Climate Change Petition Brochure

Publication date not given

Why a Levy on Fossil Fuels?

So long as fossil fuels are the cheapest form of energy people will continue to prefer them over all other sources. A levy at source on coal, oil and gas will favour renewable fuels and at the same time give a real impetus to R&D of these fuels, something New Zealand could become world leaders in. It is essential to realise that a levy is different from a tax. Whilst the government would oversee the collection it would then redistribute the revenue raised to all of us in reduced taxes or increased benefits.

A clean energy revolution is at last underway, with wind power, solar electricity, and energy efficiency becoming not only cheaper by the day, but easier to deploy. Still, the clean energy transition will be slowed until prices of coal, oil, and gas reflect their true environmental costs. A carbon levy could do that, if designed properly.

How carbon levies work is simple enough. Fuel use is infinitely varied and intricately woven into society in ways that regulations such as auto mileage standards can't fully reach. Clear price signals, on the other hand, can with the help of billions of invisible hands rapidly reduce and replace fossil fuels. Carbon levies are the only policy tool that, by slashing demand in a rapid, predictable way, divests our economy from fossil fuels, enable Government, business and consumers to make investments in the transition to clean energy. Carbon levies also have the best chance of catching fire globally. Ramping up the levy by $5 a year would shrink the use of carbon fuels drastically. .

A clear majority of New Zealanders want climate action. Remarkably, some opinion polls in the US have even found that majorities of Americans support carbon taxes.

What is New Zealand's Situation?

In December 2015 in Paris our Government signed up to commitments to reduce our Greenhouse Gases. Those agreements have now come into force though they are as yet not legally binding. The target at Paris was to keep the global temperature below 2 degrees C and strive to limit it to 1.5 degrees if possible. All the countries gave a commitment which when added together would only limit the temperature rise to about 3 degrees.

Whilst there is a direct relationship between the amount of GHG's in the atmosphere and the global temperature it cannot be forecast with complete accuracy. Climate scientists make the best estimates and have calculated what amount of GHG's the atmosphere can hold to keep under 2 degrees warming as about 840 billion tonnes of carbon. So far some 580 billion tonnes have been emitted, leaving 260 billion tonnes (the world's carbon budget). Assuming "business as usual" emitting some 10 billion tonnes annually, the budget will be exhausted by 2040.

New Zealand only emits 10 million tonnes a year and our share of the global budget is 150 million tonnes. Which in fact means we are in an even worse position and we will use up our budget even earlier, by 2031.

You would expect the government to have set targets based on these figures and laid out a strategy to achieve these targets, bearing in mind that the price of carbon is projected to rise from current low levels of $20 or $25 a tonne to between $100 and $200 and the bill could then climb into the billions of dollars that without reductions **in emissions we, the taxpayers will have to pay.**

New Zealand Compared

According to the Ministry for the Environment's figures, New Zealand has increased its gross GHG's from 1990 to 2014 by 23%, that is from 66 to 81 megatonnes of CO_2 equivalent. In July 2016 the Government set the target to be reached by 2020 at 5% below the 1990 level ie 62.7 megatonnes. The total gross emissions for the period 2013 to 2020 is estimated to be 655.9 megatonnes, or an annual emission rate of 82 megatonnes. It has similarly given two further targets, by 2030 to reach 30% reduction of 2005 levels by 2030, that is 30% of 83 megatonnes or 58.1 megatonnes and 50% of the 2005 levels by 2050. Bear in mind that no details whatsoever have been given as to how that will be achieved and that Paris agreements are asking for between an 80-90% reduction, not a measily 50%

Despite the very slow rate of progress internationally, some regions have already made significant achievements. Here are three examples:

1. In 1991 Sweden introduced a CO_2 levy which by 2011 had risen to 1050 krona (approx..NZ$190) a tonne over some sectors of the economy. It has spurred strong development of green options. Sweden's gross emissions have fallen to around 20% below 1990 levels without interrupting economic growth 24,25. (NewZealand's gross emissions rose by around 20% over the same period.)

2. In 2000 Germany passed a law guaranteeing producers of electricity from renewable resources the right to sell into the grid at a reasonable price and receive preference over other sources. It has since increased from 6.3% in 2000 to 23.4% in 2013, and reductions in emissions are on track to reach Germany's target of 80% by 2050. (New Zealand power companies are not obliged to buy energy generated from renewable sources, such as domestic solar units, nor to pay a realistic price should they agree to do so.)

3. In 2008 the Canadian province of British Columbia introduced a levy per tonne of CO2 increasing at $5 a year until it reached $30 (approx.. NZ$32) in 2012 27. The levy was kept revenue-neutral by reducing corporate and income taxes at an equivalent rate. Greenhouse gas emissions have since fallen more than 5%. (New Zealand's ETS has no provision to compensate the general public for the increased costs of goods and services resulting from emissions charges, and the ETS is far more costly and complex to operate than a simple carbon levy.)

New Zealand is strongly placed to reduce its dependence on fossil fuels. We have enormous potential to capture hydro, geothermal, wind, solar and tidal energy. We could also produce carbon-based fuels sustainably from forestry operations, agricultural crops and animal wastes.These changes would reduce the over $7 billion a year we currently spend on fossil fuel imports –around half of our earnings from dairy exports.

It is critically important that the world rapidly reduces its greenhouse gas emissions. New Zealand still has the opportunity to play a key role and to set a global example in achieving the changes that are urgently needed to avoid humanitarian disaster and to leave behind a liveable planet for our children and grandchildren.

No 5 of 6 leaflets produced in February 2017 in support of the Climate Change petition.

Missing the Target

The urgency to solve our climate crisis feels something like a ship heading off course: The longer you delay, the more you have to turn the wheel.

Consider these numbers: **2, 350, 1990**.

These were the original climate goals. In 1975, environmental economist William Nordhaus proposed that the danger threshold for a temperature increase above Earth's preindustrial average would be 2°C. This goal was not considered entirely safe, but beyond this target we risked severe climate disruption and likely runaway heating.

350

The 350 figure came from several climate scientists, including Dr James Hansen, who co-authored the first NASA global temperature analysis in 1981. Hansen proposed that to remain below the 2°C target, we would have to hold the carbon dioxide (CO_2) content of the atmosphere below 350 parts-per-million (ppm). In 2007, Bill McKibben adopted Hansen's target for the name of the climate activist group, **350.org.**"if we want to stabilise climate", Hansen said in 2012, "we must reduce CO_2 … back to 350ppm."

To achieve this, we must reduce human carbon emissions. In 1990, the Stockholm Environment Institute confirmed the 2°C maximum and, in 1991, the first climate COP met in Berlin with the goal of returning carbon emissions to the 1990 level. Ultimately, we have to reduce human carbon emissions from our current 10 billion tons to about 2-billion tons per year. That will require an **80% reduction** in the use of fossil fuels.

1990

Some European nations have retained the 1990 emissions targets, although none have achieved them. Most other nations have abandoned the 1990 emissions date in their recent 2015 Paris "pledges". The US and Canada move the target forward 15 years, to 2005 and only pledge to reduce emissions 17% below those levels. Neither nation has done anything significant to achieve even this pathetic goal. Claims in North America and Europe of "reducing" carbon emissions reflect, primarily, exporting those emissions, the dirtiest industries, to nations such as China, India and Mexico.

Other nations — such as Mexico, Israel and Brazil — have only pledged to hold emissions below a "business as usual" future projection, which is almost meaningless. Likewise, China will only commit to "reducing carbon intensity", which is a similar measure of emissions versus economic growth, also meaningless in the effort to actually reduce carbon emissions.

Since 1990, carbon emissions have increased by about 67%. In any practical sense, we can consider the original 1990 emissions target abandoned by the politicians.

350

By 1930, primarily from burning coal, humans had pushed Earth's CO_2 content above 300ppm for the first time in over 500,000 years: through four glaciation-warming cycles. A recent January 2017 reading, after 25 years of climate conferences reached 406.47ppm, and in April 2016 a Mauna Loa reading registered over 409ppm. Serious ecologists still cling to the 350ppm goal and scientists know that this is what it will take to have a chance of stabilising Earth's climate,

2°C

During the 141 years between 1850 and 1991, human industry increased atmospheric CO_2 content by about 0.5 ppm per year. However, during the last twenty years of that stretch, we were increasing

CO_2 content by about 1.5ppm per year. In the ten years between 2006 and the latest readings from 2017, we were increasing CO_2 by about 2.5ppm/year, and in the three years between 2014-17, we have been increasing CO_2 by over 3.5ppm/year.
If we continue at this business-as-usual rate, increasing the atmospheric carbon at 3.5ppm/year, we will reach 560ppm by 2060. If we reduce the rate from 3.5ppm to 2.5ppm/year, we buy a couple of decades and reach that unhappy milestone in about 2078. In either case, this means a +3°C temperature increase at least, and the risk of runaway heating — due to methane releases, forest loss and other feedback factors.
If we begin immediately to phase out fossil fuels and achieve a 50% reduction by 2100, we still reach 560ppm, a +3°C temperature increase and runaway heating by about 2075. That represents an epic fail.
So, if we are serious, we require a much faster and immediate reduction in fossil fuel consumption, which honest climate scientists have been suggesting for decades. We need to reduce fossil fuel use and carbon emissions by at least 80%, and quickly, over the next 30 years, before 2050. This means cutting carbon emissions from 10 billion tons per year, to two billion tons/year by 2050.
Starting now, we need to slash global carbon emission by about about 4.5% per year for the next 30 years. That means a 450 million ton decrease this year.
If every nation signing the Paris agreement met its goal, we would still be headed to 3°C or more. The Paris pledges are not remotely enough and do not represent any sort of "victory."

What are Greenhouse Gasses?

A greenhouse gas (abbrev. GHG) is a gasin theatmosphere that absorbsand emitsradiation within the thermal infraredrange. This process is the fundamental cause of the greenhouse effect. The primary greenhouse gases in Earth's atmosphereare water vapour, carbon dioxide, methane, nitrous oxide, and ozone.Without greenhouse gases, the average temperature of Earth's surfacewould be about −18 °C (0 °F), rather than the present average of 15 °C (59 °F).
Human activitiessince the beginning of the Industrial Revolution(taken as the year 1750) have produced a 40% increase in the atmospheric concentration of carbon dioxide, from 280 ppmin 1750 to 400 ppm in 2015. This increase has occurred despite the uptake of a large portion of the emissions by various natural "sinks" involved in the carbon cycle.(eg the oceans and forests)
Anthropogeniccarbon dioxide (CO_2) emissions (i.e. emissions produced by human activities) come from combustionof fossil fuels, principally coal, oil, and natural gas, along with deforestation, soil erosion and animal agriculture.
In New Zealand our Greenhouse gases consist of almost 50% methane and nitrous oxide (from farm animals, fertilizers etc) and the remainder from burning fossil fuels. At present there are severe technical difficulties in reducing methane and most success in agriculture has been in reducing nitrous oxide.

Global warming potential

The **global warming potential**(GWP) depends on both the efficiency of the molecule as a greenhouse gas and its atmospheric lifetime. GWP is measured relative to the same **mass** of CO_2 and evaluated for a specific timescale. Thus, if a gas has a high (positive) **radiative forcing**but also a short lifetime, it will have a large GWP on a 20-year scale but a small one on a 100-year scale. Conversely, if a molecule has a longer atmospheric lifetime than CO_2 its GWP will increase with the timescale considered. Carbon dioxide is defined to have a GWP of 1 over all time periods.
Methanehas an atmospheric lifetime of 12 ± 3 years. The 2007 **IPCC report**lists the GWP as 72 over a time scale of 20 years, 25 over 100 years and 7.6 over 500 years. A 2014 analysis, however, states that although methane's initial impact is about 100 times greater than that of CO_2, because of the shorter atmospheric lifetime, after six or seven decades, the impact of the two gases is about equal, and from then on methane's relative role continues to decline. The decrease in GWP at longer times is because methaneis degraded to water and CO_2 through chemical reactions in the atmosphere.
Examples of the atmospheric lifetime and GWPrelative to CO_2 for several greenhouse gases are given in the following table:

Atmospheric lifetime and GWPrelative to CO_2 at different time horizon for methane and nitrous oxide.

Gas name	Chemical formula	Lifetime (years)	Global warming potential (GWP) for given time horizon		
			20-yr	**100-yr**	**500-yr**
Carbon dioxide	CO_2	30–95	1	1	1
Methane	CH_4	12	72	25	7.6
Nitrous oxide	N_2O	114	289	298	153

Current greenhouse gas concentrations

Gas	Pre-1750 tropos-pheric concen-tration	Recent tropospheric concentration	Absolute increase since 1750	Percent-age increase since 1750	Increased radiative forcing (W/m^2)
Carbon dioxide(CO_2)	280 ppm	395.4 ppm	115.4 ppm	41.2%	1.88
Methane(CH4)	700 ppb	1893 ppb 1762 ppb	1193 ppb / 1062 ppb	170.4% / 151.7%	0.49
Nitrous oxide(N2O)	270 ppb	326 ppb 324 ppb	56 ppb / 54 ppb	20.7% / 20.0%	0.17
Tropospheric ozone(O_3)	237 ppb	337 ppb	100 ppb	42%	0.4

In order to simplify and to be able to aggregate the effects if the multiple GHG's they are all **expressed as CO_2 equivalents.**
(adapted from an article on the Greenpeace website.)