Your submission to Zero Carbon Bill

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Submitter Type: Individual

Clause
1. What process should the Government use to set a new emissions reduction target in legislation?
Position
The Government sets a 2050 target in legislation now
Notes
I strongly support the immediate creation of a Zero Carbon Act with a target date of 2040. 2050 is an arbitary date with no great climate significance. It has been estimated that if greenhouse gas emissions continue at there present rate the Earth's climate will cross the danger threshold by 2047.

Clause
2. If the Government sets a 2050 target now, which is the best target for New Zealand?
Position
Net Zero Long-Lived Gases and Stabilised Short-Lived Gases - Long-lived gases to net zero by 2050 while also stabilising short-lived gases
Notes
2. The Sun's thermonuclear reaction creates the stellar light and heat of our Solar system. Much of the radiant energy received by the Earth (235W/m2) is transmitted to the Earths surface (70%) mostly as visible light and heat (the main drivers of the Earth's biosphere). Some of the infra red radiation (heat) is retransmitted back. Much of this is trapped in the lower atmosphere providing a positive feedback loop keeping the Earth's surface warmed to an average of 14oC. Only some gases and molecules in the atmosphere are capable of retaining and emitting thermal infra red radiation. These are known as green house gases (GHG). The major atmosphere gases of Nitrogen N2 and Oxygen O2 are almost totally unaffected by infra red radiation. However the presence of small quantities of GHG are the drivers affecting the Earth's climate. The main GHG's are water vapour, carbon dioxide CO2, methane CH4, nitrous oxide N2O and ozone O3. Plus minor manmade aerosol such as Chlorofluorocarbons CFC and hydroflurocarbons HCFC. Greenhouse Gases Concentration in Direct Contribution the Atmosphere to Greenhouse effect ppm % Water Vapour (H2O) 10 to 50,000 30 - 72% Carbon dioxide (CO2) 400 9 - 26% Methane (CH4) 1.8 4 - 9% Ozone (O3) 2 - 8 (90% is in stratosphere) 3 - 7% Water vapour accounts for the largest percentage of GHG effect. 36 - 66% under clear skies ad 66 - 85% under cloudy skies. (Clouds contribute to about 25% to the greenhouse effect). Water vapour has a short residence time in the atmosphere (9days) and its concenration fluctuates regionally. Water vapour responds to and amplifies GHG warming. As warm air holds more moisture than cold air its warming potential is greater. Warming associated with an increase in other GHGs will result in further warming by the water vapour, amplifying the increase in temperature. Human activity has little direct affect on water vapour in the atmosphere except on a local scale eg irrigation. It has been the human induced increase in the other GHGs that are the cause in the rise of Earth's temperature by 1oC. Greenhouse Gas Atmosphere Atmosphere %Increase Increase pre 1750 Recent 2012 since 1750 radiative forcing concentration cocentration W/m2 Carbondioxide CO2 280ppm 395ppm 41% 1.88 Methane CH4 700ppb 1760 - 1890ppb 150-170% 0.49 Nitrous oxide N2O 270ppb 326-324ppb 20% 0.17 Ozone(troposphere) 237ppb 337ppb 42% 0.4 Since the beginning of human industrialisation (c1750) atmosphereic concentration of GHG have risen enormously. The vast majority of this anthropogenic emissions has come from the combustion of fossil fuels principally coal, oil, and natural gas. Carbon dioxide is by far the GHG that has increase the most. CO2 s a small but significant part the the atmosphereic gases. It has for millenia been part of the biospheric Carbon cycle and is intimately linked to water, oxygen , hydrogen and nitrogen cycles. CO2 is a potent GHG as its strong vibrational absorption band is very close to the peak of thermal infra red radiation. This effectively insulates the lower atmosphere keeping in the heat. CO2 has a variable atmosphereic life 30 - 95years. Although half of the CO2 emmitted is removed fom the atmosphere within a century in the ocean, soil, biosphere and geological sinks, about 20% remains in the atmosphere for thousands of years. Because of its relatively high concentration in the atmosphere compared to other GHGs, and long life in the atmosphere aside from water vapour it is the strongest driver of the earth's greenhouse effect. CO2 is the base line for the measurement of other greenhouse gases global warming potential (GWP). Globally CO2 is increasing at a rate of 3million tonnes/yr. Carbon dioxide CO is also a GHG but is present in very minute amounts. It is largely produced by the burning of fossil fuels. It absorbs infra red radition at a lower frequency away from the thermal peak and as such has a lower direct GWP. However CO oxidise with hydroxyl ions OH to form CO2. The summation of these effects makes CO three time more effective at capturing heat than CO2. The other carbon GHG in the atmosphere is methane CH4. It is a natural compound emmited from wetlands melting permafrost, animal enteric fermentation and rice cultivation (biological methane). Methane as a GHG has an 84% stronger radiant efficency than equivalent mass of CO2 over 20 year. However it is present in much smaller concentrations in the atmosphere and has a short atmospheric lifetime 12 +-3yrs. Thus the total radiative effect of methane contributes to a small portion of the total GHG radiative effect. Methane's potency as a GHG, not only lies in its direct radiative effect but it also has an indirect effect. Methane oxidies with a hydroxyl ion OH to produce CO2 and water and also ozone. It competes with CO for OH ions in the atmosphere. The removal of OH ions by oxidation leads to fewer OH ions and increases the atmosphere lifetime of methane. Thus increasing the overall radiative effect. Methane also has a far reaching effect in the atmosphere. Methane oxidation releases water vapour high into the stratosphere. The statrosphere is normally dry and it is the oxidising of methane that is the major source of water here. Water in the stratosphere has increased dramatically. The could cause dramatic long term effects in the Earth's climate. Non biological sources of methane come from natural gas leaks, leaks in fuel

systems, gas leaks from drilling, old oil wells and fracking (Taranaki). Methane has increased dramatically not only from fossil fuels production but intensification of agriculture and farming (increased herd numbers). Methane is the largest source of GHG emissions in New Zealand. An unknown quantity of bio methane emissions is coming from melting permafrost (result of global temperature rise). Further releases could be devasting to the Earth's climate. Only stopping further increases in global temperature could slow this. Aside from the carbon based GHGs Nitrous oxide is a potent GHG. It had increased significantly due to human industrialisation and instensification of agriculature and farming, and huge inputs of artificial Nitrogenous fertilisers. N2O is 264 times more effective at entrapping heat than CO2 in the Atmosphere. It also has a longer lifetime 121yrs in the atmosphere. Nitrogen is the essential building block of amino acids, proteins, an DNA. In the biosphere it is cycled through the great biospheric nitrogen cycle. However human itensification of agriculture and farming and huge inputs in artificial N2 fertilisers has altered this balance. Greenhouse gas lifetime Glogal Warming Potential years 20yrs 100yrs 500ys Carbon dioxide CO2 30-95 1 1 1 Methane CH4 12 84 28 7.6 Nitrous ocide N2O 121 264 265 153 A suite of man made aerosols are also potent GHG They are present in very small quantites but have extremely high GWP and remain in the atmosphere for thousands of years. (Chlorofluorocarbon CFC, Hygrochlorocarbon, Halons, Halocarbonsulfur hexafluoride and carbon tetrachloride to name a few) Due to the scientific evidence given above if the Government set a 2040 target now the best target for New Zealand is Net Zero long-lived greenhouse gases and dramatically reducing short lived greenhouse gases. Long lived greenhouse gases from fossil fuels (including non biological methane) and man made aerosols to zero by 2040 while dramatically reducing short lived gases including biological methane. (The word stabilising is not used as it is unknown at what level the GHG will be stabilised at)

Clause
3. How should New Zealand meet its targets?
Position
Domestic emissions reductions only (including from new forest planting)
Notes
I am against using emission reductions from overseas international carbon units. This perferred creative accounting system of offset emissions by carbon credits sinks has allowed New Zealand not to put in place real action to reduce carbon emissions. In fact carbon emissions have increased by 20% above the 1990 levels. There is a risk of relying heavily on sequestration by forestry as a cheap plentiful mitigation option. Each tonne of emissions offset by forestry is a tonne not reduced at the source, Focus should be on making lasting reductions in gross emissions. At present New Zealand has a large carbon sink in forestry but by 2025 this will be substantially reduced as the forests reach harvestable age. Relying on sequestration is also risky as the forests may not be replanted, disease, pests, natural disasters (storms droughts) could decimate the forests.

Clause
4. Should the Zero Carbon Bill allow the 2050 target to be revised if circumstances change?
Position
No
Notes
NO! If you have a set time it must be adhered to. Giving an escape clause not to fore fill obligations will allow Governmets to keep reneging. Allowing serious climate change to continue. Oligations not met could be carried on ad infinatum. Once the bill has been past there is no obligations for a new Government not the change the targets (This is wrong)

Clause
5. The Government proposes that three emissions budgets of five years each (i.e. covering the next 15 years) be in place at any given time. Do you agree with this proposal?
Position
Yes
Notes

Clause
6. Should the Government be able to alter the last emissions budget (i.e. furthest into the future)?
Position
No - emissions budgets should not be able to be changed
Notes

Clause
7. Should the Government have the ability to review and adjust the second emissions budget within a specific range under exceptional circumstances? See p36 Our Climate Your Say
Position
No
Notes

Clause
8. Do you agree with the considerations we propose that the Government and the Climate Change Commission take into account when advising on and setting budgets? See p44 Our Climate Your Say
Position
Yes

Notes

Clause
9. Should the Zero Carbon Bill require Governments to set out plans within a certain timeframe to achieve the emissions budgets?
Position
Yes
Notes

Clause
10. What are the most important issues for the Government to consider in setting plans to meet budgets? For example, who do we need to work with, what else needs to be considered?
Notes
NO! If you have a set time it must be adhered to. Giving an escape clause not to fore fill obligations will allow Governmets to keep reneging. Allowing serious climate change to continue. Oligations not met could be carried on ad infinatum. Once the bill has been past there is no obligations for a new Government not the change the targets (This is wrong) How GHG emissions contribute to Global warming and the Earth's Climate, and what the main GHG contributors are is vital to our understanding. To find meaningul ways of reducing these emissions we need toknow where they are coming from, the sources. Focus should be on making lasting reductions in gross emissions at the source and prioritising reducing the major contributors. The main sources of GHG emission due to combustion of fossil fuel sources. Liquid fuels (gasoline, fuel oil) 36% Solid fuel (coal) 35% Gaseous fuel (Natural gas) 20% Cement production 3% Flaring of gs (wells and industry) - 1% Non fuel hydrocarbons - 1% Bunker fuels 4% In New Zealand GHG emission sources are different in economic sectors form overseas. Here in New Zealand agriculture especially farming account for the largest share of GHG emissions 47%. Energy sector excluding transport accounts for nearly 1/4 of the GHG emission largely for the burning of fossil fuels. Transport accounts for almost 1/5 of the total emission and has been where the greatest increase in emissions have occured. All sectors except waste have experienced large increases in emissions. Sector %2012 total emissions % emission increase since 1990 Transport 19% 40% Agriculture 47% 28% Industrial processes 7% 14% Waste 3% 0% Energy (excluding transport) 24% 18% Agriculture is the Biggest GHG emitter in NZ. This is largely from enteric fermenation and the release of methane(43%) and land use N20(13%). Dairying has intensified, with increased herd numbers, change in land use with large scale irrigation systems and more farms have been converted to dairying. Huge inputs of artificial nitrogenous fertilisers are used. This is the main cause of N20 GHG increases. To address these issues changes need to be made in the agricultural sector especially Dairying. Shift to more sustainable and appropriate land practises without the need for irrigation, reduced herd numbers and lower nitrogen fertiliser usage. Possible changes in animal diet, removal of animals of wet pasture and use of sustainable organic products such as biochar that have the ability to sequestrate excess nurtients. The soil is a major Carbon sink. 80% of the total terrestrial carbon is found in the soil mostly in organic components. Humus is especially inportant as it is highly recalcitrant, resistant to decomposition and leads to long term carbon sequestration in the soil. The soil carbon pool 2500GT is 3 times larger than the atmospheric pool 800GT. Only the ocean has a larger carbon pool 38400GT. Depletion of soil organic carbon has exacerbated Global Climate change. To have a meaningful Zero Carbon Act, polices must include the importance of improved land management practices, increasing soil organic carbon, reducing tillage or having not tillage, erosion control, reafforestation and creation of wetlands. Transport is a large emittor of GHG emission and is the sector that has experienced the most dramatic increased GHG emissions. 40%. Most New Zealanders have multiple vechicles, campervans, boats, motorcycles and other motorised fuel vehicles. Growing number of people still make unnecessary short distant journeys (taking children to school when they could easily walk or cycle). Because of our rundown antiquated rail system most of the transport is by road (road haulage). Tourism globally contributes significantly to the increase of GHG's. It accounts for 50% of the traffic movement and is expected to increase. A Carbon tax on incoming passengers needs to be put in place. It is the rich affluent people with money that are the major drivers of climate change. All air flights need a carbon tax including domestic routes. A cap on the number of tourist entering New Zealand also needs to be put in place. An increase in petrol prices at the pumps (Carbon tax) should motivate people to make less unnecessaary journeys and increase usege of electric vehicles. One litre of gasoline used as fuel produces 2.32Kg of CO2. The Energy sector accounts for about a 1/4 of the total emission in NZ. This is largely through the burning of coal and natural gas. The emissions from this sector have grown 18% since 1990 levels. To shift to a Carbon Zero economy implementation of sustainable power genertation wind solar needs to be made at the local household level (new house construction) at local regional council level and national level. Embedded emission are often passed over as the are unseen. Approximately 25% of all CO2 emissions from human activity flow (imports and exports) from one country too another. Major developed economies are typically net importers of embodies carbon emissions. While these emission are not of immediate priority to reduce emissions from they are none the less important Carbon sources and future polices need to tackle these emissions.Increasing , promoting incentivising local food and products, levys on imported goods. 1o Primary focus prioritise making lasting deductions to gross emissions from their major sources.

Clause
11. The Government has proposed that the Climate Change Commission advises on and monitors New Zealand's progress towards its goals. Do you agree with these functions? See p42 Our Climate Your Say
Position
Yes
Notes

Clause
12. What role do you think the Climate Change Commission should have in relation to the New Zealand Emissions Trading Scheme (NZ ETS)?
Position
Advising the Government on policy settings in the NZ ETS

Notes

Clause
13. The Government has proposed that Climate Change Commissioners need to have a range of essential and desirable expertise. Do you agree with the proposed expertise? See p45 Our Climate Your Say
Position
Yes
Notes

Clause
14. Do you think the Zero Carbon Bill should cover adapting to climate change?
Position
Yes
Notes
We are already experiencing the impacts of a 1oC rise in the Earths temperature by burning fossil fuels and industrialisation (extreme wather event with increase frequency and intensity). The Government needs to come up with national guidance plan.

Clause
15. The Government has proposed a number of new functions to help us adapt to climate change. Do you agree with the proposed functions? See p47 Our Climate Your Say
Position
Yes
Notes

Clause
16. Should we explore setting up a targeted adaptation reporting power that could see some organisations share information on their exposure to climate change risks?
Position
No
Notes
If you set up a climate change commission plus a Government department why do you need more buerocracy. Enough is Enough. The Climate change commission and the Govenement should be reporting- transparancy for public scrutiny. Government must produce an Adaption Programme to address the climate risks identified in the National Climate Risk Assessment