CLIMATE EMERGENCY INSTITUTE
The Health and Human Rights Approach to Greenhouse Gas Pollution

6 April 2020

No More Financing of Fossil Fuel Climate Destruction

Expert Fossil Fuel Climate Change Statement

by Dr. Peter D. Carter (BC, Canada)

To the Urgent Attention of Prime Minister Trudeau, Government of Canada, and all Ministers with portfolios relevant to climate change
cc Government of Alberta and Ministers
cc Government of British Columbia and Ministers
cc Government of Saskatchewan and Ministers

Please do NOT use the excuse of the pandemic to hand over EVEN MORE money to the planet-destroying fossil fuel industry. Please reverse the fossil-fuel-increasing policies of Canada's Energy Future 2019, which is no future at all.

By 2040 Canada's oil production will increase by nearly 50%, and natural gas will increase by over 30%.

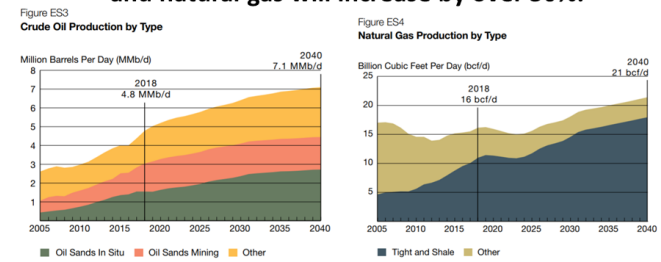


Figure 1

THE ISSUE
The fossil fuel permitting and promoting policies of the Canadian government and fossil fuel producing provinces will have the effect of keeping the world on the current planetary catastrophic worst-case climate change scenario (Figures 8, 9, 10).

Continuing on this worst-case scenario will severely damage Canada's agricultural food production and forests (Figures 3 & 4, from January 2020 NRCAN Drought; 2019 NRCAN Canada's Changing Climate) Extreme heat and drought both increase concentrated over Canada's best food-producing regions. **Globally it will lead to multiple feedback biosphere collapse.**

This Climate Emergency Institute statement is in part a response to Canada's Energy Future 2019: Energy Supply and Demand Projections to 2040 (EF2019), of December 2019.

As the UN Director General has stated, global climate change is an "existential threat to most life on the planet, including and especially humankind" (https://unfccc.int/news/un-secretary-general-calls-for-rapidly-scaled-up-climate-finance).

While the world is in a dire global climate (and oceans) emergency, with accelerating global surface warming, accelerating atmospheric CO2 concentration and accelerating ocean acidification, Canada is increasing fossil fuel production by a large amount.

For our future survival, global emissions MUST (and can) be put into a rapid and sustained decline from this year, 2020 (Figure 2).

> "On the brink of 2020, we now need to reduce emissions by 7.6 per cent every year from 2020 to 2030. If we do not, we will miss a closing moment in history to limit global warming to 1.5°C. If we do nothing beyond our current inadequate commitments to halt climate change, temperatures can be expected to rise 3.2°C above pre-industrial levels, with devastating effect" (UNEP, 10 things to know about the 2019 Gap Report).

To avoid global climate catastrophe, global emissions have to decline on an immediate basis (IPCC Reports and UN COP 25 opening speeches by H. Lee, IPCC Chair, and UN Secretary-General António Guterres).

Governments have known at least since 2011 that global emissions had to peak before 2020 and rapidly decline afterwards (UNEP 2011 Gap Report)

The UNEP 2019 GAP report confirms this.

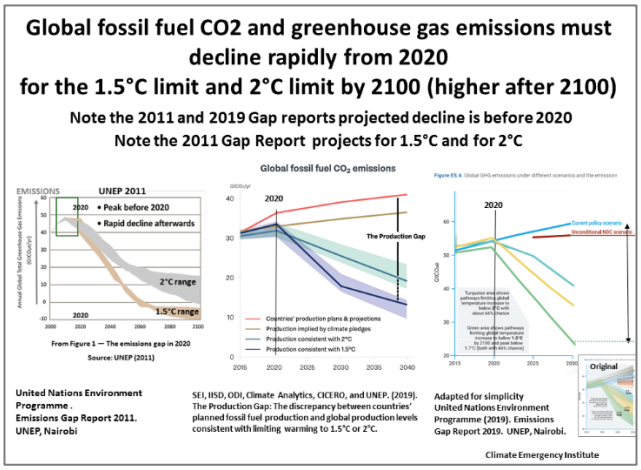


Figure 2

The Government of Canada, and specifically its natural resources department, knows this, from its own 2019 Canada climate change assessment.

> **"Only the low emission scenario (RCP2.6) is consistent with holding the increase in the global average temperature to below 2ºC above pre-industrial levels, in line with the temperature goal of the Paris Agreement. This scenario requires global emissions to peak almost immediately, with rapid and deep reductions thereafter" (Canada's Changing Climate, NRCAN 2019).**

Government support, permits and subsidies for the expanded extraction and distribution of more fossil fuels are predicted to lead to large increases in oil and natural production as documented in Canada's Energy Future 2019 report.

The Government of Canada's financial support to the Alberta tar sands and the Trans Mountain tar sands oil pipeline of 2018-2019 is the largest fossil fuel subsidy ever from any government.

To avoid global climate catastrophe, all governments must cease all support for the fossil fuel industries (including its economic response to the current virus pandemic) on an immediate basis, to at least allow the market to operate without distortion. Governments must charge large central fossil fuel polluters the full cost of their air, water and atmospheric GHG pollution.

The science is definite. Government energy policy must tax the fossil fuel industries the full costs of all their pollution and only provide support for the clean, renewable, non-combustion energy industries.

This statement is also in support of the (public and First Nations) opposition to fossil fuel extraction and distribution expansion projects, such as the Trans Mountain pipeline, tar sands oil production, and fossil fuel fracking in Canada. Note that the natural gas industry is a

source of CO2 emissions (gas combustion) and of methane (natural gas is mainly methane), making it a high greenhouse gas (GHG) industry, especially production by fracking as in western Canada.

The above governments are pursuing a destructive policy to our planet, the future of Humanity and most life on Earth, due to substantially increased fossil fuel production and distribution from Canada over the next 20 years.

The EF2019 Report predicts that by 2040 Canada's oil production will increase by nearly 50%, and natural gas will increase by over 30%.

THE BACKGROUND

To avoid a global temperature increase of 1.5°C and of 2°C by 2100, global emissions have to decline rapidly from 2020 (UNEP Gap Report 2019). The IPCC 2014 5th assessment and the IPCC 1.5°C Special Report show the same — and that global emissions must decline 50% by 2030 (IPCC 2018 1.5°C report). At the Madrid UN COP25, the IPCC Chair stressed that global emissions have to decline on an "immediate" basis: 2020" (https://www.youtube.com/watch?v=YxNNE-5mmek&t=4s).

Therefore any increase in fossil fuel production after 2020 from any major fossil fuel producer (i.e., Canada) contributes to a future of global climate catastrophe and a life not worth living for all the world's children and all future generations. Humanity literally has no future if fossil fuel producing governments do not immediately put their fossil fuel production into rapid decline.

Atmospheric CO2, methane and nitrous oxide are all accelerating higher. Atmospheric CO2 (mean) is now 413.25 ppm, the highest in 3-5 million years and increasing faster than ever, due to constant record high CO2 emissions, mainly from fossil fuel energy combustion.

In 2018, Canada was the world's fourth-largest petroleum and other liquid fuels producer and was a net exporter of oil (US Energy Information Administration, EIA, October 2019).

According to the October 2019 Carbon Brief Profile of Canada, Canada is the world's 10th largest emitter of greenhouse gases, with greenhouse gas emissions at 849m tonnes of CO2 equivalent (MtCO2e) in 2015. In 2015, Canada accounted for roughly 1.7% of global emissions that year and was the 10th highest emitting country — ahead of Mexico and just behind Germany. This is roughly twice the total emissions of the UK. Canada's per capita emissions exceed several of the other world top emitters.

The EF2019 Report claims that Canada is "making progress in transitioning towards a low carbon future." That is a most deadly deception. Our only future is a zero fossil fuel carbon future (IPCC 1.5°C Report). The EF2019 report states, "Oil and natural gas production grows steadily over the projection period." This increased fossil fuel production will increase greenhouse gas emissions from North America, as Canada is a major exporter of fossil fuels to the USA.

Furthermore, Climate Action Tracker rates Canada's national emissions target (NDC) as "insufficient," being incompatible with achieving the global target of holding warming to 1.5°C and to below 2°C by 2100. If all countries followed Canada's example, the global temperature increase by 2100 would be above 2°C up to 3°C by 2100, which is 2.8°C to 4.2°C by 2300 (IPCC 2014 AR5). These are temperature increases that civilization and humanity could not survive.

Presently, global CO2 emissions and atmospheric CO2 concentrations are tracking the worst-case scenario (RCP8.5). Canada's energy plans will help to keep the world on the worst-case scenario, which leads to a catastrophic 2°C warming by 2050.

At 2.0°C, most of Canada's food-producing area would by impacted by 10-20 days of temperature above 30°C, which is the temperature tolerance of crops, and at 2.2°C most of Canada's food-producing area would be affected by drought, ranging from dry to extremely dry, with the top productivity region at extremely dry (NRCAN, Canada's Changing Climate, 2019; NRCAN Drought January 2020). Above 1.5°C, food imports from the south (such as Mexico, California and the US Great Plains) would become unreliable to unavailable due to more severe climate change impacts.

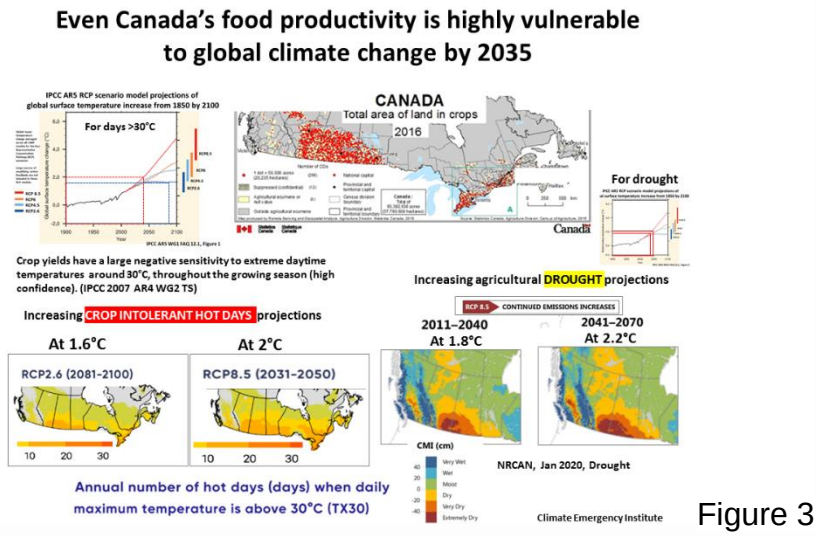


Figure 3

Moreover, 2°C is projected to be the feedback trigger for uncontrollable Hothouse Earth from enormous planetary sources of multiple inter-reinforcing amplifying feedback emissions (W. Steffen et al, Trajectories of the Earth System in the Anthropocene, PNAS, 2018).

This would be the end of the human race.

The EF2019 Report predicts, "**From 2018 to 2040, crude oil production grows by nearly 50%,** to around seven million barrels per day" and "**natural gas increases by over 30%,** to over 20 billion cubic feet per day."

Almost all the predicted increase in Canada's fossil fuel comes from the very worst polluting extraction of tar sands oil and fracked natural gas. Research is proving that fracked natural gas is no better than coal with respect to GHG emissions, because of inevitable fugitive methane emissions during production.

"Almost all of this growth comes from sources that were a small portion of production just a decade ago. In situ oil sands production leads crude oil growth. Natural gas production is led by growth from tight and shale resources" (EF2019 Report).

The world, and particularly Canada and its western provinces, has absolutely no need of fossil fuels for energy. Canada and western provinces have large sources of abundant clean renewable zero-combustion energy, far more than enough to replace all fossil fuel energy.

FUNDAMENTAL SCIENCE OF CO2 AND GREENHOUSE GAS (GHG) EMISSIONS

To stabilize the global temperature at 2°C and 1.5°C by 2100, global emissions of atmospheric CO2 and other "long lived" (in the atmosphere) GHGS must be reduced to "near zero" (Headline Statement, IPCC 2014 AR5).

By keeping global fossil fuel emissions on today's worst-case climate change scenario, governments are ensuring that these fossil fuel projects make the global climate change collapse of world agriculture, the world's great forests, the oceans (ocean heating, acidification and deoxygenation), civilization and the biosphere our future reality.

The physics of CO2 greenhouse gas global heating and ocean acidification alone makes this certain.

Note that policy makers cannot make the deceptive excuse of negative emissions in pursuing continued and more fossil fuels. Whatever degree of global climate change the world ends up with is irreversible. The Government of Canada, and specifically its natural resources department, knows this from its own 2019 Canada climate change assessment.

> NRCAN 2019, Canada's Changing Climate
> 3.4: Cumulative Carbon and Global Temperature Change
> "Global temperature change is effectively irreversible on multi-century timescales. This is because the total amount of carbon dioxide emitted over time is the main determinant of global temperature change and because carbon dioxide has a long (century-scale) lifetime in the atmosphere."

The world has no capacity of any consequence to remove any CO2 from the atmosphere. MIT estimates it would take about 30 years to develop an effective CO2 removal capacity. Global CO2 emissions have to decline rapidly NOW. In any case, CO2 removal will remain economically unfeasible so long as governments subsidize the fossil fuel industries and fail to charge the fossil fuel industry polluters (air and atmospheric GHG pollution) the full cost of their pollution (at least US$200/tonne).

This letter provides the climate change science that proves that fossil fuel production must be phased out starting immediately and fossil fuel pipelines must not be built, because they lead to the combustion of far more fossil fuels, the emission of more CO2, and the even faster acceleration of global surface heating and ocean acidification.

The Government of Canada is an aggressive promoter of more fossil fuel extraction and distribution in Canada. It has already handed over the world's largest one-time fossil fuel subsidy of $4.5 billion to force the Trans Mountain pipeline through, this in addition to the estimated average of $3 billion a year in fossil fuel subsidies. This is a most monstrous crime against all humanity and Life.

The world is in a GLOBAL CLIMATE & OCEANS EMERGENCY, and it is dire.

The Government of Canada has acknowledged the global climate emergency, but it is acting in total disregard.

Also, the government is not paying the slightest attention to the excellent 2019 Canadian climate change science assessment (Canada's Changing Climate), which shows Canada's public health and food productivity security to be highly vulnerable to global climate change, from which I quote here (below).

THE BACKGROUND TO CANADA'S POLICY OF PUSHING FOSSIL FUELS

Fossil fuel combustion is by far the largest industrial source of fossil fuel CO2 emissions, and also methane emissions. Natural gas is mainly methane, which emits CO2 when burned for energy. The emission of CO2 is by far the largest source of global heating (ocean heating and global surface warming) and global climate change. The emission of CO2 is the sole source of ocean-killing acidification.

This fossil fuel pushing policy of continued and increased fossil fuel expansion of extraction and distribution is a policy of insane global extinction — with respect to the future survival of Humanity and Life.

All adverse indicators of atmospheric greenhouse gas pollution are at record highs and accelerating higher (see below).

We are in the accelerating 6th mass extinction of life on Earth. While deforestation is the leading cause, it is happening in all regions (not just tropical forests), and global climate change is accelerating further.

For our survival (*the common future survival* of all Humanity and all Life), global emissions have to decline this year (2020). The 2020 deadline, for the 1.5°C survival limit and the old catastrophic 2°C target, is universally agreed by the science, most recently emphatically stated by the IPCC Chair, Dr. H. Lee at the Madrid COP 25 opening.

The Government of Canada's fossil fuel policy contributes to the present fossil fuel death sentence for the human race and most life. This applies presently particularly to the planned Trans Mountain oil pipeline, which the government has been determined to push through in order for the Canadian tar sands to be able to expand, increasing bitumen production with increased export routes.

Canada hands over billions of dollars a year in subsidies to the fossil fuel industry, and this has escalated under the Trudeau government. In December 2018, CBC published a massive oil subsidy tally of between $7.7 billion and $15 billion. This includes the world-record one-time pay out to the oil industry of $4.5 billion for a 50-year-old pipeline and the government's promise to the oil industry to pay for the new Trans Mountain pipeline. All this taxpayer money to bring down total planetary climate catastrophe on today's children!

Though the courts have approved this vast increase for the tar sands (among the world's worst), the government must, nevertheless, not allow it. Tar sands production has to be phased out fast, for our common future survival. Canada has much more than enough clean zero combustion renewable (everlasting) energy to replace all fossil fuel energy.

By its actions, it is clear that Canada's governments want global fossil fuel emissions to keep increasing, which is a global death sentence for our future.

AGRICULTURE Canada has major agricultural regions. Due to its temperature location, it has been thought that Canada would be relatively invulnerable to global climate change — this century at least. Current science reveals that this is not the case.

The 2019 Canada's Changing Climate report (CCC) shows that Canada's high food productivity and food security will be compromised by global climate change, by increasing maximum summer

temperatures, heat waves and drought. This assessment shows that Canada is highly vulnerable because its top producing regions are also the regions that will heat the fastest and be affected the most by drought (2019 Canada's Changing Climate). The temperature tolerance maximum for cereal crops is 30°C (known since 2007), which will be reached by higher global surface warming and heat waves. "Crop yields have a large negative sensitivity to extreme daytime temperatures around 30°C" (IPCC 2007 AR4 WG2.TS). Crop yields crash when temperature tolerance is exceeded, and the global warming when that would happen is irreversible ("warming is effectively irreversible," 2019 CCC).

"A warmer climate will intensify some weather extremes in the future. Extreme hot temperatures will become more frequent and more intense. This will increase the severity of heat-waves and contribute to increased drought. Drought projections (medium emission (RCP4.5) scenario [which is 2.4°C by 2100], showed that the frequency of severe-to-extreme drought conditions is expected to increase by the late 21st century for much of southern Canada, including southeast British Columbia, the prairies and Ontario" (CCC 2019).

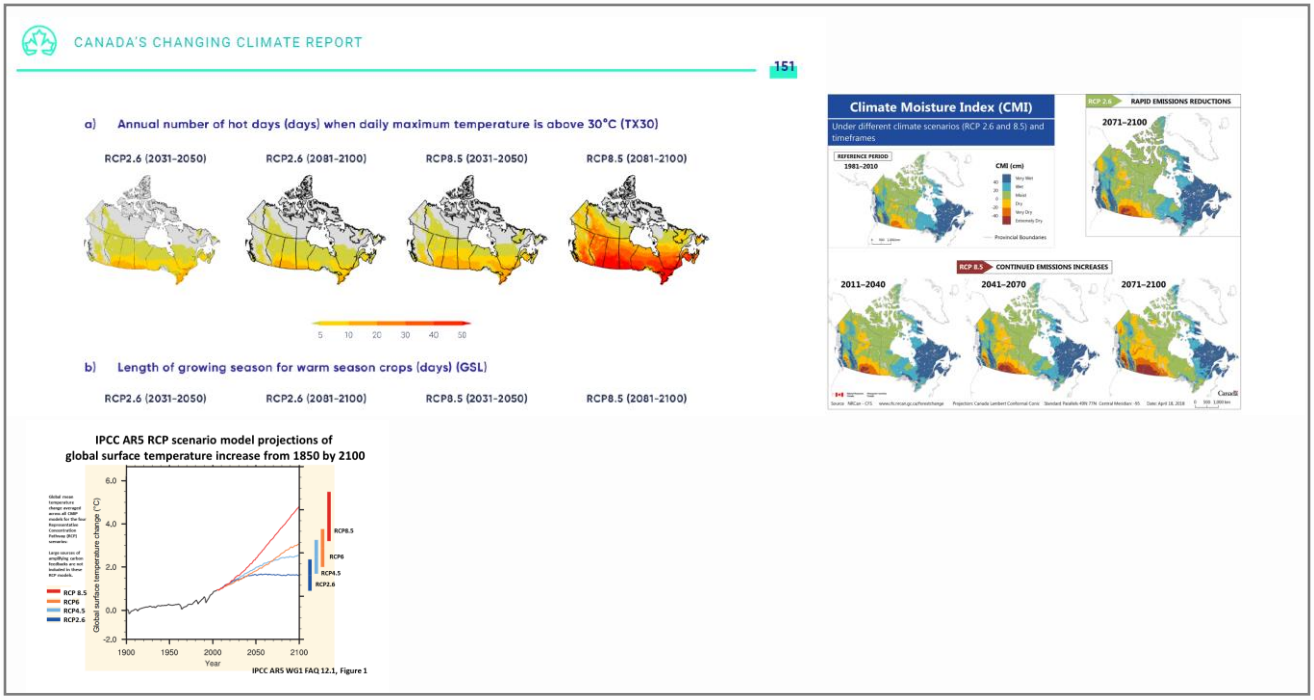


Figure 4

Crop productivity is adversely affected by many effects of global climate change. These include high degrees of summer warming, heat waves, drought, severe storms, extreme precipitation, floods, increased weeds, increased pests and pathogens, and combinations of impacts. Increased drought, extreme precipitation, and floods increase soil erosion. As warming increases these will increasingly outweigh benefits of a longer growing season, and of CO2 fertilization for some crops.

FISHERIES Also affected will be Canada's food fisheries. "**Ocean warming** and **loss of oxygen** will intensify with further emissions of all greenhouse gases, whereas **ocean acidification** will increase in response to additional carbon dioxide emissions. These changes threaten the health of marine ecosystems" (CCC 2019).

FORESTS Canada is renowned for its valuable forests. Forest fires are a source of additional CO2 (and methane) emissions, and contribute to temperature- and drought-driven forest dieback, already taking place. "**There has been a significant increase in annual area burned across Canada**. Increases in fire spread days and extreme values of the FWI (Forest Fire Weather Index) are

projected, with the largest changes in the western Prairies." "In the future, higher temperatures will contribute to an increased risk of **extreme fire weather** across much of Canada" (CCC 2019, Summary). The northern BC pine beetle forest kill is a massive global surface warming catastrophe that has killed over 730 million cubic meters, over 50% of B.C.'s merchantable pine volume.

WATER Even water security in Canada will be compromised by global climate change. "The seasonal availability of freshwater is changing, with an increased risk of water **supply shortages** in summer" (CCC 2019).

DROUGHT Areas of western Canada are already experiencing frequent and severe droughts. Scientists expect new areas across the country to be affected and drought to become even more frequent and severe. The consequences could have far-reaching impacts on Canada's forests. Drought is expected to become more frequent in several areas that are already relatively dry, such as the southern interior of British Columbia and the Prairie provinces. Some areas that have not previously experienced frequent drought are also expected to become drier in the future (Drought, Natural Resources Canada, January 2019).

The Government of Canada must halt all fossil fuel extraction and distribution projects and rapidly phase out the largest GHG polluting sources, replacing them with clean zero-combustion renewable energy.

No matter what climate-change-uninformed Canadian judges say, these pipelines would lead to huge increases in gas and oil combustion, so must not be built. When Canadian law supports the destruction of our Earth, it must give way to Indigenous customary law.

LATEST GHG POLLUTION DATA TRENDS

We are killing the planet we depend on for survival by constantly burning massive quantities of fossil fuels, accelerating global surface heating and ocean acidification.

ACCELERATING GLOBAL SURFACE HEATING

Recent reports (NASA GISS) on 2019 global surface warming report that warming is accelerating — and rapidly — over just the last decade.

That is because the rate of acceleration of atmospheric CO2 increased sharply over the last decade, due to the continuing increasing trend in emissions.

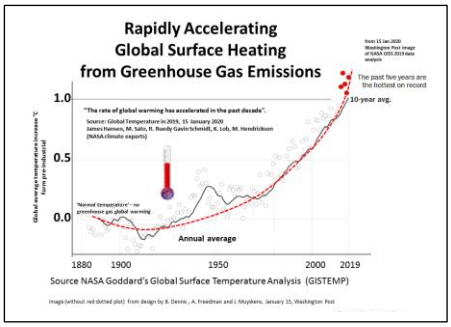


Figure 5

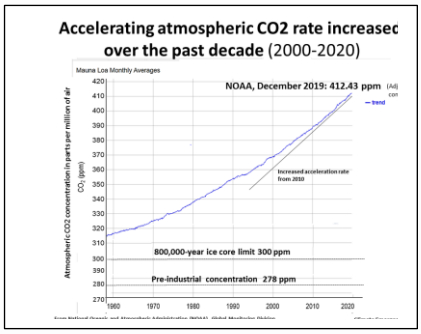
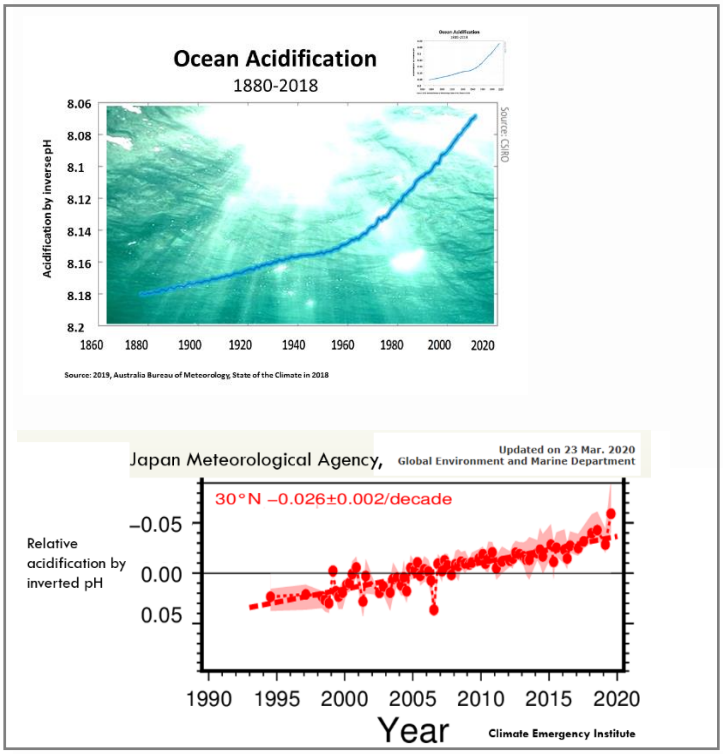


Figure 6

ACCELERATING OCEAN ACIDIFICATION Acidification of the west coast in California waters is increasing at a rate double the global average (E. B. Osborn, December 2019, Decadal Variability in Twentieth-Century Ocean Acidification in the California Current Ecosystem). Off the west coast of Oregon, ocean acidification is so severe that it is dissolving shells of young Dungeness crabs (N. Bednaršek, January 2020, Exoskeleton Dissolution with Mechanoreceptor Damage in Larval

Dungeness Crab Related to Severity of Present-Day Ocean Acidification Vertical Gradients). The Salish Sea off the southwest coast of British Columbia is a global acidification hotspot.



Fossil fuel CO2 emissions are causing accelerating ocean acidification

Latest data is from the Japan Meteorological Agency, March 2020

Figure 7

ICE SHEETS and SEA LEVEL RISE Global sea level rise is accelerating
Worst-Case Climate Change Scenario: Greenland and Antarctica Losing Ice 6x Faster Than Expected (SciTechDaily, 4 April 2020),

Life on Earth is being annihilated by land clearing and now by fossil fuel emissions (G. Ceballos et al, 2017, *Biological Annihilation via the Ongoing Sixth Mass Extinction Signaled by Vertebrate Population Losses and Declines*; G. Strona & C. Bradshaw, 2018, *Co-extinctions Annihilate Planetary Life During Extreme Environmental Change*).

We simply cannot survive more fossil fuel, extraction, distribution and combustion.

Latest atmospheric greenhouse gas pollution indicators (see: StateofOurClimate.com)
These are trending to biopshere collapse

- 2019 global surface temperature is 1.2°C (second highest) and accelerating
- Ocean heat 2019 record high 217 zettajoules and accelerating
- Ocean acidification record high pH 8.04 (record low) and accelerating
- Atmospheric CO2 (global) record high currently 411.2 ppm and accelerating (Mauna Loa 413.25 ppm) (1-million year ice core limit of CO2 is 300 ppm)
- Atmospheric methane (global) record high 1,886 ppb and accelerating (Mauna Loa 1,873 ppb) (800,000 year methane limit is 800 ppb)
- Atmospheric nitrous oxide (Mauna Loa) record high 332.8 and accelerating

Global atmospheric CO2 concentration is tracking the worst-case scenario (RCP8.5). It has never increased as fast as the past 5 years, a rate that is presently increasing sharply, and the rate of CO2 increase over the past few decades is unprecedented in the past 40 million years (WMO 2017).

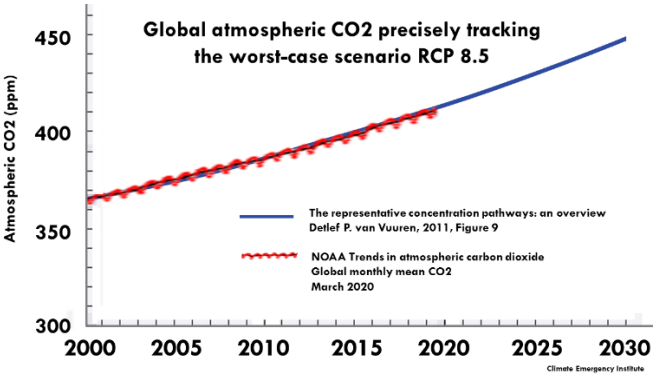


Figure 8

The rate of global atmospheric methane has shot up over the past 5 years, and since 2018 the rate of atmospheric decrease of carbon-13/carbon 12 has never been faster, indicating fossil fuel methane (i.e., the source of the increase in atmospheric methane is fossil fuels).

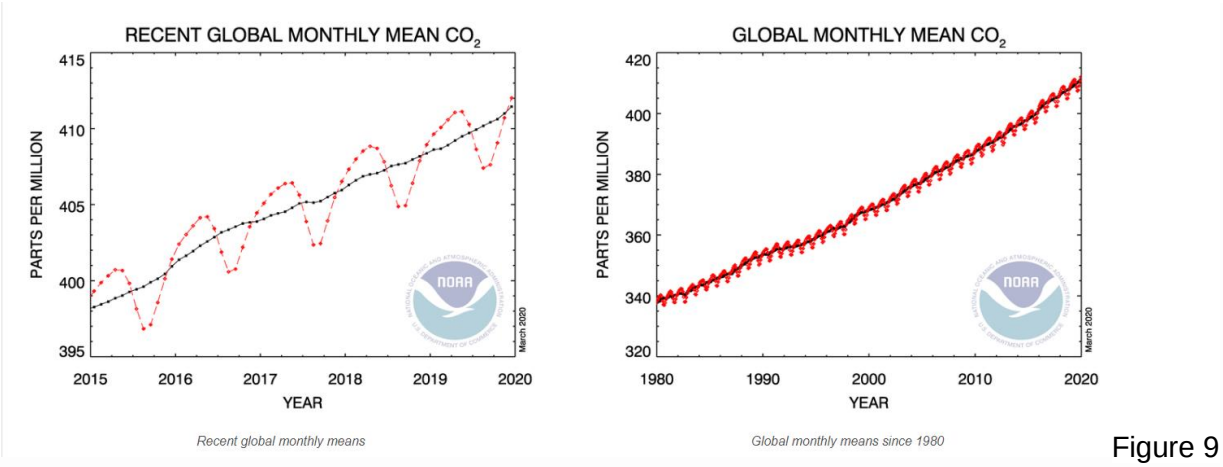


Figure 9

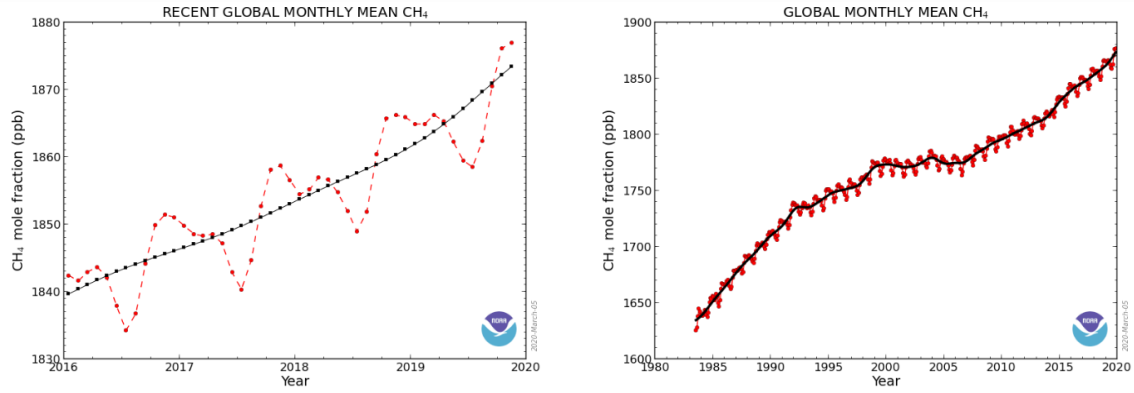


Figure 10

Worst of all, the rapidly heating Arctic (almost 3X the global average) has switched from a carbon sink to a carbon source (NOAA, Arctic Report Card, 2016 and 2019).

- Atmospheric CO2 concentration increased 47% since industrialization.
- Ocean acidification is at a 15 million year high and increasing at a rate unprecedented in the past 300 million years.
- Atmospheric methane has increased 160% (more than 2.5X higher).

More emissions mean faster acceleration, with higher degrees of surface heating, sooner. Heat waves will keep increasing in frequency, intensity and duration (IPCC 2014 AR5). There will be more and longer lasting intense forest fires, and more and longer droughts in dry regions. More emissions mean that accelerating ocean heating, acidification, and de-oxygenation will accelerate faster. This increase will affect BC and Canada. These apply now and from now on.

At this time, on any ethical basis, the permitting, pushing and subsidizing of fossil fuel expansions in extraction and distribution are unprecedented crimes by governments and Ministers, based at least on the clear intents of both the Public Trust Doctrine and Article 7 of The Canadian Charter of Rights and Freedoms ("Everyone has the right to life, liberty and security of the person and the right not to be deprived thereof except in accordance with the principles of fundamental justice"). It is now a crime against all humanity, because of today's extremely high and accelerating levels of atmospheric CO2 and methane pollution, and ocean heating, ocean acidification and ocean deoxygenation.

The survival of most life on Earth and of Humanity is now at an unprecedented great risk from continued CO2 and methane emissions. All government policy has to be directed at mitigating a world of now unavoidable and increasingly frequent and severe climate disruption disasters and catastrophes.

Yours truly,

Peter Carter
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IPCC Expert Reviewer (6th Assessment)
Reviewer for the 2019 World Scientists' Warning to Humanity climate emergency paper
Co-author, Unprecedented Crime: Climate Science Denial and Game Changers for Survival (2018)

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