

Climate Crisis Urgency

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1. Overview

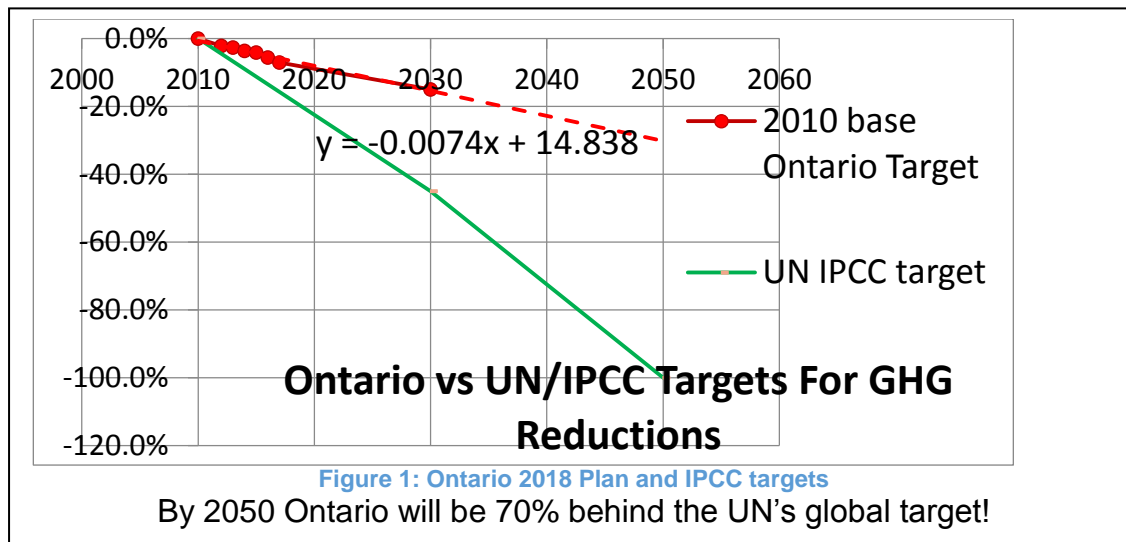
I am personally very concerned about the Climate Crisis and the lack of urgency that is being expressed.

The United Nations released its latest targets and warning in the fall of 2018. The warnings continue to persist into 2019, dire warnings that we must make dramatic changes within the next 10 years to avoid severe consequences.

The targets are now set to:

45% reduction by 2030 over 2010 levels

100% reduction by 2050 over 2010 levels.



The Chart shows how far off Ontario will be, and Canada will be no different.

This is what the UN/IPCC PRESS RELEASE, Oct 2018, said:

“The report finds that limiting global warming to 1.5°C would require “rapid and far-reaching” transitions in land, energy, industry, buildings, transport, and cities. Global net human-caused emissions of carbon dioxide (CO₂) would need to fall by about 45

percent from 2010 levels by 2030, reaching 'net zero' around 2050. This means that any remaining emissions would need to be balanced by removing CO₂ from the air."¹

The United Nations is telling us we must act now to reduce GHG emissions.

2. *The Evidence*

What is the evidence that we may be close to the end of our planet's ability to support life as we know it? Greta Thunberg berated the world leaders about their lack of action. She is correct.

Canada is one of the worst offenders. I personally believe that there are many individuals who want to do more but are frustrated by our blind leaders. Since 1990 Canada has gone from 600 million tonnes/yr emissions to over 710 million tonnes/yr.

On average, Canadians emit about 22,000 Tonnes/yr of GHG's. This is higher per capita than any other G20 nation. We are a poor leader/example to nations who now want to burn fossil fuels and enjoy some of the prosperity the first world nations have had.

Both Liberal and Conservative governments over this period, have the 'talk' but insufficient action. They have failed Canadians repeatedly. They do not deserve another chance.

We have blinders on and our avarice for wealth out-paces our desire to save the planet. Canadian oil and gas exports account for over 10% of the world's consumption. When burned, these fossil fuels create more GHG's. We are supposed to reduce the burning of fossil fuels. Instead, we buy a pipeline so we can increase Canada's contribution to fossil fuels and GHGs. We cannot continue on this path.

Apparently, Canada's desire for profit outweighs our desire to save the planet. As Greta points out, all the nations are prepared to mirror Canada in preferring economics over survival.

We are addicted to oil and gas profits to the exclusion of our own health and that of the planet.

3. *The Stats*

There are several indicators on the problems we have. Consider these below.

¹ <https://www.neidrya.com/blogosphere/ipcc-press-release-8-october-2018-summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-15c-approved-by-governments>

3rd paragraph

Since 1979 arctic sea ice has decreased by 70%. This is a dramatic statistic. That much ice is not a short term event. The oceans must be warming for that to happen. It is well known that warmer oceans also mean more severe hurricanes that draw their energy from warm waters. We can expect more cities like New Orleans to be devastated with repair costs into the billions as well as loss of life (The final death toll was at 1,836).

“An estimated 80% of **New Orleans** was under water, up to 20 ft deep in places. **Hurricane Katrina caused \$81 billion in property damages**, but it is estimated that the total economic impact in Louisiana and Mississippi may exceed \$150 billion, earning the title of costliest **hurricane** ever in US history.”² Repair of environmental damage is very costly. The pipeline has a cost of \$4.5 billion. Do we really want to risk this against the probable costs to recover from a disaster?

But there is a lot more. Snow and ice reflect the sun's rays back into space. As the ice retreats, more dark surfaces are exposed so that more of the sun's energy stays on Earth heating the planet more. More heat means more melting ice, and then more heat is retained on earth, not reflected. This is a positive feedback loop. The danger is that the loop will get to the point where it cannot be stopped. This is called thermal runaway. But there is more.

As oceans warm up, they release more dissolved CO₂. It is like heating up a can of pop forcing out the CO₂ into the atmosphere. This increases the green house effect so that more heat is trapped on the Earth. The more heat, the warmer the Oceans and the more CO₂ is released from the Oceans. Again, positive feedback.

The melting snow and ice in Canada's north exposes more of our frozen soil, the permafrost. Permafrost contains methane gas, which has an equivalent impact that is 25 times more than CO₂ per molecule. Another very serious positive feedback.

As the oceans warm up, they also expand. This is because water has its highest density at 4°C. While water density in a glass does not perceptively change with small increases in temperature, in the oceans a +1°C change has a massive impact. Adding to ocean level rise is the melting of ice on land, notably the Greenland ice sheet and Antarctica. Estimates suggest a 10m rise is most likely, a 20m rise is possible. A 70m rise is the maximum if all ice on land melts.

At the likely rise height many world cities will be inundated. Most of Florida will go as will Long Island, NY, and much of PEI. A great deal of the US and Canadian eastern seaboard will go under. Ocean rise will also mean the rivers that flow into them will rise by the same amount. This includes the St. Lawrence, Lake Ontario and the three Toronto rivers.

² Google summary from <https://www.dosomething.org/us/facts/11-facts-about-hurricane-katrina>

How fast will this happen? It is difficult to be certain but we do know that positive feedback will make it happen faster - faster than we are ready for.

4. Canada's Forests and Planting More Trees

“Canada's forests actually emit more carbon than they absorb — despite what you've heard on Facebook” ³

“When you add up both the absorption and emission, Canada's forests haven't been a net carbon sink since 2001. Due largely to forest fires and insect infestations, the trees have actually added to our country's greenhouse gas emissions for each of the past 15 years on record.”

This information is rather disturbing. Reading between the lines, this tells us that due to global warming, we have new invasive species attacking our forests causing faster decay and creating GHGs. The drought conditions that are also an effect of global warming, mean more forest fires that again are a source of GHGs. In essence this is giving us a signal regarding where the forests are with respect to positive feedback and GHG emissions.

It is too late to simply plant more trees! It tells us that our forests are into the tipping point of no-return on the positive feedback loop. There have entered the thermal run-away condition.

Once new diseases and insects attack our trees how do we stop them? How do we impede forest fires with more episodes of drought? As global temperatures rise of both these attacks on our forests will get worse. Planting more trees in our forests becomes a questionable remedy to remove CO₂ (GHG) from the atmosphere. Indeed, the research suggests that more trees in our managed forests will make it worse. **And this is the Liberal plan to address GHG emissions.**

Extremes of temperatures and weather events have been and will continue to be more frequent. Last year, California had both floods and droughts. Neither condition is conducive to growing food. Ontario imports a lot of its food from California, so these events impact us directly.

³Source: <https://www.cbc.ca/news/canada/calgary/canada-forests-carbon-sink-or-source-1.5011490>

5. Ocean Dead Zones – a compounding issue

“In March 2004, when the recently established [UN Environment Programme](#) published its first [Global Environment Outlook Year Book](#) (GEO Year Book 2003), it reported 146 dead zones in the world's oceans where [marine life](#) could not be supported due to depleted oxygen levels. Some of these were as small as a square kilometre (0.4 mi²), but the largest dead zone covered 70,000 square kilometres (27,000 mi²). A 2008 study counted 405 dead zones worldwide.”⁴

“The Gulf could see one of the largest dead zones in history this year”⁵

These quotes show another disturbing trend happening in our Oceans. Dead zones are areas where the Oxygen levels have dropped so low that sea life cannot survive. All aquatic life, including birds that feed on them, die. Our Oceans are a crucial component of the human food chain. The dead zones are related to our polluting of the Oceans, with nitrogen fertilizers a major culprit. While this phenomenon is not directly related to GHGs, it does reflect humanity's improper management of our Eco system and we will pay the price.

6. Summary/Conclusions

Our globe is showing severe cracks in the eco-sphere yet our politicians are not acting quick enough. We have a crisis, We have an emergency crisis! Our hand to mouth management of economies and the environment leaves us devoid of long range planning. It is the equivalent of eating the seed stock for next year's crops. While we may survive today, we condemn ourselves and our children to doom in the near future.

Science and engineering do have the ability to solve our environmental problems but we will never get to use them if we do not create the political will to act, and to act now.

Time is running out faster than we think.

Sincerely,



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⁴ [https://en.wikipedia.org/wiki/Dead_zone_\(ecology\)](https://en.wikipedia.org/wiki/Dead_zone_(ecology))

⁵ <https://www.cnn.com/2019/06/10/health/gulf-dead-zone-study-climate-scni/index.html>

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