entering the atmosphere, albeit at enormous cost, is carbon capture and storage (CCUS). In the case of the oil sands, CCUS would capture CO<sub>2</sub> emissions from the flue gases where the fuel for the extraction process is combusted (at 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 CO<sub>2</sub> is compressed into an almost liquid form, then transported by pipeline and injected deep underground for permanent storage. The technology is very costly. The process itself is energy intensive.

Today in the oil sands there are only two existing CCUS projects. One is the “Quest Project”, located at Shell Canada’s Scotford Upgrader near Edmonton, which was designed to capture and inject underground 1.2 million tonnes (Mt) of CO<sub>2</sub> every year. The Quest Project became operational in November 2015. That amount represents 35% of the total volume of CO<sub>2</sub> emitted annually from the upgrader’s steam methane units that produce hydrogen for upgrading bitumen. The capital cost was about \$1.35 billion, two-thirds of which was paid for by the Canadian and Alberta taxpayers through government funding.

To place the Quest Project in context, in 2019 total oil sands production process emissions in reached 83 Mt (in addition to which conventional oil production in Canada accounted for another 35 Mt of emissions that year).

Ambitious plans in the past to deploy CCUS on a very large scale in Alberta’s have failed. The Alberta government announced a major scheme in 2008 to install enough CCUS to achieve a 30 Mt cut in the provinces annual level of emissions by 2020. To meet that goal, the province would have needed to complete about 25 Quest-sized installations, all by 2020. The scheme was abandoned in 2014.

More than a year ago, in 2021, the “Pathways Alliance” producers declared that they would reduce their aggregate upstream emissions by 22 Mt of CO<sub>2</sub>eq annually by 2030. That 22 Mt number has not been substantiated by any detailed studies and only a portion of that promised cut relies on CCUS. Nor has the Federal Government for its part released any analysis or data showing the magnitude of the emissions reductions that CCUS technology might achieve by 2030 (the government’s recent *2030 Emissions Reduction Plan* (ERP) published March 29, 2022, offers no details).

A recent analysis by the Pembina Institute concluded that CCUS could possibly achieve annual emissions reductions of 7 Mt – 15 Mt in the oil sands sub-sector by 2030: “Getting on Track: a primer on challenges to reducing carbon emissions in Canada’s oil sands: <https://www.pembina.org/reports/getting-on-track.pdf> ; and “Decarbonizing Canada’s oil and gas supply”, March 21, 2022: <https://www.pembina.org/reports/decarbonizing-canadas-oil-and-gas-supply.pdf>.

The industry relies on a combination of CCUS and other promised innovations in technology and production methods to achieve an overall 22 Mt reduction of oil sands emissions by 2030.

However, even capturing as much as 22 Mt annually by 2030 by rapid and large-scale adoption of CCUS would have no appreciable impact on the overall magnitude of the emissions released into the atmosphere by our oil production.<sup>5</sup>

The problem is that emissions at oil sands production sites in Canada account for less than 15% of the total well-to-wheels emissions released by each barrel of oil from Canada's oil sands and ultimately burned as fuel. Over 85% of the total emissions from every barrel we produce occur after we export our oil, when it is combusted as fuel in vehicle engines in the U.S and in other foreign markets and released into the atmosphere as tailpipe emissions. Those downstream emissions will continue to rise in step with our production.

At best, even if adoption of CCUS and other technologies achieve a 22 Mt reduction of oil sands emissions by 2030, that would cut the overall emissions (total life-cycle emissions per barrel) of our exported oil by about 4%. But if Canada's oil production continues to expand to 2030, as the government confirms and the industry plans to do, there will be no overall emissions reduction at all. The volume of the "exported emissions" (downstream emissions) from our expanding production will continue to grow. The substantial rise in the downstream emissions by 2030 (in the range of an additional 100 – 150 Mt) from the expanding volume of our oil exports will more than offset the promised 22 Mt cut in extraction emissions in Canada.

These downstream emissions do not get counted in our national emissions, and we do not include them in setting Canada's emissions reduction targets. Yet the scientific evidence is clear that cumulative global emissions are driving the warming of the atmosphere, and that includes the downstream emissions from our oil exports. Reliance on CCUS and other technologies to reduce domestic emissions from oil production activities within Canada by 2030 will not do anything to curb or reduce the massive global footprint of our downstream emissions – which will continue to grow as our oil production rises over the next eight years.

If we continue to increase oil production, capping emissions released during the oil production process in Canada will do nothing to divert us from a catastrophic pathway.

## 6. Why we need an independent public inquiry

On December 16, 2021, as we have noted above, the Minister of Natural Resources belatedly instructed the Canada Energy Regulator (CER) to conduct an internal study to determine what future level of oil production in Canada would be aligned with limiting warming to 1.5°C. The

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<sup>5</sup> On March 6, 2023, the CEO of Cenovus (one of Canada's major oil sands producers who comprise the "Pathways Alliance" industry group) in a statement during an interview on CBC Radio repeated the industry's promise that by 2030 the industry will reduce the annual level of GHG emissions at their production sites in Alberta by 22 Mt. He stated that installation of CCUS would account for "a little over half of that" reduction, which would be a cut of a little more than 11 Mt. The Pembina Institute's report published a year ago, giving an estimated reduction of 7 - 15 Mt, appears to be a realistic assessment of the very limited scale of the reduction that can be achieved by 2030 using CCUS technology: <https://www.cbc.ca/radio/thecurrent/monday-march-6-2023-episode-transcript-1.6770155>

promised 1.5°C-aligned analysis is now expected to be made available to the public shortly, possibly by the end of this month.

That is the kind of study that should have been undertaken seven years ago, before the present Government on November 29, 2016, committed itself to the construction of a massive expansion of Canada's pipeline capacity to export an additional 910,000 bpd of exported oil. At the very least, it should have been initiated three years ago, immediately after the IPCC issued its *Special Report on Global Warming to 1.5°C* in October 2018, which warned governments unequivocally that to stay on a pathway to keep temperatures within the 1.5°C warming threshold, global emissions must be cut 50% by 2030. The government's refusal for over nine years to conduct a proper inquiry is unforgivable.

But this crucial study should not be left to the CER. It is wrong to leave an inquiry on a question of this gravity, which is so irrevocably consequential for our children, to the CER, which is an agency of the Federal Government and entirely unaccountable to the public. The Minister assigned this task to an anonymous group of Federal Government employees and others selected and contracted by the government to provide information and expert evidence behind closed doors.

The Minister's December 16, 2021 letter to the CER instructed that it "undertake scenario analysis" relating to Canada's future oil production: <https://www.cerrec.gc.ca/en/about/news-room/whats-new/2021/canadas-energy-future-report-minister-letterto-cer-16-december-2021.pdf>. It outlines the scope of the inquiry in three sentences. Here are the first two sentences:

*... 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, by itself, does not address the problem. A scenario "consistent with Canada achieving net-zero emissions by 2050" requires only that our domestic emissions be reduced to "zero" by that date, which *in theory* could be achieved by relying on CCUS technology, modular nuclear reactors, and other future technologies to "remove" all upstream emissions from our oil production operations. They comprise only 15% of the emissions released by every barrel of oil we export.

That kind of "*net-zero emissions by 2050*" outcome in Canada would not require any reduction of our existing high levels of oil output. Our domestic emissions do not count the much larger volume of "downstream emissions" released by our exported oil, after it is refined and consumed as fuel in vehicles (they amount to 85% of the emissions released by every barrel we producer and export). The first part of the Minister's letter therefore does not indicate any departure from Canada's existing policy which is to continue indefinitely our high levels of production. Continuing high levels of oil production exports by the world six major producers is not at all consistent with the world reaching net-zero by 2050.

A third sentence of Wilkinson's instructions raises the global dimension of the problem:



*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.*

This third sentence does appear to direct that the CER should examine the future decline in *global oil consumption* that will be essential to meet the global goal of limiting warming to 1.5°C, and the timeline for those required reductions (which will show that deep reductions in oil production are essential as early as 2030 and 2040) But the Minister’s proviso that the study should consider “*energy markets*” and “*future trends in low-carbon technology*” introduces important qualifications about the scope of the inquiry. It gives the CER enormous discretion to arbitrarily shape the results of their study to justify why Canada’s production can remain at higher levels.

### Proposed “future trends in low-carbon technology”

Most significantly, instructions to consider “future trends in low-carbon technology” opens up the issue – a deeply conflicted question – about the possibility that envisioned future “negative emissions technologies” will allow the world to effectively *remove* CO<sub>2</sub> from the atmosphere on a sufficiently vast scale to permit and justify much higher levels of oil, coal, and natural gas use for many more decades, or at least delay any immediate action to rapidly curb their use.

The CER, in its *Canada’s Energy Future 2020* report published three years ago on November 24, 2020, strongly promoted that view. It extolled the promise of future “*emissions removal*” technologies and asserted, without any detail or evidence, that “*residual emissions can be balanced by enhanced biological sinks and negative emissions technologies*” (see page 67 of the CER’s November 2020 report, found at <https://www.cer-rec.gc.ca/en/data-analysis/canada-energy-future/2020/canada-energy-futures-2020.pdf>).

Direct air removal technologies do not yet exist or exist only in experimental forms that may never prove viable or scalable. The CER has no special expertise on those far-reaching and speculative matters. It has no special expertise in climate science.

The Minister’s instructions to the CER on December 16, 2021, were given in broad terms but they included directives that could fatally compromise the scope and integrity of the study. Mr. Wilkinson’s qualifications appear to invite the CER to conclude that global oil demand is likely to remain high for another several decades (which is the publicly stated view of Mr. Wilkinson and of the oil industry and its proponents) and that future development of negative emissions technologies including “direct air removal” will eventually allow the world to “remove” the resulting higher levels of CO<sub>2</sub> from the atmosphere and achieve “net-zero emissions” by 2050. That was the approach the CER laid out in its *Canada’s Energy Future 2020* published three years ago, although at that time it offered no detailed analysis or evidence to substantiate the plausibility of those envisioned future technological solutions.

In conducting the kind of analysis the Minister has directed, the CER will be considering expert evidence on a series of highly complex issues relating to climate science and also contentious issues about the future path of energy demand, the future pace of the uptake globally of renewable energy sources, and highly contentious questions about the future role that Carbon

Dioxide Removal (CDR) technologies might play in extending the timeline available to continue high levels of oil and natural gas use.

The Minister’s decision to assign this consequential study to a closed process, allowing no opportunity to ensure that the evidence sources selected by the government are publicly examined and properly challenged, is a betrayal of the public interest. Under this arrangement, there have been no hearings open to the public, no cross-examination, no public record of proceedings, and no media access. There has been no lawful avenue for Canadian citizens to scrutinize the sources and evidence that is being considered by the CER, or legally challenge the evidence, the process, or the findings. The CER has quietly decided behind closed doors what evidence it would look at, who it would talk to, and what lines of inquiry it will ignore.

The issue at stake, *the future path of Canada’s oil production to 2030, 2040, and 2050*, is too deeply enmeshed in the conflicted economic and political interests of government and the oil industry to be entrusted to a secretive process out of the public view. A proper examination of this crucial question must be done by an independent *public* inquiry process. That is our guarantee that the evidence will not be pre-selected or “cherry-picked”. There must be an opportunity for Canadians to challenge and cross-examine the experts, and an opportunity to call other expert witnesses who may disagree with those who have been selected by the government. The process must be able to test and challenge the experience and skills of those who are selected by the government as expert witnesses and scrutinize their affiliations and independence.

## 7. The unforgiving 2030 deadline

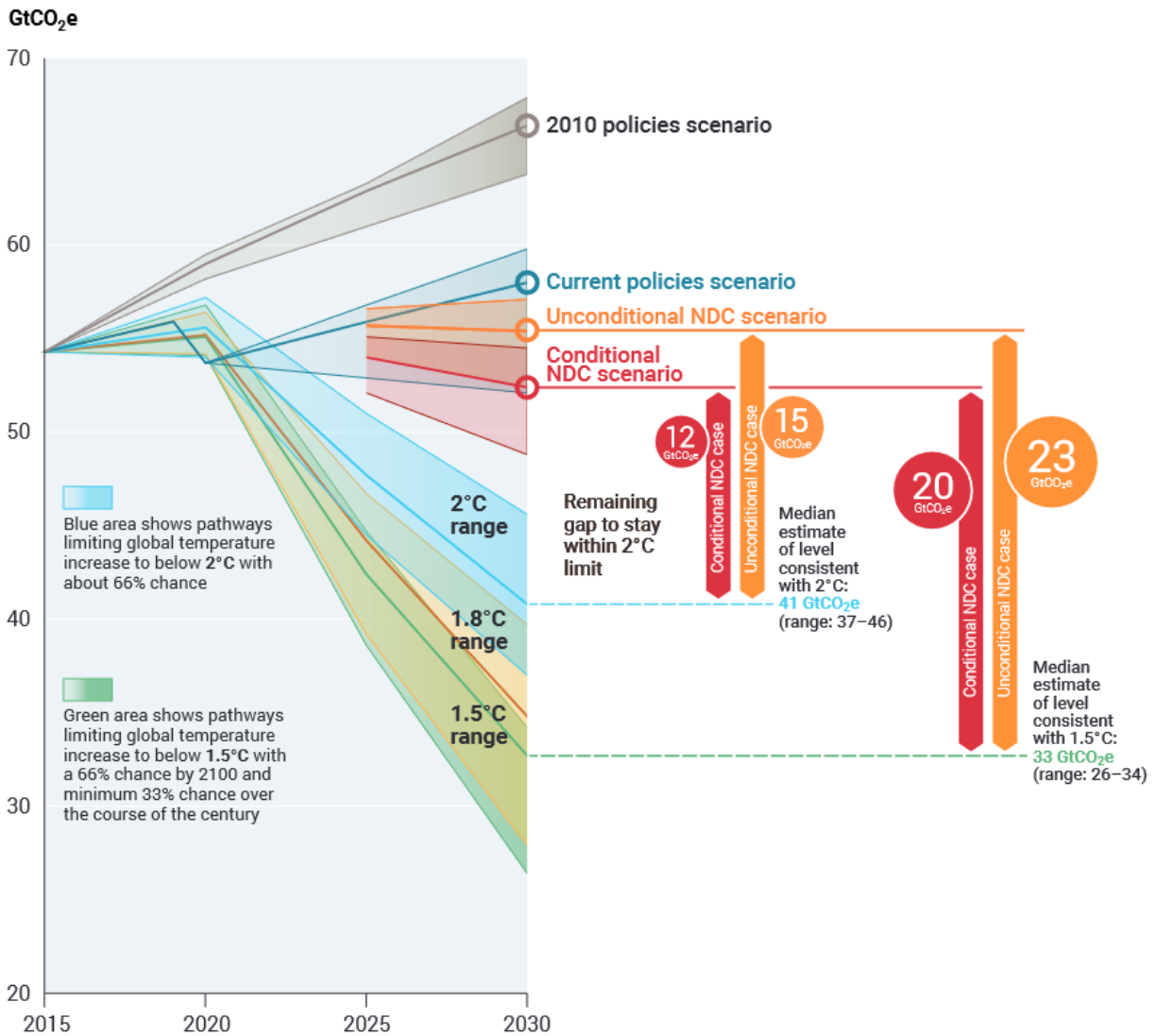
Canada’s most recent *Emissions Reduction Plan* (ERP) published on March 29, 2022, affirms that the aim of Federal Government policy is to continue to maximize our oil production. The government’s plan is clear: Canada’s oil production will continue to increase until – and if – other countries eventually begin to consume less oil. In the meantime, Canada’s production levels will be guided solely by “global demand”.

The new *UN Emissions Gap Report 2022* published on October 27, 2022, provides a comprehensive picture explaining the extreme danger of our situation.<sup>6</sup> It includes three crucial findings that define the global scale of the problem:

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<sup>6</sup> *UN Emissions Gap Report 2022*, October 27, 2022: <https://www.unep.org/resources/emissions-gap-report-2022>

**Figure E: Global greenhouse gas emissions scenario and the emissions gap to 2030**



Source: UN Emissions Gap Report 2022, October 27, 2022, Figure ES.3, p. XX

The annual level of global GHG emissions, not including emissions from changes in land use (i.e., deforestation), reached an estimated 52.8 GtCO<sub>2</sub>eq in 2021.

The first crucial finding is that with the benefit of all emissions reduction policies currently in place (that means all policies that have already been implemented by all countries and assuming that no additional action is taken) global emissions are projected to increase to 58 GtCO<sub>2</sub>eq by 2030. That emissions pathway (the “Current policies scenario”) will result in warming of 2.8°C during the twenty-first century. That is the pathway we are presently on.

Second, even with the full implementation of all unconditional NDCs (emissions reduction commitments made by individual countries under the 2015 Paris Agreement, referred to as ‘Nationally Determined Contributions’), global emissions are on track to reach 55 GtCO<sub>2</sub>eq by 2030. The annual level of global emissions by 2030 will still be higher than it was in 2019, even

if all the NDCs promised so far are fully achieved. That level of global emissions by 2030 will put us on a pathway to a temperature increase of 2.6°C above pre-industrial levels. That outcome is depicted by the orange line (the “Unconditional NDC scenario”) shown in Figure E.

A third crucial finding set out in the new report is that to stay on a pathway to limit the warming increase to 1.5°C, global emissions must decline to an annual level of 33 GtCO<sub>2</sub>eq between now and 2030 (far below the projected 55 GtCO<sub>2</sub>eq, which assumes all the unconditional NDCs so far promised will be fully implemented).

That means we must achieve additional reductions of 23 GtCO<sub>2</sub>eq all within the next eight years. That is referred to as the “emissions gap” to 1.5°C. Closing the emissions gap would require achieving a 45% reduction of all emissions world-wide within the next eight years.

Canada promises to reduce our domestic emissions 40% by 2030, below the 2005 level. That is our NDC. But even if Canada and all other countries successfully implement and achieve the full amount of their promised unconditional NDC reductions by 2030, that still leaves us on a path to a temperature increase of 2.6°C above pre-industrial levels.

### The salience of CO<sub>2</sub> emissions released into the atmosphere by global oil consumption

Canada is the world’s 4<sup>th</sup> largest oil producer and 3<sup>rd</sup> largest exporter. No amount of further technological improvements in the oil sands industry aimed to “cap” and reduce emissions during extraction activities, not even large-scale adoption of Carbon Capture, Utilization, and Storage (CCUS) technology at oil sands production sites, will significantly lower the total amount of emissions that will be released into the atmosphere from oil sourced from Canada’s oil sands. None of the Federal Government’s declared policies, including plans to subsidize large-scale CCUS deployment in the oil sands industry, are intended to bring about any decline in the currently projected growth of Canada’s oil production. Our predicament is that over 85% of the life-cycle emissions of every barrel of oil we produce occur *after the extraction process is completed*, after we export our oil, when it is burned as fuel in cars and trucks.

The world’s six largest oil producers (including Canada) have no present intention to curb the ongoing increase in their oil production and exports.

Of the total amount of greenhouse gas emissions which reached an estimated 52.8 GtCO<sub>2</sub>eq in 2021, about 70% of that amount were emissions from burning coal, oil, and natural gas – representing about 36.6 GtCO<sub>2</sub>. Recent estimates indicate that globally the share of CO<sub>2</sub> emissions attributed to coal use is 15.1 GtCO<sub>2</sub>; another 12.1 GtCO<sub>2</sub> is attributed to combustion of oil.; and 7.9 GtCO<sub>2</sub> is from the combustion of natural gas.

CO<sub>2</sub> emissions from coal, oil, and natural gas use must be reduced by more than one-third within the next eight years – falling from 36.6 to less than 23 GtCO<sub>2</sub> by 2030: see the International Energy Agency’s most recent annual report, *World Energy Outlook 2022*, section 3.3 at page 125. Coal use has been slowly declining in the richest advanced industrial economies, but natural gas use is rising. Achieving a reduction in overall global emissions cannot be achieved without accelerated cuts in coal production and substantial reductions in both oil and natural gas production, all within the next eight years.

Our predicament is severe. The present pathway that Canada and other major fossil fuel producers have adopted – which is characterized by the continuing growth of oil and natural gas production through the rest of this decade and only a slight decline in coal production – means the world is headed to warming of about 2.6°C.

The terrible risk and burden of catastrophic and irrevocable climate breakdown is being quietly shifted to the world's children in exchange for our own immediate financial gain from expanding Canada's oil production.