Brief to the Government of Canada Concerning Fossil Fuel Subsidies 6 May 2022

To the Standing Committee on Environment and Sustainable Development

From Climate Emergency Institute

By Dr. Peter Carter (expert IPCC reviewer)

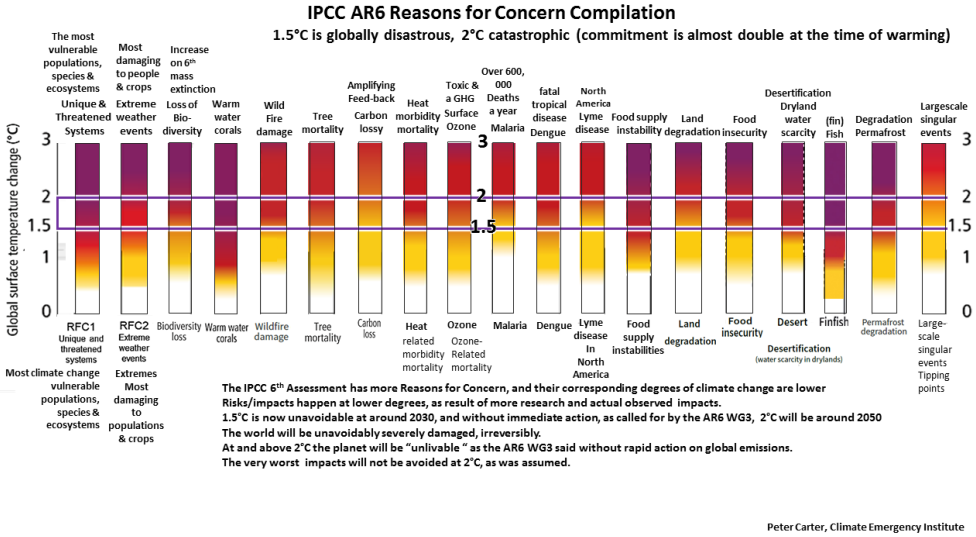
Dear committee members:

Congratulations on considering fossil fuel subsidies.

The rapidly deteriorating global climate emergency and a livable future for Humanity require the immediate termination of all fossil fuel subsidies.

Summary

Continuing to subsidize fossil fuels greatly increases the risk of multiple disastrous, catastrophic and irreversible climate change and ocean change impacts, making catastrophic 2°C by 2050 unavoidable and subsequently over 3°C this century (current policies: 3.2°C by 2100, IPCC AR6 WG3). 1.5°C is globally disastrous. Above 1.5°C, world food productivity is at risk and there is food supply instability (IPCC 2019 Land Report). By 3°C, all crops for all regions are in decline below baseline (IPCC AR5, AR6). A warming of 2°C is the threshold for multiple large amplifying feedbacks. Fossil fuel subsidies today therefore are a policy for biosphere collapse and an unlivable future.



It is obvious (2006 Stern Commission Economics of Climate Change, and has been confirmed by the 2022 IPCC AR6 WG3 on mitigation) that terminating all fossil fuel subsidies is a fundamental and essential climate change mitigation measure, and, according to the IPCC AR6, this needs to happen on an immediate priority basis.

The AR6 WG3 shows that global CO2 emissions decline immediately and rapidly for both the 1.5°C current limit and for 2°C (by 2100). At the opening of the 2021 UN Glasgow COP26, the Chair of the IPCC, Hoesung Lee stated: "Global warming of 1.5°C and 2°C will be exceeded during this century unless immediate, rapid, and large-scale reductions in greenhouse gas emissions, especially of carbon dioxide and methane, occur in the nearest future."

Current Global CO2 emissions have to be cut about 50% by 2030 for the 1.5°C limit and about 30% by 2030 for 2°C (IPCC AR6 WG3). The IPCC 2018 1.5°C Report showed that 1.5°C is globally disastrous and at 2°C, globally

catastrophic. 2°C is the threshold for all amplifying feedbacks to be triggered, which leads to totally unlivable hot house Earth (Trajectories of the Earth System in the Anthropocene Supplement, Will Steffen et al, 2018).

As a livable future cannot be secured without the immediate rapid decline of CO2 emissions (IPCC AR6 WG3), it is now no exaggeration to say there can be no livable future without the immediate termination of fossil fuel subsidies, by all nations.

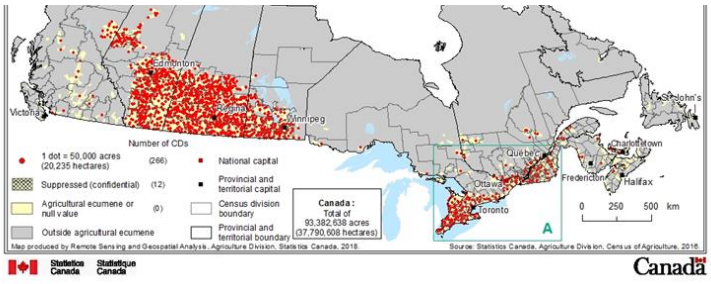
Termination of fossil fuel subsidies is also required for mitigation of global air pollution deaths that amount to over 10 million people a year (Global mortality from outdoor fine particle pollution generated by fossil fuel combustion, Karn Vohra et al, April 2021).

The globally disastrous 1.5°C is now unavoidable at around 2030 (IPCC AR6 WG1). If there is no rapid decline of global emissions, 2°C will also be unavoidable by 2050 (IPCC AR6).

Staying on current policies condemns Humanity to a world-ending 3.2°C by 2100 (IPCC AR6 WG3), and over 4°C by 2300.

The 2 April 2019 Government of Canada Climate Change Assessment, Canada's Changing Climate Report, (Natural Resources Canada) showed Canada's forests and agriculture are vulnerable to global warming of 1.5°C and 2°C. "Canada's climate has warmed and will warm further in the future, driven by human influence. Both past and future warming in Canada is, on average, about double the magnitude of global warming. Northern Canada has warmed and will continue to warm at even more than double the global rate. […] Canada's climate will warm further, with warming projected in all seasons. Warming globally and for Canada will be similar under all plausible emission pathways over the next two decades. However, efforts to reduce greenhouse gas emissions, beginning in the next two decades and continuing thereafter, will have an increasing impact on the amount of additional warming beyond this time frame. Country-wide annual average temperature projections for the late century (2081–2100) range from an increase of 1.8°C for a low emission scenario (RCP2.6) to 6.3°C for a high emission scenario (RCP8.5), compared to the reference period 1986–2005.

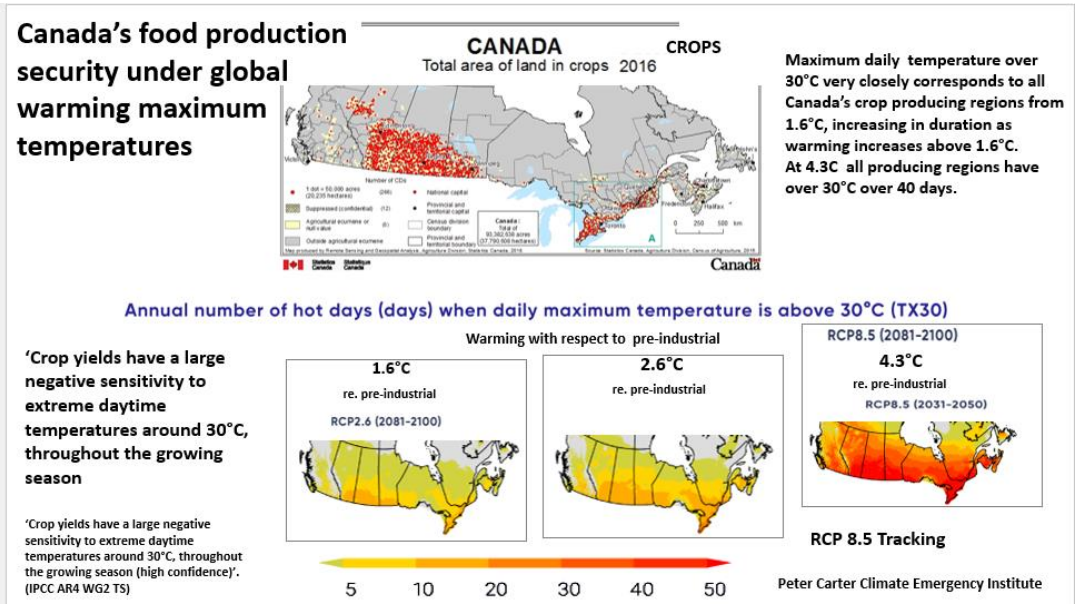
"Only the low emission scenario (RCP2.6) is consistent with holding the increase in the global average temperature to below 2°C above pre-industrial levels, in line with the temperature goal of the Paris Agreement. This scenario requires global emissions to peak almost immediately, with rapid and deep reductions thereafter. Canada is warming at double the global rate. The location of Canada's crops [is] such that the projected maximum surface warming, extreme heat and drought selectively impact the food producing regions."



Under already committed unavoidable global climate change, the NRCAN climate change report and a NRCAN drought page show Canada's forests and agriculture regions will be impacted adversely, which will increase in extent and severity with degree of global temperature increase and climate change.

HEAT

Heat extremes under a global warming of 1.6°C and 2.6°C will impact adversely on Canada's best food producing regions (Canada's Changing Climate).



DROUGHT

From NRCAN

"Drought is expected to become more frequent and severe in parts of Canada."

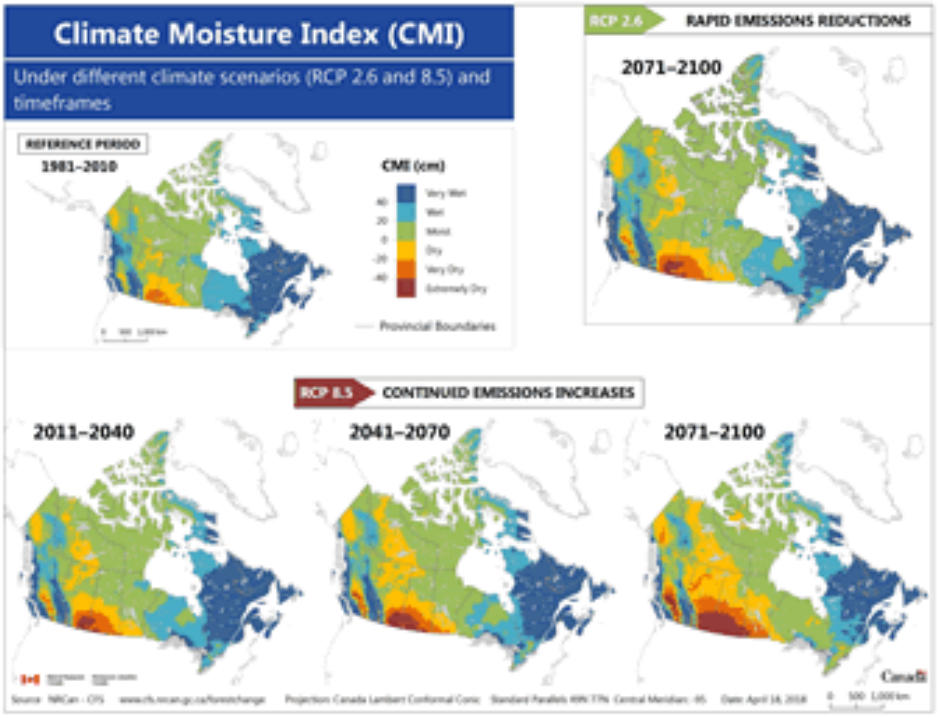
https://www.nrcan.gc.ca/climate-change/impacts-adaptations/climate-change-impacts-forests/forest-change-indicators/drought/17772

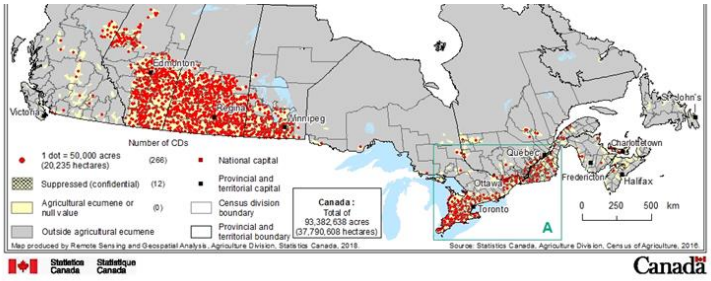
"Increases in drought could have far-reaching impacts on Canada's forests, both directly, through impacts on tree growth and survival, and indirectly, through drought-related increases in the frequency of disturbances such as fire and insect outbreaks.

"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.

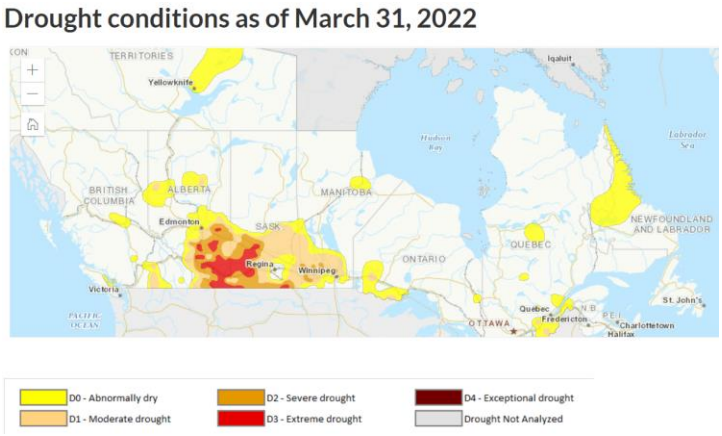
"Some areas that have not previously experienced frequent drought are also expected to become drier in the future. The current prairie conditions are expected to spread northwards into areas of the southern boreal forest. Such a shift would lead to significant changes in forest ecosystems."

Such increases in drought would adversely impact on Canada's best food-producing regions.





Canada's best south-central food-producing region is suffering a severe prolonged drought, with adverse impact on crops.



Canada Drought Monitor

It has been universally determined over many years that there is no justification for fossil fuel subsidies, as they are damaging with respect to economy, social equity and environment (https://www.climateemergencyinstitute.com/subsidies_ghg_polluting).

Energy subsidies are expensive, they damage the climate, and they disproportionately benefit the well-off. Their reduction can encourage energy efficiency, increase the attractiveness of renewable energy, and allow more resources to flow to poor people and to investments in cleaner power (Climate Change World Bank Group, An Evaluation of World Bank Win-Win Energy Policy Reforms, 2009). In 2014 the World Economic Forum published an article, Why We Need to Abolish Fossil Fuel Subsidies. The IMF has determined that total world fossil fuel subsidies amount to a staggering $5.9 trillion USD/year.

Fossil fuels are the main source of CO2 emissions and a major source of methane emissions (natural gas industry). CO2 emissions contribute over 60% of global warming and 100% of ocean acidification. Methane emissions contribute over 25% of global warming. The climate and oceans cannot be stabilized without net zero CO2 emission, which can only be achieved by near-zero CO2 emissions (IPCC 2014 AR5, IPCC 2018 1.5°C Report).

The very survival of Humanity is now in question due to accelerating global climate change driven mainly by still increasing fossil fuel greenhouse gas emissions.

2021 fossil fuel CO2 emissions were a record high and a record annual increase (International Energy Agency, April 2022). Methane emissions are at a record high and increasing fast (Global Carbon Project, 2020).

Atmospheric CO2 at 418 ppm is the highest in 3 million years (IPCC AR6 WG1) and it is increasing at a rate unpresented in the 40-million-year paleo-climate record (WMO, 2017). Ocean acidification is also the highest in 3 million years and increasing at a rate not seen for 300 million years. Cumulative CO2 emissions are tracking the very worst-case scenario (RCP8.5 tracks cumulative CO2 emissions, C. R. Schwalm, 2020).

Atmospheric methane is tracking close to the worst-case scenario (Global Carbon Project Methane Budget, 2020) and at almost 1900 ppb is 160% higher than its preindustrial level and increasing at an accelerating rate, which is contributed to substantially now by fossil fuel methane emissions.

Amplifying feedbacks are already operant. The thawing Arctic permafrost is emitting methane, CO2 and nitrous oxide. The Arctic carbon sink has switched to source (NOAA Arctic Report Card 2016, confirmed 2019).

To make a terrible situation even worse, the land and ocean carbon sinks are losing efficiency. There is increased tree mortality and forest die back due to temperature and drought stress on all vegetated continents (IPCC 2014 AR5 WG2, AR6 WG1). The land carbon sink has lost 15% efficiency in the last decade and the ocean 5% (Global Carbon Project 2021).

There is no time for CO2 removal to delay globally disastrous 1.5°C at around 2030, nor 2°C by 2050, if global emissions are not put into rapid decline.

At the opening of the 2021 UN Glasgow COP26, the Executive Secretary of the UNFCCC Secretariat, Patricia Espinosa, stated the following: “We either choose to achieve rapid and large scale reductions of emissions or accept that Humanity faces a bleak future on this planet. We either choose to recognize that business as usual isn’t worth the devastating price … or we accept that we’re investing in our own extinction.”

The evidence is overwhelming. It is an imperative life-or-death matter for the future of Humanity that all countries terminate fossil fuel subsidies on an immediate basis. Not to do so now will, at best, be morally unconscionable and will surely be seen by the generation of today’s children as an unprecedented crime against all Humanity.

On the more positive side, as clean renewable energy is now cost competitive with fossil fuel energy, terminating fossil fuel subsidies could swing the market to replace fossil fuel energy and so possibly rescue the future.