MISLEADING CANADIANS

Bill C-12 (the *Canadian Net-Zero Emissions Accountability Act)* and the promise of net-zero emissions by 2050

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In a news release on June 30, 2021, the Liberal government made a series of ambitious media claims about the new law that is described as Canada's "commitment to reach net-zero by 2050":

> *Yesterday, the Minister of Environment and Climate Change, Jonathan Wilkinson, welcomed Royal Assent to the Canadian Net-Zero Emissions Accountability Act, which has become law. It marks the first time a Canadian government has legislated emissions reductions accountability to address climate change, by setting legal requirements on the current government and future governments to plan, report, and course correct on the path to net-zero emissions by or before 2050.*

That statement is a series of half-truths. It omits any mention of crucial, deliberate features of this new law that allow our government for many more years to legally avoid disclosing key information about the long-term emissions implications of our country's current economic policies, including most significantly Canada's plans to continue increasing our oil and gas production for another 25 years to 2045. A summary of the new law in Bill C-12 describes in more limited terms what the Government of Canada has really committed itself to do:

> *This enactment requires that national targets for the reduction of greenhouse gas emissions in Canada are set, with the objective of attaining net-zero emissions by 2050. The targets are to be set by the Minister of the Environment for 2030, 3035, 2040, and 2045.*
>
> — Bill C-12, Summary, June 22, 2021 (emphasis added)

This law merely requires that the government in the distant future set emissions reduction targets. Apart from a near-term target for 2030, the new law does not in fact require the government to set any target for 2045 for fourteen years, until 2035. It is free to delay telling us anything about the 2040 target until December 29, 2029. We will not get details of the 2035 target until 2025.

In the past 20 years, we have seen multiple commitments by governments in Canada promising us emissions reductions within specified deadlines, enshrined in laws passed by Parliament or in international agreements. A generation ago, the Liberal government of Jean Chretien made a commitment under the Kyoto Protocol (signed by Canada in 1997 and ratified by Parliament in 2002) to reduce Canada's total emissions 6% below the 1990 level by 2012. That represented a legal commitment by the government to cut our emissions down to an annual total of about 580 million tonnes (Mt) of CO_2eq by 2012. Canada's emissions reached 739 Mt by 2005. They

continued to increase until the Liberals were voted out of office and the Conservative Harper government took power. By then, the Kyoto target was beyond reach. In 2011, the Conservative government formally abandoned Canada's commitment under the Kyoto Protocol. The new Conservative government signed the non-binding Copenhagen Agreement making a new commitment, which promised a 17% reduction below the 2005 level by 2020, which would have been down to 612 Mt. The current Liberal government came into office in October 2015. It made a new commitment to cut our emissions 30% below the 2005 level by 2030, which would be 517 Mt. Canada's annual emissions reached 730 Mt in 2019. We sailed past the Copenhagen target without any public discussion. Each time we get near a failed target our government announces a new target, always a decade or two in the future.

The truth is that Canadian governments have repeatedly made commitments, some legal and some under international agreements. And then ignored them. A second truth is that no law passed by Parliament (not even this new *Canadian Net-Zero Emissions Accountability Act* passed by Parliament on June 29, 2021) can bind a future government, not even a future Liberal government. Under our legal system, in a year or two, a simple majority vote in Parliament can make this law and its promises disappear.

A third truth is that this new law does not set any target at all for 2050, or for 2045, 2040, or 2035. We must wait years before those targets are revealed. Although the government claims it has a plan to achieve net-zero emissions by 2050 (the Preamble says: "Whereas the Government of Canada recognizes that its plan to achieve net-zero emissions by 2050 should contribute to making Canada more resilient, inclusive, and competitive…"), under this law the government is under no legal requirement to share crucial details of its plan with Canadians. Most troubling, it enables the government to conceal from the public for many more years the long-term emissions implications of Canada's current plan to continue expanding oil and gas production to 2045.

I. There is no 2050 target

Bill C-12, passed on June 29, 2021 (which is now called the *Canadian Net-Zero Emissions Accountability Act*), makes this impressive-sounding declaration in section 6: "The national greenhouse gas emissions target for 2050 is net-zero emissions".

> The new law does not commit this government or future governments to any identifiable or quantified target that tells us what the remaining annual level of Canada's total emissions will be by 2050. There is no numerical target that limits the growth of our future energy sector emissions.

The definition section of the legislation provides an explanation of what "net-zero emissions" means:

Net-zero emissions means that anthropogenic emissions of greenhouse gas emissions into the atmosphere are balanced by anthropogenic removals of greenhouse gases from the atmosphere over a specified period.

This definition refers to two "unknowns". It refers, first, to the annual level of our "remaining emissions" in 2050 (described as the amount of Canada's "emissions of greenhouse gases into the atmosphere" in that year), but the expected amount of our emissions is *not quantified or defined*. The new law does not tell us what the expected volume of Canada's remaining emissions will be by 2050, or even what our aspirational target is for that date. Secondly, it refers to "anthropogenic removals" but provides no estimate or measure of the amount of CO_2 that will have to actually be *removed from the atmosphere* on an annual basis by that date. The definition tells us only that these two undefined numbers, whatever they might be, will be "balanced".

One of the fundamental flaws with this plan, apart from the complete absence of essential information about the expected annual level of Canada's remaining emissions by 2050, is that the envisioned future technologies that are supposed to eventually have the capacity to achieve large-scale emissions removals from the atmosphere by 2050 do not yet exist, or exist only in small-scale experimental forms. The new legislative scheme relies on a conjecture about the availability and efficacy of future technologies to achieve emissions "removals," but doesn't give us any information about the amount of the emissions "removals" that will be required.

Worse, under this new law, Canadian citizens have no legal rights to obtain any information about these missing numbers for at least another 15 years. The government can keep the information secret.

II. No transparency or accountability until 2035

Section 7 in 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" (i.e. certain specified future dates). Here is the 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.*

Under this scheme, we must wait until December 1, 2034, before we will learn from the government what Canada's annual level of emissions is expected to be by 2045 or at least what the government says the "target" will be for that year.

Accordingly, no government will be under any legal obligation to inform Canadians of what the expected level of our "continuing emissions" in 2050 might be until the end of 2034, when it will reveal the 2045 target.

Does this mean the government itself will not know what these numbers are

The new law does not require (until after 2034) that the current government or any future governments reveal what the remaining annual level of Canada's total emissions will be by 2050.

for thirteen more years? Of course not. Any competent and serious government would already by now, in 2021, have a very clear understanding of the scale of emissions reductions Canada must achieve, for example by 2045, to give us any realistic chance of meeting a serious "net-zero" target by 2050.

Any serious net-zero objective for 2050 will be one where the required volume of future "emissions removals" (the new law calls them "anthropogenic removals") from the atmosphere is not a fantasy but a plausible number based on a realistic assessment of what might be technologically feasible. That kind of assessment and planning should be publicly accessible. That number should not remain a cabinet secret for the next thirteen years. If the current government has no informed understanding of what magnitude of "carbon removals" will be technologically feasible by 2050, it should candidly tell us now — admit that it does not know whether Canada by 2050 will have the technological capacity to achieve any large-scale emissions removals from the atmosphere.

Even for any assessment of the supposed "target" for 2040, under the new law we must wait for eight years, until December 1, 2029, before the government is legally required to reveal to us what they plan to do by 2040.

Under the terms of this new law, the process for disclosing information provided by Bill C-12 is even less forthright. The new law says in section 7 (5) that "*Within a year after a greenhouse gas emissions target is set for a year after 2030, the Minister must publish*" a detailed description showing "the latest projections of greenhouse gas emissions" after "taking into account the combined impact of those measures" the government plans to implement. This means that on December 1, 2034 the government will just provide Canadian citizens with a "target" number for 2045, but citizens will then have to wait as much as another full year, until December 2035, before we learn, for example, any details about what the annual level of emissions in the oil and gas sector is expected to be by 2045 or what the planned reduction of transportation sector emissions is expected to be by that year. It will not be until 2035 that Canadian citizens will begin to receive from their own government any detailed picture of the long-term emissions implications of our current policies.

Under the new law, "transparency" and "accountability" about the most serious questions concerning the new "net-zero by 2050" plan do not begin until 2035.

III. Government "net-zero by 2050" plan relies on unproven future technologies

The plan referred to in the new law relies on large-scale future emissions removals ("negative emissions") which are entirely hypothetical. And because the new law provides no measurable commitment specifying the expected annual level of Canada's "remaining emissions" by 2050, we have no idea of the amount of "carbon removals" that we or our children will be obliged to achieve in 2050 – and that they will be required to repeat every year, for many decades after 2050.

Before this law was passed on June 29, 2021, the Liberal government, the Minister of the Environment Jonathan Wilkinson, and the Liberal and NDP Members of Parliament who supported the bill had ample warning of the dangers of adopting a climate plan that is built on the *assumption* that non-existent technologies will be developed and will be viable thirty years in the future.

> The government's scheme relies on future "carbon removal" technologies that do not yet exist (or exist only in small experimental forms) to meet our unknown 2050 goal. This plan is dangerous.

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. The Committee comprised five Liberal MPs, four Conservative MPs, one NDP MP and one Bloc Quebecois MP. About 75 written submissions were filed by a range of groups and individuals from across Canada. Some people were invited by the Committee to attend and testify.

Canadian climate scientist Kirsten Zickfeld filed a written submission that clearly addresses 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. 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. Kirsten Zickfeld is one of the top atmospheric climate scientists in the world and a lead author on the IPCC 2018 report.

A comprehensive joint submission was 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 CO_2 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

A clear warning by three of the world's leading climate scientists was published on 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). This article was not in the evidence presented to the Committee. But it 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.

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 1021). In addition to his review of engineered carbon removals, Marc Lee at p. 8 – 11 also discusses the LULUCF sector, our 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

On May 14, 2021, we filed a joint submission to the Parliamentary Committee. We proposed an amendment that would have legally required that the government by January 2022 disclose to Canadians its presently available projections showing what the expected level of Canada's total "remaining emissions" will be by 2050, based on the government's most recently promised emissions-reduction policies: https://www.ourcommons.ca/Content/Committee/432/ENVI/Brief/BR11369349/br-external/Jointly9-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 – refused to even discuss whether the reliance of this legislative scheme on future large-scale emissions removals was a matter of concern.

IV. Global predicament: an unforgiving timeline to reduce emissions 50% by 2030

Three years ago the IPCC *Special Report* warned governments that the annual level of global emissions would need to be reduced 45% below the 2010 level by 2030 (equivalent to a cut 50% below the 2018 level) to give us any realistic chance to keep the warming increase to less than 1.5°C.

Unfortunately, the annual level of total global emissions has continued to increase since 2010, rising at an average rate of about 1.3% per year (driven by economic growth and the continued reliance of the global energy system on oil, natural gas, and coal). The *UN Emissions Gap Report 2020* released on December 9, 2020, reported that the annual level of global emissions reached 52.4 billion tons (Gt) of CO_2eq in 2019 (not including additional emissions from forest fires, deforestation, and other land use changes). Based on current policies and assuming all unconditional commitments made by signatories to the Paris Agreement to reduce their own emissions by 2030 (known as "Nationally Determined Commitments", or NDCs) will be fully

implemented, the annual level of global emissions by 2030 is expected to rise to 56 $GtCO_2eq$ by 2030. The reality we are facing now is that despite all emissions reduction pledges already made by countries up to December 2020, global emissions will have increased substantially above the 2019 level by 2030.

The *UN Emissions Gap Report 2020* concluded that global emissions must be reduced to an annual level of 25 $GtCO_2eq$ by 2030 to keep us on a pathway giving a 66% probability to limit warming to 1.5°C. An earlier edition of the *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.*
>
> — *UN Emissions Gap Report* 2017, Executive Summary, p. xvii (emphasis added)

The November 2017 report left no doubt that the full implementation of all the existing NDCs by 2030 would be insufficient to put the world on an emissions pathway consistent with keeping warming "well below 2°C", let alone 1.5°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 most recent *Emissions Gap Report* on December 9, 2020, repeated the same warning. The problem is that the annual level of global emissions has continued to increase during the past decade, reaching 52.4 $GtCO_2eq$ in 2019. To stay on a pathway to limit the warming increase to 1.5°C. global emissions must be reduced to an annual level of 25 $GtCO_2eq$ by 2030 – an absolute reduction within the next nine years of about 27 billion tonnes below the 2019 level, a stunning number. That is the unforgiving challenge we face.[1]

V. Canada's emissions reductions to 2030

The only "target" the new legislation offers us at an early date (and it has now been publicly released) is Canada's reduction target for 2030.

But the obligation of our government to set a new 2030 target is nothing new.[2] Since 2015, the Government of Canada has been obligated under the terms of the Paris Agreement (signed by the Trudeau government) to publicly reveal a new, more ambitious 2030 target. Six years ago, Canada agreed to achieve a 30% reduction by 2030 below the 2005 level, which meant a reduction of our national emissions down to 517 Mt by 2030. That commitment was Canada's "Nationally Determined Contribution" obligation under the Paris Agreement. At that time, Canada also agreed to announce a deeper reduction commitment within five years. Since at least 2018, when the IPCC *Special Report on Global Warming to 1.5°C* was released, it has been absolutely clear that the advanced industrialized economies who are among the world's largest

emitters (Canada ranks as the 10th largest emitter in the world) will have to reduce their national emissions at least 50% by 2030 to give the world any realistic chance to keep warming within the 1.5°C limit.

After an inexplicable delay, on April 22, 2021, the Trudeau government belatedly announced that it is adopting a 40% to 45% reduction below 2005 as Canada's new 2030 emissions reduction target (which now promises a reduction down to 401 Mt). The announcement in April of the new 2030 target is not the result of the new *Canadian Net-Zero Emissions Accountability Act.* It is the result of Canada's obligations six years ago under the Paris Agreement.

Yet even now, with less than nine years remaining to meet our 2030 target, the government has still not publicly released any details of how the required deep reductions are going to be achieved in each of the seven economic sectors of Canada's economy.

The new law imposes on the government only one significant new obligation with respect to the 2030 target. It requires that by December 31, 2021, the government must "establish an emissions reduction plan" for the 2030 target. That legal requirement simply confirms that at present we do not have a plan – that is, six years after the Trudeau government signed the Paris Agreement, we have reduced our emissions by only 1.1% below the 2005 level and our government has still failed to develop and publicly disclose a plan that explains in quantified terms the reductions we must achieve in each of Canada's six economic sectors by 2030. To provide the public with accountability, a real plan would identify in detail the proposed new policies (which have not yet been implemented) that will allow us to achieve those reductions within the next nine years.

Our predicament is severe. We are nine years away from the crucial 2030 deadline to cut all global emissions by 50%. Canada is still far from achieving its original 30% target and has no plan at all to meet its newly promised 40% to 45% target. Our reckless political leaders are taking credit for setting a new climate "target" for 2030. Our problem is that we still have no actual policies that are capable of achieving a serious target.

Beyond 2030, Canadian citizens have no information about what Canada's emissions reduction targets will be for 2035, 2040, 2045, or 2050. It is difficult to imagine legislation that could be more effectively designed to ensure that the Executive (the Cabinet and Ministers and bureaucrats) are bound to disclose virtually nothing of significance to the Canadian public about the long-term emissions implications of current policies that will continue to drive our emissions for the next 30 years.

VI. Emissions implications of expanding Canada's oil and gas production to 2045

Canada announced its new "net-zero emissions by 2050" goal on November 19, 2020.

But just a few days later, on November 24, 2020, the government quietly released *Canada's Energy Future 2020*, the annual report published by Canada's Energy Regulator, which confirmed the massive scale of the currently planned growth of oil and natural gas production in Canada for three more decades.[3] The report's Reference Case projection shows that Canada's oil

production is expected to expand for twenty-five more years. Output will "peak" in 2045 at 7.1 million barrels per day (bpd) – more than 2.2 million bpd above the production level in 2019.

Oil and gas production and processing is Canada's biggest emitting sector (26% of our total emissions). Since 2005, the oil and gas sector has been the largest source of emissions growth in our economy.[4] The crucial question – not answered by our government and met with silence by virtually all elected Members of Parliament (Liberal, NDP, and Conservative) – is whether Canada's planned expansion of oil sands production to 2045 can be reconciled with achieving a net-zero by 2050 emissions reduction goal.

An analysis[5] by Angela Carter and Truzaar Dordi, *Correcting Canada's "one eye shut" climate policy* (Cascade Institute, University of Waterloo, April 16, 2021), finds that based on Canada's currently planned growth in oil and gas production to 2050 (using the government's own Reference Case production data published in the CER 2020 report), Canada's oil and gas sector will be emitting about 200 Mt annually by 2050. The sector's emissions in 2019 were 191 Mt. A second study[6] by David Hughes, *Canada's Energy Sector: status, evolution, revenue, employment, production forecasts, emissions and implications for emissions reduction* (June 1, 2021) also concluded that based on the CER's production scenarios published November 24, 2020, the oil and gas sector's total annual emissions will be about 200 Mt by 2050. David Hughes concludes that "proceeding with an oil and gas production ramp-up as projected by CER makes achieving Canada's emissions-reduction commitment impossible".

In contrast, the federal government has not released any estimates of what the annual level of oil and gas sector emissions will be by 2050. The *Canada's Energy Future 2020* report provides detailed information documenting the growing level of oil production for every year to 2050 (measured in the number of barrels of oil produced per day) but it includes no data showing the expected level of emissions to 2040, 2045, and 2050 that will accompany that rising production.

Canada does release data (annually or bi-annually) showing the expected level of oil and gas sector emissions up to 2030, but it does not disclose any data showing what the emissions levels after 2030 will be, for example by 2040, if production follows the growth trajectory shown in the CER's most recent Reference Case. The government's published emissions data about the oil and gas industry stops at 2030.

The government and the Liberal MPs who support it (and NDP Members of Parliament and Conservative members) are all silent about the emissions implications of Canada's planned increase of oil production to 2045. Most of that planned expansion will be in the oil sands industry.

VII. Canada's plan is to continue to expand oil production but "capture" emissions

The government makes the extraordinary claim that Canada can continue to expand production for another two or three decades but nevertheless achieve by 2050 what it calls "net-zero oil sands production".[7]

Since November 19, 2020, when the new "net-zero by 2050" goal was publicly announced, Canadian citizens have been repeatedly assured by the government that future large-scale deployment of carbon capture and storage (CCUS) technology and other envisioned future technologies (direct air removal, BECCS and enhanced natural sinks) will have the capacity by 2050 to remove massive amounts of CO_2 from the atmosphere, and thus will be able to reduce oil sands emissions to zero. The promise is that the annual level of "remaining emissions" from increased oil production, however high they may be by 2050 (Canada has not disclosed any estimates of the numbers), will be safely "balanced" by "emissions removals".

Apart from carbon capture and storage (CCUS), these promised CDR technologies do not yet exist, or exist only in very small-scale experimental forms that may never prove to be viable. CCUS is at present the only existing technology that can separate and remove industrial CO_2 gas and prevent it from entering the atmosphere, albeit at enormous cost. In the case of the oil sands, CCS would capture CO_2 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 CO_2 would be compressed into an almost liquid form, then transported by pipeline and injected deep underground for permanent storage.

Only two operating CCUS installations exist in Alberta. One of them, at Shell's Scotford Upgrader near Edmonton, cost about $1.35 billion, two-thirds of which was paid for by the Federal and Alberta governments (taxpayers' money). That single installation completed in 2015 has the capacity to capture annually 1.2 million tonnes (Mt) of CO_2 – which is only about 35% of the total emissions released into the atmosphere every year at that single facility. Canada would need dozens of CCUS installations in the oil sands by 2030 and many more by 2040 to even make a dent in the expected 200 Mt of continuing emissions we are going to see in the oil and gas sector if we continue down this path. The Alberta government and the oil sands industry are already demanding that the Federal government subsidize CCUS on a massive scale, seeking funding in the range of $30 to $75 billion over the next decade or two.

The government does not deny that as production increases to 2045 Alberta's oil sands industry will continue to release massive amounts of CO_2 every year. But the government and industry assure us that CCUS and other non-existent future technologies (including envisioned "direct air removal" methods that will have the capacity to suck large amounts of CO_2 directly from the atmosphere) will solve the problem by "emissions removals". It rests much of that claim on promises about the feasibility of large-scale future deployment of CCUS.

But even assuming that CCUS might be economically viable and that it offers a safe and effective technological means to significantly lower GHG emissions from the *oil extraction process in Alberta*, the emissions from the extraction process in Alberta account for <u>less than 15%</u> of the total amount of emissions released into the atmosphere by each barrel of oil we produce and export. CCUS will do nothing (and is not intended to do anything) to curb the expansion of oil sands production in Alberta. Canada's total oil production will continue to rise.

Canada's Energy Future 2020 ignores any discussion of the emissions impact of the "downstream" emissions from Canada's growing oil sands, namely the emissions released outside Canada's borders after our bitumen is shipped to the U.S. or elsewhere when the oil is

burned as fuel in vehicles. Downstream emissions account for about 85% of all the emissions from every barrel of oil we extract.[8] Our government's new plan is focused exclusively on Canada's "upstream" emissions, namely the portion of emissions released during the bitumen extraction process within our borders.

No amount of CCUS deployment at oil sands production and processing facilities in Canada over the next 30 years, even if done on a very large scale, will halt or even significantly curb the massive additional volumes of greenhouse gas emissions, principally CO_2, that will be released into the atmosphere every year from now to 2045 from our expanding production and exports of bitumen. CCUS will do nothing to slow down the heating of the earth's surface. "Net-zero oil sands production" is a cynical communications strategy and a fraud on the world's children.

VIII. The hard truth: global oil consumption must fall 50% by 2040

None of this is new. Multiple authoritative studies have again and again modelled the projected long-term growth of emissions from the world's industrial economies with their heavy fossil-fuel dependency. It is the cumulative emissions that are driving atmospheric warming. As long ago as 2013, the International Energy Agency (IEA) concluded that oil consumption must begin to decline in absolute terms by 2020 to give us even a 50-50 chance to keep future warming within the 2°C limit. That well-known study, called the "450 Scenario", called for a 20% reduction of oil consumption by 2040 below the 2013 level. The IEA published a further study in late 2019.[9]

On May 18, 2021, in its most recent report *Net-Zero by 2050: A Roadmap for the Global Energy Sector*, the IEA warns 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 40 million bpd within the next 20 years. To stay within the 1.5°C temperature threshold, oil consumption worldwide must further 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* and deep reductions in oil consumption by 2040 on a scale that is unprecedented. For Canada, the world's 4th largest oil producer, this report has enormous implications: https://iea.blob.core.windows.net/assets/4719e321-6d3d-41a2-bd6b-461ad2f850a8/NetZeroby2050-ARoadmapfortheGlobalEnergySector.pdf

The new report explains that to meet the net-zero goal by 2050, 70% of the remaining 24 million bpd of global oil production will have to be used in applications where the fuel is not combusted and so does not result in any direct CO_2 emissions (i.e., chemical feedstocks, lubricants, and asphalt). Oil will have very limited use as transportation fuel by 2050, except for aviation.

The IEA's new report is based on the IEA's "Net-Zero by 2030 Scenario" which models the changes needed across all the main energy sectors (coal, oil, and natural gas and wind and solar) to achieve net-zero energy related and industrial process emissions by 2050, consistent with giving us a 50% chance of limiting the long-term average global temperature rise to 1.5°C. It describes the oil industry as now 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 that is essential to meet a real net-zero emissions goal by 2050. Another very recent analysis published

on September 8, 2021, provides details of the sharp decline of production for Canada's oil sands and for other large producers (U.S., Middle East, Russia, etc.) required to keep the temperature increase below 1.5°C: Welby, D., Price, J., Pye S., and Paul Ekins "Unextractable fossil fuel in a 1.5°C world." *Nature* 597, 230-234 (2021): https://doi.org/10.1038/s41586-021-03821-8

Global oil production reached 98 million bpd in 2019. As a result of the severe economic impact of the Covid-19 pandemic, oil consumption dropped sharply to 90 million bpd in 2020. However, the IEA's May 19, 2021 report makes clear that based on existing energy policies around the world, global oil demand will move back up to 98 million bpd by 2023 and rise to a plateau of around 104 million bpd shortly after 2030, and remain at that level through to 2050. The world is not remotely on track to achieve any deep reductions in oil consumption.

IX. A safe future pathway for Canada's oil production

Canada is the world's 4th largest oil producer and 3rd largest exporter.

If other countries move to adopt more aggressive climate policies that begin to curb global oil consumption and demand starts to decline, world oil prices will decline. The costs of production per barrel in Canada's oil sands are already among the highest in the world. As world oil prices fall, Canada's high-cost oil sands producers will increasingly be unable to compete with other lower cost suppliers of conventional oil. Canada's ambition to continue expanding our oil production up to 2045 is inconsistent with the required decline in global oil consumption and lower oil prices that align with the IEA's Net Zero by 2050 Scenario. Our ambition is incompatible with achieving a 1.5°C world.

Alternatively, if the world's richest countries who are the major emitters of CO_2 fail or refuse to adopt ambitious and stringent new climate policies that are needed to rapidly reduce oil consumption, global oil demand and oil prices will remain at relatively high levels for at least another decade or two. Under that scenario, Canada's oil production could continue to profitably expand for a time but the world's emissions will continue to increase. It is a tragic scenario.

Our government's plan is based on the premise, or expectation, that global demand for oil *will continue to increase for another 20 or 30 years*, thereby offering sufficiently high oil prices to make Canada's expanding production profitable. But the government's hopes for the future growth of our oil industry for several more decades cannot be reconciled with any vision of a future world that avoids the irrevocable breakdown of the natural systems that support human life. We have run out of time to continue increasing global oil consumption.

The government's rationale for proceeding with the completion of the Trans Mountain Pipeline Expansion Project is to facilitate the export to Asia or elsewhere of the ongoing increases in our oil sands output. The choices we make today about expanding Canada's oil sands production to 2045 will drive our emissions for the next 30 years.

The *Canadian Net-Zero Emissions Accountability Act*, which was passed into law on June 30, 2021, offers us no legal mechanism to compel the government to reveal the long-term emissions implication of these momentous and perverse choices it is quietly making now.

But Canadians citizens can challenge the government. On July 8, 2021, twenty-one energy economists and climate scientists, all deeply 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 politely direct attention to the fact the CER, a federal government agency, "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 direct or instruct the CER to develop a scenario that will inform Canadians, with compete 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.

X. An unconscionable plan

The scheme under the new *Canadian Net-Zero Emissions Accountability Act* allows our government to avoid disclosing to Canadians crucial information about the long-term emissions implications of its current policies. The government can put off for many more years telling us what the expected annual level of oil and gas sector emissions is going to be by 2050. Our Members of Parliament (both Liberal and NDP) take generous credit for providing their constituents with this new "Net-Zero Emissions Accountability Act", the ironic and deceptive name they give to this meaningless legislation.

The new "net-zero by 2050" plan gives to 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 county'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".

Political and industry leaders propose that our oil sands industry continue to expand for another 20 or 30 years – for the immediate economic benefit of the present generation, they claim – and later, starting around 2050, the world's children will spend the second half of the 21st century attempting to remove those emissions from the atmosphere at enormous economic cost – and by technological means that do not yet exist and which may not prove viable. It is an unconscionable plan. This new law is their cover.

NOTES

1. Reduction of the annual level of global greenhouse gas emissions by 2030

Our immediate and most pressing objective is to achieve an absolute reduction in the annual level of global emissions in the order of 27 $GtCO_2eq$ below the 2019 level within the next nine years. The annual level in 2019 reached 52.4 $GtCO_2eq$. The difficulties of our situation can be clearly seen if we consider the examples of the world's six largest emitters and their annual emissions in 2019 (and their percentage share of the global total): China (14 Gt, 26%); U.S. (6.6 Gt, 13%); EU (4.3 Gt, 8.6%); India (3.7 Gt, 6.6%); Russia (2.5 Gt, 4.8%), and Japan (1.4 Gt, 2.8%). The six dominant emitters combined account for 32.5 Gt of the global total (62%). Even if all six were to cut their own emissions by a full 50%, together they would contribute a total reduction of only about 16 Gt – still a massive 11 Gt short of the reductions needed by 2030.

But India will not be able to achieve any reductions at all before 2030 (India's per capita emissions are 2.7 tonnes compared to 20 tonnes in the US). All indications are that China's emissions will not plateau until after 2025 and will not achieve any large reductions before 2030. Russia will not achieve any substantial reduction before 2030. Canada (1.6%) is the world's 10th largest emitter (ranking just after South Korea, Saudi Arabia, and Iran) – followed by more than 150 other countries, most emitting a small fraction of what Canada does. If it proves to be beyond the reach or the will of the world's countries (and especially the richest countries who have access to advanced technology and capital) to act quickly now to achieve the full amount of the emissions reduction required by 2030, and if the priceless goal of limiting the ongoing heating of the earth's atmosphere to 1.5°C is lost, our children will be left to work with difficulty through the following decades to keep the limit to 1.8°C or 2°C if they can.

2. Canada's 30% reduction target by 2030

When the 30% target was put forward by the Conservative government in May 2015, the accepted view by governments was that *"reducing greenhouse gas emissions so as to hold the increase in global surface temperature below 2°C above pre-industrial levels"* would give the world a reasonably safe level of protection against the most serious risks of climate change (the 2°C goal was adopted under the terms of the Copenhagen Accord in December 2010). It was only later, when the Paris Agreement was signed in December 2015, that Canada and other countries committed to *"pursue efforts to limit the temperature increase to 1.5°C"* because of growing alarm about the serious impacts of warming below the *2°C* threshold. When the *IPCC Special Report on Global Warming to 1.5°C* was subsequently published in October 2018, it provided a comprehensive picture of the substantial differences in the outcomes for human and natural systems as warming increases from the current level (now 1.1 °C) to 1.5°C and the much more destructive impacts that will occur as warming increases above 1.5°C to 2°C.

3. Report: *Canada's Energy Future 2020* (November 24, 2020)

Canada's Energy Future 2020, a document released by the government's energy regulator (CER) on November 24, 2020, reported that Canada's total oil production was 4.9 million barrels

per day in 2019. Based on the CER's assessment about the expected growth of global oil demand over the next 30 years under its "Reference Case" scenario (which assumes there will be no significant slowdown or decline in the demand for oil despite the threat of climate change), Canada's oil production is projected to rise to 7.1 million bpd by 2045 - a 45% increase. Oil sands production, which accounts for about 60% of Canada's total oil production, is projected to increase from 3.1 million bpd to 4.3 million bpd by 2045.

The CER Report also included a new scenario called the "Evolving Scenario," which outlines an alternative path for crude oil production involving a *slightly reduced rate of growth* over the next twenty years. Based on the Evolving Scenario, Canada's oil production will keep growing every year to 2039, but more slowly, when it "peaks" at 5.8 million bpd. Under this supposedly more climate-friendly scenario, Canada's oil sands production by 2050 will still be higher than it was in 2019. The Evolving Scenario is just a theoretical projection. The CER Report does not indicate any pending change in Canada's existing energy policies. Under existing policy, oil production continues to expand at the higher rate shown in the Reference Case

Yet, the CER 2020 Report concedes (in a brief a statement on page 62) 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, page 62 (emphasis added)

That is a clear acknowledgement that Canada's planned trajectory of oil sands expansion is inconsistent with limiting global warming to 1.5°C. On that important point, the Minister of Environment and Climate Change has remained silent for over nine months since the CER report was released on November 24. The government has offered no comment on how Canada's current plans to continue oil sands expansion can be reconciled with the "net-zero emissions by 2050" goal.

During two weeks of hearings held in May 2021 before the Standing Committee on Environment and Sustainable Development, the Parliamentary committee assigned the task of examining the draft legislation for the *Canadian Net-Zero Emissions Accountability Act* (Bill C-12), not a single Liberal or NDP Member of Parliament (and no Conservative MP) raised any questions about the incompatibility between Canada's expanding oil production and the promised 2050 goal.

In its discussion of the planned pipeline "capacity additions" (i.e., Keystone XL, TMX, and Keystone Line 3) the CER 2020 Report also acknowledged that under the slower rate of oil production growth depicted in the Evolving Scenario, the 540,000 bpd of new pipeline capacity provided by the TMX expansion project would not be required.

There was a temporary decline in the level of Canada's oil production in 2020 due to the Covid-19 pandemic. But according to the CER 2020 report, oil output in Canada is expected to soon exceed the 2019 level and continue the expansion to 2045 shown in the Reference Case.

4. Canada's oil and gas sector emissions

Total oil and gas sector emissions in Canada were 191 Mt in 2019, representing 26% of the national total of 730 Mt that year. Between 2005 and 2019 oil and gas emissions increased from 160 Mt to 191 Mt. The 30 Mt increase made the oil and gas sector the largest source of emissions growth in the Canadian economy. Emissions in the oil sands sub-sector more than doubled in that period, increasing from 35 Mt to 83 Mt (offset by some decline in the annual level of emissions in the conventional oil and natural gas sub-sectors).

The transportation sector (Canada's 2nd largest emitting sector) increased 26 Mt over the 2005-2019 period, from 160 Mt to 186 Mt. Transportation and oil and gas together account for more than 50% of Canada's total emissions. The combined 56 Mt increase in those two sectors completely offset the remarkable 57 Mt reduction of emissions achieved in the electricity sector over the same period (electricity generation is the only economic sector in Canada that has shown any significant reduction since 2005). The result is that Canada's total emissions declined only 8 Mt over 14 years, about 1.1%. The most recent emissions data showing the annual level of emissions for each of Canada's seven economic sectors is found in the *National Inventory Report*, April 15, 2021, Table 2-12. It provides details of Canada's sectoral emissions up to 2019.

The most recent Government of Canada projections showing Canada's expected emissions up to 2030, including details of oil and gas sector emissions, are found in *Canada's Greenhouse Gas and Air Pollution Emissions Projection 2020*, Environment and Climate Change Canada, released on May 14, 2021. This report presents two scenarios. One is called "Canada's Reference Case emissions projections to 2030". It calculates what the annual level of Canada's total emissions will be by 2030, based on emissions reductions from all policies "*funded, legislated and implemented by federal, provincial and territorial governments as of September 2020*". This Reference Case projection is therefore a realistic indication of what the outcome will be by 2030, based on actions taken by Canada and by provincial governments up to this point. Under the Reference Case, Canada's total emissions by 2030 will be reduced to 674 Mt (not including LULUCF). That is only a 9% reduction below the 2005 level.

In the Reference Case, the analysis shows oil and gas sector emissions (which as noted comprise 26% of total emissions) are expected to rise slightly to 194 Mt by 2030 (they were 193 Mt in 2019). In other words, under the Reference Case our largest emitting sector will contribute nothing to the reductions needed by 2030. We are not remotely on track to meet the commitment made in December 2015 to cut our emissions 30% by 2030, let alone the new and much deeper 40% to 45% reduction target announced by the government on April 22, 2021.

The government nevertheless claims that substantial additional deep reductions can be achieved by 2030. In its May 14, 2021, report, the government published a second scenario which it calls "Canada's strengthened climate plan for 2030", which promises new "initiatives" that it says will allow us to cut total emissions to 503 Mt by 2030.

A key element of the promised "new initiatives" is a claim by the government that oil and gas sector emissions by 2030 will be reduced from 194 Mt currently projected under the new Reference Case for 2030 down to 138 Mt. That would require a massive 56 Mt cut of oil and gas emissions within the next nine years. But the government has not yet revealed any plan or

quantified analysis to explain how a 56 Mt cut in oil and gas sector emissions within the next nine years is plausible.

Based on the limited amount of information revealed to us by the government, that promised 56 Mt cut of oil and gas sector emissions by 2030 will require large-scale deployment of CCUS technology that will capture CO_2 emissions at oil sands production sites. But the only detailed information with any actual estimates of what CCUS might achieve are the claims made by the Canadian oil industry. Industry CEOs in the past six months are quoted saying that "it will cost about C$75 billion to "zero out" greenhouse gas emissions from oil sands operations by 2050": Bloomberg, July 8, 2021: https://www.bloomberg.com/news/articles/2021-07-08/oil-sands-carbon-cuts-come-with-60-billion-bill-loose-ends. In July, five of Alberta's largest oil sands producers released details of what they call their "Pathway to Net Zero initiative". They promise that by 2030 oil sands emissions can be reduced 22 Mt, of which 8.5 Mt will be achieved by CCUS (total annual oil sands emissions in 2019 were 83 Mt). They claim they will be able to further reduce oil sands emissions by an additional 46 Mt between 2030 and 2050. Overall, the industry group claims that the annual level oil sands emissions can be reduced 68 Mt by 2050, of which 36 Mt would be by means of capturing CO_2 using CCUS technology: https://globalnews.ca/news/8152776/oil-producers-canada-carbon-capture/. On March 8, 2021, the *Globe and Mail* reported that "Alberta is asking Ottawa to commit to $30 billion in subsidies or tax incentives over the next decade to spur the building of large-scale industrial carbon capture projects": https://www.theglobeandmail.com/business/article-alberta-seeks-billions-in-federal-funding-for-carbon-capture-projects/. Costs for this massive engineering scheme range from $30 billion over this decade to $75 billion by 2050. The media reports that "the industry says it's not prepared to foot the bill alone".

With respect to the government's bold promise that there will be a 56 Mt reduction of oil and gas sector emissions by 2030, the industry's own "Pathway to Net Zero" document accounts for only a 22 Mt reduction by 2030, which relates solely to the oil sands industry. The industry's plan relies on taxpayer subsidies to pay for CCUS. Meanwhile, our government and political leaders have fallen silent, offering no data or analysis to substantiate how a 56 Mt cut of emissions in the oil and gas sector might possibly be achieved by 2030.

The outlook is even more discouraging if we consider the much larger emissions cuts that would be required to meet Canada's new 40% to 45% reduction target for 2030, announced on April 22, 2021 (now adopted as Canada's new "target" for 2030 under the *Net-Zero Emissions Accountability Act*). The 45% reduction target calls for a cut down to 401 Mt by 2030. Meeting the new 45% target would require that we achieve an astonishing 339 Mt of emissions reduction within the next nine years, measured against Canada's annual total in 2019, which was 730 Mt. That would require far more than a 56 Mt cut in the oil and gas emissions by 2030. But since April 22, the government has offered no explanation of how any significantly deeper cuts could be achieved in the oil and gas emissions by 2030 if production levels continue to increase.

The only reasonable conclusion is that if oil and gas production continues to grow through this decade, the 40% to 45% reduction target by 2030 is beyond reach. We are nine years away from the crucial 2030 deadline to cut global emissions by 50%. Canada is still far from achieving its original 30% target and has no plan to meet its newly promised 40% to 45% target.

5. Angela Carter report

Angela Carter and Truzaar Dordi, *Correcting Canada's "one eye shut" climate policy*, Cascade Institute, University of Waterloo, April 16, 2021: https://cascadeinstitute.org/wp-content/uploads/2021/04/Carter-Dordi-Canadas-one-eye-shut-climate-policy-1.1-April-16.pdf

6. Hughes report

David Hughes, "Canada's Energy Sector: status, evolution, revenue, employment, production forecasts, emissions and implications for emissions reduction" C.C.P.A., June 1, 2021: https://www.policyalternatives.ca/sites/default/files/uploads/publications/BC%20Office/2021/06/REPORT_ccpa-bc-cmp_canadas-energy-sector.pdf

7. The concept of "net-zero oil sands production"

The *Canada's Energy Future 2020* report (November 24, 2020) introduces the term "net-zero oil sands production" on p. 40. The report discusses in vague terms a future "transition" of Canada's energy sector to accommodate "a global energy system that does move towards net zero" (page 79). It refers to carbon capture and storage technology (CCUS) as a means that would allow the industry to continue to expand while reducing the volume of emissions that will accompany rising output, but it does not discuss the economic viability of large-scale installation of CCUS technology, or the timing of completing such a vast engineering project. It gives no information about the volume of oil sands emissions that might be captured by CCUS by 2030. In talking about "net-zero oil sands emissions" by 2050, the report does not count or even mention downstream emissions.

8. "Well to wheels" emissions for Canada's oil sands production

Carbon intensity is a metric commonly used to measure the amount of GHGs emitted through a portion of the oil supply chain (i.e., 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 analysis of the fuel including extraction emissions, refining, shipping, and emissions from the fuel's combustion in a vehicle engine (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 CO_2).

Oil sands emissions intensity in the oil sands extraction process in Canada has declined since 1990 from 116 kg CO_2per barrel in 1990 to 80 kg CO_2 per barrel in 2019 (those are averages for all oil sands producers): see *National Inventory Report*, April 15, 2021, at pp. 55-56. Extraction 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. 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_2 per barrel up to a high end of about 650 kg CO_2 per barrel. Canadian oil sands is ranked at the higher end of the range, above 550 kg. Given that oil sands extractions emissions average 80 kg CO_2 per barrel, they account for less than 15% of the total life-cycle emissions released by each barrel we produce. A similar analysis was conducted 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. In the U.S. study, extraction emissions intensity for Canada's oil sands was found to be 74 –105 kg CO_2 per barrel. The overall well-to-wheels emissions were reported as 533 – 568 CO_2 per barrel. The important point is that extraction stage emissions are a small proportion of the total emissions released by each barrel we export.

9. IEA's "Sustainable Development Scenario"

The IEA delivered a similar warning less than two years ago in its "Sustainable Development Scenario" published on November 8, 2019, in the agency's annual report *World Energy Outlook 2019*. The "Sustainable Development Scenario" was designed to calculate how much global oil consumption would have to 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 CO_2 emissions, or 1.65°C with a 50% probability.*
>
> — *World Energy Outlook 2019*, section 2.4 at page 88 (emphasis added)

Setting a long-term goal to staying within a 1.8°C warming threshold, the Sustainable Development Scenario concludes that to have a 66% chance of meeting that goal 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. The *WEO 1019* report also presented two baseline scenarios based on assumptions that our present dependency on oil, coal, and natural gas would remain substantially unchanged:

***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 Current Policies Scenario published in 2019 assumed there will be no significant changes that will slow the future growth of oil demand to 2040. The "Stated Policies Scenario" was based on the more positive assumption some recently promised new policies would be adopted that would curb the growth of oil demand. Those two scenarios showed that global oil production was on track to increase to 105.4 million bpd by 2030 and possibly to as much as 111.5 million bpd. Neither was consistent with limiting warming to 1.5°C, or 1.8°C, or even 2°C.

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 an LLB from the University of Toronto Law School in 1970. Since 2013, he has been engaged in contesting the Government of Canada's approval process for the Trans Mountain Pipeline expansion project (TMX) in a number of forums, including making a written submission to Environment Canada in June 2016 critiquing the government's draft report *Review of Related Greenhouse Gas Emissions Estimates* for the TMX Project and oral and written submissions to the Ministerial Panel in August 2016.

Jennifer Nathan has a Science degree in biology and a Masters of Education Degree. She worked initially as a biotechnician and interpretive naturalist in Northern B.C. and the Yukon, and as the coordinator of a Scientists in the Schools program in the Yukon Territory. She subsequently provided professional development training to teachers on experiential science and was a teacher of high school science in B.C. She is deeply engaged in climate issues, advocating for the inclusion of climate literacy in schools and engaging with her municipal government and local community on transportation policy issues including car light streets.

Both were arrested in 2018 after peacefully disobeying an injunction relating to the construction of the Trans Mountain pipeline expansion. They raised the common law defence of necessity in a lengthy legal case. Their necessity defence was ultimately dismissed by the B.C. Court of Appeal in September 2020, after the appeal judges refused to consider or take into account any of the evidence on climate science and emissions presented to the Court.