

20 May 2015 (Budget Day)

To uncounted Ministry for the Environment Officials managing the Climate Change Contribution Consultation  
121 x Members of the New Zealand Parliament  
74 x Chairs / Mayors of Regional / City / District Councils and their Councillors  
45 x media, scientific, and environmental organisations and individuals  
2 x Supreme Leaders 斐天丕倭侏 and *PMJohnKey*

From George Preddey (see endnote [32] for contact details and credentials)

### **A tragicomedy: setting emissions targets in an absurd world**

A scientific conjecture that cannot be disproven by peer review - i.e. strongly supported by theory, observations, and successful predictions - eventually comes to be accepted as scientific 'fact'. In this submission I put forward eight conjectures, invite its recipients to disprove them, and if not able to do this, then to consider their implications as 'facts'.

Over the past six years of the National Government, I have made 16 evidence-based submissions to all 121 Members of Parliament and to other political/business/media/scientific/environmental organisations and individuals on climate change and related matters. These evidence-based submissions, amounting to 98pp or 58,913 words, have encouraged several dozen polite Private Secretaries to acknowledge their receipt, a dozen MPs/Mayors/Chairs to fulsomely respond to them (generally supportively), and one Regional Council to invite me to address one of its regular committee meetings.

The eight (8) conjectures I have put forward, undeterred, in this 17<sup>th</sup> submission (amounting to 6pp or 4634 words) are:

- a deadly new pathogen has emerged that threatens the ability of Earth to sustain life;
- the incoming Security Council President will not veto rising sea levels;
- responsible media will not publish material denying anthropogenic global warming (AGW);
- neoliberal market economics is patently absurd;
- sustainable economic growth is an oxymoron and also patently absurd;
- the top environmental problems are selfishness, greed, and apathy;
- human civilisation won't unduly extend the duration of the Anthropocene;
- New Zealand's farcical (net) INDCs must be increased to 9% (2020), 27% (2030), and 64% (2050).

#### **Conjecture [1]: a deadly new pathogen has emerged that threatens the ability of Earth to sustain life**

Scientists have discovered a powerful new strain of fact-resistant humans (FRHs) including political leaders who are threatening the ability of Earth to sustain life, a sobering new study reports (endnote [1]). The research conducted by the University of Minnesota has identified a virulent strain of humans who are virtually immune to any form of verifiable knowledge, leaving scientists at a loss as to how to combat them.

Davis Logsdon, one of the scientists who contributed to the study, observed that FRHs appear to have all the faculties necessary to receive and process information yet somehow have developed defences that, for all intents and purposes, have rendered those faculties totally inactive. According to Logsdon, as facts have multiplied, the defences of FRHs against those facts have only grown more powerful.

While reaffirming the gloomy assessments of the study, Logsdon held out hope that the threat of FRHs including political leaders could be mitigated in the future, suggesting that they will become more receptive to facts once they are in an environment without food, water, or oxygen.

#### **Conjecture [2]: the incoming Security Council President will not veto rising sea levels**

*PMJohnKey* will not use his forthcoming Presidency of the United Nations Security Council to put anthropogenic global warming (AGW) sufficiently high on the Council's agenda to avoid its inundation by rising sea levels, despite three compelling reasons for doing so.

Firstly, the destruction of entire nation states is a fundamental breach of human rights and contradicts everything the United Nations stands for. Rising sea levels from AGW represents precisely this threat for low-lying Pacific nations like Kiribati, Tuvalu, and the Marshall Islands.

Secondly, cyclones and inundations resulting from AGW will drive countless millions from their homes around the world, creating unprecedented security and humanitarian crises. AGW is already occurring, and the international community must develop ways of dealing with its consequences.

Thirdly, by fully engaging the Security Council with AGW, New Zealand could begin to address its own shameful record on responding to AGW. As examples of this shameful record, according to a reputable international Climate Change Performance Index (CCPI), New Zealand ranks fourth worst among 60+ countries for its climate protection policies (endnote [2]) and unsurprisingly also ranks 25<sup>th</sup> of 26 countries in a 2014 review of emissions trading schemes (ETS, endnote [3]). Not many voters in the 2014 General Election knew this (endnote [4]).

Accordingly President *PMJohnKey* should ask one of his Officials - without pulling her hair - to google CCPI and report back to him immediately on New Zealand's shameful CCPI and ETS rankings. He should then respond with an appropriate veto, and remedy New Zealand's record.

### **Conjecture [3]: responsible media will not publish material that denies anthropogenic global warming (AGW)**

AGW was an insightful conjecture of the Swedish physicist Arrhenius in 1896. Just as the Earth can now be considered an oblate spheroid rather than flat as previously believed, AGW is now so strongly supported by theory, observations, and successful predictions that it can be taken as scientific 'fact'. AGW is now accepted by more than 97% of reputable climate scientists, contrary to the expressed views of (often paid) climate change sceptics (endnote [5]).

Not all debate should be conducted via responsible mass media. For example, holocaust denial denies historical fact and for that reason should not feature in responsible mass media. Similarly, anthropogenic climate change (AGW) denial denies scientific fact and for that reason should also not feature in responsible mass media. Published AGW denial provides comfort for FRH politicians who ignore AGW and also helps to detoxify the FRH senior management of big carbon-emitting businesses and fossil energy extractive industries.

On 13 May 2015 the New Zealand Press Council regrettably declined to uphold my complaint against the *Dominion Post* that a published opinion piece denying AGW breached prescribed press standards of accuracy, fairness, balance, and conflicts of interest, despite the Council's comment that the piece was 'highly selective and tendentious in its use of data' (endnote [6]). A minority dissenting opinion held that publication of the opinion piece was not in the public interest. I conclude, noting the Council's comment, that regrettably the *Dominion Post* is not an example of responsible mass media.

### **Conjecture [4]: neoliberal market economics is patently absurd**

In the aftermath of the greatest economic calamity in 80 years, the reputation of neoliberal market economics itself has taken a beating. Two central components of the so-called dismal science (macroeconomics, financial economics) are now being closely re-examined. According to an editorial in *The Economist* (endnote [7]), the three main critiques are that macro and financial mainstream economists helped cause the crisis, failed to predict it as HM the Queen has complained, and have no idea or cannot agree on how to fix it. Macroeconomics is now perceived as having been at best completely useless over the past 30 years and at worst positively harmful (endnote [8]) and may be considered patently absurd.

A rational way of cooling the overheated Auckland property market would be to introduce a robust Capital Gains Tax (CGT). The reason why *PMJohnKey* has avoided mentioning let alone introducing a robust CGT is that many thousands of National-voting Personal safety also aspire to become millionaires and would strongly oppose its imposition. To be scrupulously fair, the new Labour Leader *LittleAndrew* also avoided mentioning a CGT prior to the 2014 election for the same reason. What these Personal safety haven't understood is that 250,000 of them would end up with negative equity (bankrupt) when the Auckland housing bubble inevitably bursts (endnote [9]) along with a substantial chunk of the financial sector, which is also patently absurd.

Over the past two decades, dairy production in New Zealand has intensified requiring increased external inputs of fertiliser, feed, and water. Intensified dairying has impacts that are not paid for by dairy farmers. These 'negative externalities' are left for the wider population to pay for, economically and environmentally. They are also counter-intuitive because the dairy industry itself relies on New Zealand's 'clean green' image to maximise its returns. Recent research by Massey University scientists (endnote [10]) shows that the total external costs of intensive dairying caused by nitrate contamination of drinking water, nutrient pollution to lakes, soil compaction, and greenhouse gas emissions probably exceeds total dairy export revenue. Summarizing, the costs of intensive dairying probably exceed its benefits, which is also patently absurd.

Adam Smith recognised that a truly free market is a myth. Free trade in child labour, plutonium, or heroin would be unacceptable to most people. All markets are not only constructed and regulated but are constantly manipulated. Behind the faith in a (mythical) free market is the ideology that the so-called 'invisible hand' will optimally match supply and demand. No politician or economist has yet been able to explain its workings (endnote [11]).

Almost without exception, neoliberal free market economists since Adam Smith have believed that the free market is in a state of equilibrium, naturally balancing supply and demand, a belief utterly contradicted by a continuing sequence of

economic crises including global depressions and market crashes. The best emerging models of free markets, developed by physicists, resemble models of Mandelbrot-like disequilibrium processes driven by positive feedbacks and instability in the real world's natural systems (endnote [12]). Science rules, OK!

There is clear evidence that the neoliberal free market philosophy of trickle down doesn't work. The richest 85 people in the world now have as much wealth as the poorest half (3.5 billion). Concentration of wealth is increasingly rampant. However, lobbying a Government to increase one's share of the pie provides no incentive to grow the pie for both companies and individuals. Whereas small businesses face inescapable taxes, big businesses are able to decide how much tax to pay on a 'take it or leave it' basis. The rich no longer create jobs. By processes of consolidation, takeover and merger, they actually destroy them. Why would the rich offer terms and conditions that give individual workers any standing? Will zero-hour contracts become the way of the future? Undeterred, governments measure their economic success by aggregated GDP data that fails to take into account wealth distribution, educational achievement, innovation, or even the welfare and health of the population they claim to represent, which is also patently absurd (endnote [13]).

### **Conjecture [5]: sustainable economic growth is an oxymoron and also patently absurd**

Almost all FRH economists and politicians including *PMJohnKey* pursue 'sustainable economic growth' as their fundamental economic objective.

In 1972, researchers at the Massachusetts Institute of Technology studying computer simulations of a future Earth published Limits to Grow (LtG) (endnote [14]). The researchers' various simulations took into account accelerating industrialisation, rapid population growth, widespread malnutrition, resource depletion, and a deteriorating environment. Their BAU ('business-as-usual') simulation predicted overshoot and collapse in the global economy, environment and population beginning around 2015-2030.

LtG's central point, strongly criticised by FRH economists and politicians but self-evident to this retired physicist, is that the pursuit of any form of growth within a closed (finite) system, including economic growth within Earth's closed biosphere, is unsustainable and will inevitably lead to 'overshoot and collapse'. Subsequent research by other researchers has shown that LtG's business-as-usual scenario projections (1972) have accurately tracked 40 years of real data collected subsequently by reputable international agencies including the United Nations, UNESCO, FAO, and NOAA (endnote [15]).

According to LtG's 1972 business-as-usual simulation, growing populations and demands for material wealth lead to increases in industrial output, resource use, and pollution. As diminishing resources become more expensive, capital is increasingly diverted to resource extraction. Consequently, industrial output per capita starts to fall from about 2015. As pollution increases and industrial inputs into agriculture decrease, food production per capita also begins to fall. Overstretched governments respond by cutting or privatising health and education services leading to increasing death rates from about 2020. Global population is predicted to begin falling from about 2030 by half a billion people per decade, and living conditions fall to levels similar to those typical of the early 1900s. Although LtG (1972) attributed global collapse predominantly to resource constraints, it also factored in the consequences of increasing pollution and anthropogenic global warming (AGW), although arguably underestimating the impacts of the latter.

In the real world, the pursuit of material wealth contributed to unsustainable levels of debt and to the Global Financial Crisis of 2007-08 and subsequent economic malaise – perhaps a harbinger of the consequences of resource constraints and other limits to growth. Even the conservative International Energy Agency warns about peak oil (endnote [16]) seen as another potential catalyst for global collapse. Although optimistic FRHs perceive unconventional fossil energy sources like shale oil, tar sands and coal seam gas as replacements for 'conventional' oil, they ignore the fact that these are essentially 'stranded assets' that cannot be used (endnote [17]), which is also patently absurd.

It is self-evident to this retired physicist that 'sustainable economic growth' is an oxymoron (endnote [18]) and its pursuit by FRHs is patently absurd. It may be too late to convince the world's political leaders and wealthy business elites including *PMJohnKey* of these self-evident realities - and to convince them to chart a completely different course. I note with interest the predictions that in about a year's time *PMJohnKey* will accept a Knighthood and head overseas (endnote [19]), presumably to his modest batch on Maui (Hawaii) which, peaking at 3055m, should be largely unaffected by rising sea levels.

### **Conjecture [6]: the top environmental problems are selfishness, greed, and apathy**

Humanity has been in the same predicament for three decades: increasingly dire scientific warnings about human-induced global warming (endnote [20]) followed by political inaction. Climate diplomacy is now disconnected from scientific reality (endnote [21]). Despite international agreements and recession, 2014 was a record year for carbon emissions and mean global land and ocean temperatures (endnote [22]), currently 0.9°C above pre-industrial levels. Global warming

impacts are becoming ever more apparent as extreme weather events (floods, droughts, cyclones) even more extreme than climate scientists have predicted.

A non-negotiable constraint for safe atmospheric carbon dioxide (CO<sub>2</sub>) levels is that global coal use must substantially end within several decades. Only 565Gt remained in 2012 of Earth's safe carbon budget up until the year 2050, whereas proven reserves owned by companies and governments represented 2,795Gt of emissions (endnote [23]). There is at least five times as much fossil carbon on company/country balance sheets as climate scientists believe is safe to burn. Hence only 20% of total fossil energy reserves can be safely burnt and accordingly 80% of the fossil energy reserves on company/country balance sheets are 'stranded assets' (footnote [17]). What these numbers show is that the global human economy by around 2070 must become carbon-neutral (i.e. zero net emissions) and that planet Earth faces an enemy more committed to action than any government: pariah fossil-energy companies/countries behaving recklessly over future climate and future human civilization.

As an example, the multinational oil company Royal Dutch Shell has been accused of pursuing a strategy leading to catastrophic climate change. Its 'New Lens Scenarios' document guiding future business planning assumes a forecast by the International Energy Agency (IEA) for a temperature rise of 4°C in the short term rising later to 6°C (endnote [24]). This pariah planning document accepts that a 4°C rise by 2100 will have severe and widespread impacts including coastal flooding, biodiversity loss, and megaextinctions, particularly in the Arctic and parts of Africa experiencing warming of up to 10°C. However it further notes that "our base case energy demand and outlook do not ... limit warming to 2°C ... (since) governments (are not) taking steps consistent with a 2°C scenario." Without exonerating Shell for its pariah planning, I can despairingly concur with the company's assessment of most governments' unresponsiveness to AGW.

Indisputable maths (the difference between 2,795Gt and 565Gt) and dire warnings of climate scientists demand that all of New Zealand's proposed new energy initiatives must not proceed. What is it about these simple facts that *Energy Minister Simon Bridges* didn't understand when announcing in 2015 a major expansion of offshore oil and gas prospecting?

Such short-sighted self-serving policies in the face of biodiversity loss, ecosystem collapse, and anthropogenic global warming has led one scientist to admit: "I thought that with 30 years of good science we could address these problems. But I was wrong. The top environmental problems are selfishness, greed, and apathy ... and to deal with those we need a spiritual and cultural transformation and we scientists don't know how to do that" (endnote [25]).

#### **Conjecture [7]: human civilisation won't unduly extend the duration of the Anthropocene**

Humanity is now deeply into the Anthropocene, a proposed geologic term for an era during which human activities began to have a significant global impact on the Earth's life supporting ecosystems. The Nobel Prize-winning atmospheric chemist Paul Crutzen argues that the influence of humanity on the Earth's atmosphere has been so significant as to constitute a new geological era following the beneficent Holocene era during which humans have evolved. Other scientists argue that it started with the Industrial Revolution (late eighteenth century), the rise of agriculture, or growing human impacts on the biosphere that are driving the current sixth megaextinction event (endnote [26]).

The survival of human civilisation into an emerging Anthropocene will depend on the extent that decision makers act on scientific facts rather than neoliberal market economics assumptions that the biosphere is merely a subset of inconsequential 'negative externalities' rather than an essential life support system. The biosphere responds to human interference according to scientific facts, not to the assumptions of neoliberal market economics.

I'm deeply pessimistic (to put it mildly), and unimpressed by *PM John Key* and other political leaders for their utter disregard of anthropogenic global warming reflected in New Zealand's shameful climate protection and ETS rankings (endnotes [2], [3]) and farcical INDCs (endnote [27]). Putting a positive political spin on it, as *Climate Change Issues Minister Groser* does, is arguably even more shameful. The biosphere does not respond to political spin by fact-resistant humans. The only Budget that really matters accounts for carbon flows within the Earth's biosphere, not for currency flows within a National economy.

#### **Conjecture [8]: New Zealand's farcical (net) INDCs must increase to 10% (2020), 30% (2030), and 70% (2050) (the crux of my individual submission to the Climate Change Contribution Consultation)**

In December 2015, countries will meet in Paris to negotiate the future of the Earth's climate. Ahead of Paris, countries are preparing Intended Nationally Determined Contributions (INDCs) that indicate their proposed emissions reduction targets. Earlier this month, the Government invited the public to make submissions on the position *Climate Change Issues Minister Tim Groser* should take to Paris, giving them a farcical four weeks to do this. It has subsequently published a consultation document that plays up the costs of action and plays down the costs of inaction - calculated by Treasury to be up to \$52 billion - and is conducting a rushed series of consultation meetings around the country at which no Ministers have yet fronted.



Tim Groser's discussion document provides an execrable plethora of excuses for the National Government's inaction including: why we should wait and see; action will cost New Zealanders dearly; so much of our energy is renewable already; requiring farmers to pay for emissions will lead to global starvation; anything New Zealand does about its emissions will make very little difference to the planet; and - most irksome of all - "we are committed to doing our fair share and taking responsibility for our emissions" (endnote [27]).

New Zealand is achieving a *polluta non grata* status at international climate negotiations when other countries compare this country's modest indicative commitment to a 5% reduction below 1990 levels with the already announced commitments of the European Union to a 40% reduction (endnote [28]), the United States to a 28% reduction, and China to a 20% reduction by 2030. Other countries also note the National Government's deception in meeting its 2020 targets by buying junk "hot air" emissions certificates from former Soviet states, widely considered to be fraudulent.

This context is conspicuously absent from the consultation document, as are any projections about the actual costs of doing nothing, despite Treasury figures which show that maintaining the present emissions trajectory could cost \$52 billion. The Government is trying to present New Zealand's climate policy as a choice between an arbitrary, meaningless percentage and what it might cost the voting public. That is a gross misrepresentation.

Between 1990 and 2012, New Zealand's net emissions including forestry rose 111%, the 5<sup>th</sup> highest per capita increase among OECD countries. New Zealand did achieve its target for the first commitment period of the Kyoto Protocol (limiting net emissions on average over 2008–12 to gross 1990 emissions) largely due to Kyoto accounting of forest sinks and to the purchase of overseas junk emissions certificates as noted above. Under the United Nations Framework Convention on Climate Change (UNFCCC), New Zealand has a non-binding unconditional target to reduce its net emissions to 5% below 1990 levels by 2020, and a non-binding target to reduce net GHG emissions to 50% of 1990 emissions by 2050 (endnote [29]). During his successful 2008 election campaign, PM John Key loudly promoted a 'fifty by fifty' slogan, but has been conspicuously silent about this broken promise since then. Under current policy settings, New Zealand's net emissions are projected to increase by 159% by 2030 relative to 1990 levels.

My modest alternative proposal for New Zealand's INDCs is to dispense with econometric wanking that characterised so much of the discussion document and, as a scientist, to work backwards from the essential goal of net carbon neutrality by 2070 dictated by science (see conjecture [6]) from 2015 when New Zealand's emissions are nominally 80Mt (CO<sub>2</sub>-e) (endnote [31]). Achieving this goal requires a 100% reduction in net emissions over 55 years, or nominally a constant 1.82% reduction or 1.45 Mt (CO<sub>2</sub>-e) reduction in emissions per year.

Under this modest proposal and applying Ockham's razor (endnote [30]) by assuming the required decrease in net emissions is linear, New Zealand's commitments would be 9% by 2020 (5 years hence), 27% by 2030 (15 years hence), and 64% by 2050 (35 years hence). A more complex distribution of reductions over time (parabolic, hyperbolic, or as derived from econometric wanking) would add more complexity and a greater opportunity for political interference. Under my modest proposal, New Zealand's commitment by 2030 (27%) would be less ambitious than the European Union's commitment (40%) but would closely match the United States' commitment (28%).

## ENDNOTES

- [1] See *The New Yorker*, 12 May 2015.
- [2] See for example Burck J (2014). *The Climate Change Performance Index: Results 2015* which ranks New Zealand fourth worst among 60+ countries for its climate protection policies at <http://germanwatch.org/en/download/10407.pdf>.
- [3] See <https://www.worldbank.org/en/news/feature/2014/05/28/state-trends-report-tracks-global-growth-carbon-pricing>
- [4] Immediately prior to the 2014 general election I wrote a short letter to the Editors of 25 New Zealand metropolitan and provincial newspapers with the intention of informing voters of these facts. It was published by only two of them.
- [5] See for example Anderegg WRL, Prall JW, Jacob H, Schneider SH (2010). *Expert credibility in climate change*. Proc US Nat Acad Sci US 107 (27): 12107–9.
- [6] The *Dominion Post* on 5 March gave prominence to an opinion piece by two high profile climate change denialists riddled with untruths, half-truths and misrepresentations. The newspaper's lack of editorial judgement extended beyond its failure to fact-check the article. A contrasting follow-up opinion piece on 10 March by three professional New Zealand climate scientists argued that the evidence for AGW is "unequivocal". By giving prominence and hence credence to (paid) activists misrepresenting the scientific facts of climate change, the *Dominion Post* promoted the fiction that it might not be happening and accordingly providing comfort for the National government that during its three terms in office developed the fourth worst climate protection policies of 62 counties (see endnote [2]). An irony was that I received the Council's verdict during Wellington's worst flooding emergency in 50 years, extreme weather events being a predicted consequence of AGW.
- [7] See *The Economist*, Editorial, 18 July 2009, p2.

- [8] *ibid*, p58.
- [9] See Foote KJ, Joy MK, Death RG. *New Zealand dairy farming: milking our environment for all its worth*. Environmental Management, 22 April 2015. ISSN0364-152X, ISSN1432-1009. Springer US.
- [10] 250,000 households would have negative equity if Auckland prices fell by 20%, modest by the measure of bursting housing bubbles in Spain etc where some regions saw prices plunge by as much as 50% (source: *The Dominion Post*, 21 May 2015).
- [11] Ja Hoon Chang, 2010. '23 Things They Don't Tell You About Capitalism'. Penguin Books, 2010. ISBN 978-1-60819-166-6.
- [12] Mark Buchanan, 2011. 'Mandelbrot Beats Economics in Fathoming Markets.' See <http://tinyurl.com/75n8ecb>
- [13] See <http://www.theguardian.com/commentisfree/2014/jan/20/trickle-down-economics-broken-promise-richest-85>
- [14] See Meadows DH, Meadows DL, Randers J, Behrens WW, 1972. '*The Limits to Growth*', 205pp. ISBN 0-87663-165-0
- [15] In 2008 the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO) validated LtG's analysis by showing that its business-as-usual simulation in 1972 accurately tracked actual outcomes up until 2008 i.e. 36 years later (see Graham Turner et al, CSIRO working paper ISSN 1834-3638). This work was replicated in 2014 by researchers at the University of Melbourne. See [http://sustainable.unimelb.edu.au/files/mssi/MSSI-ResearchPaper-4\\_Turner\\_2014.pdf](http://sustainable.unimelb.edu.au/files/mssi/MSSI-ResearchPaper-4_Turner_2014.pdf); also <http://www.theguardian.com/commentisfree/2014/sep/02/limits-to-growth-was-right-new-research-shows-we-re-nearing-collapse>.
- [16] See for example <http://www.iea.org/aboutus/faqs/oil/>
- [17] According to a well-known search engine, stranded assets are those assets that "suffer from unanticipated or premature write-downs, evaluations, or conversion to liabilities".
- [18] 'Figure of speech in which apparently contradictory terms appear in conjunction'. See NZ Pocket Oxford Dictionary, p 567.
- [19] See Underwood D. *The Wellingtonian*, 21 May 2015.
- [20] The International Panel on Climate Change (IPCC) has become increasingly unequivocal and also increasingly pessimistic about AGW in a series of Assessment Reports. See <https://www.ipcc.ch/report/ar5/> for the 5<sup>th</sup> report in this series.
- [21] See for example *New Scientist*, 30 Jun 2012, p3 (editorial).
- [22] See <http://www.ncdc.noaa.gov/sotc/summary-info/global/201412>
- [23] See <http://www.carbontracker.org/> Carbon Tracker is a non-profit, independent team of financial, energy and legal experts.
- [24] See <http://www.theguardian.com/environment/2015/may/17/shell-accused-of-strategy-risking-catastrophic-climate-change?CMP=ema-60>
- [25] Professor Guss Speth, Yale University's School of Forestry & Environmental Studies, on the BBC *Shared Planet* programme, 1 Oct 2013. See [www.bbc.co.uk/programmes/b03bqws7](http://www.bbc.co.uk/programmes/b03bqws7).
- [26] The Fifth Megaextinction Event marked the end of the dinosaur era 65 million years ago and was caused by the climatic effects of a 10km diameter meteorite that impacted in the ocean close to the Yucatan peninsular, Mexico.
- [27] See Hansford D (2015) <http://publicaddress.net/envirologue/multi-no-choice-nationals-idea-of-climate/>
- [28] See <http://newsroom.unfccc.int/unfccc-newsroom/eu-submits-its-climate-action-plan/>
- [29] See <http://silverlinings.com/new-zealands-journey-toward-a-low-emission-future-todays-climate-change-landscape/>
- [30] Occam's razor is a problem-solving principle devised by William of Ockham (c. 1287–1347) that states that among competing hypotheses that predict equally well, the one with the fewest assumptions should be selected.
- [31] See <http://www.mfe.govt.nz/publications> (estimated from latest available figure for 2012 of 77.0Mt CO<sub>2</sub>-equivalent units)
- [32] I am currently a retired upper atmospheric physicist (PhD at VUW 1968) engaged in making unpaid submissions to MPs etc on climate change and related matters and formerly: [i] a DSIR scientist during an era when collaborative public good science still existed in New Zealand; [ii] an environmental activist sued for US\$3.5m by a multinational company for claiming that one of their fine products was destroying Earth's vital protective ozone layer; [iii] a futurist prior to PM R Muldoon sacking me for publishing, under the auspices of the Commission for the Future (disestablished), evidence-based peer-reviewed predictions of the effects of a nuclear attack on New Zealand; [iv] an education bureaucrat in the Ministry of Education as Chief Adviser Tertiary who facilitated the (then) Labour government's goal of putting more 'bums on seats' to increase tertiary participation rates (ACHIEVED); [v] a tertiary education consultant working for international agencies (ILO, World Bank, UNESCO, ADB) in 25 countries; and now a grandparent of six who do not deserve to face an uncertain future. The Montreal protocol now protecting Earth's vital ozone layer from the products of multinational companies (despite non-compliance by New Zealand's continuing use of methyl bromide as a fumigant), New Zealand's current post-ANZUS nuclear free status, and New Zealand's substantially improved tertiary participation rates affirm that my previous efforts have not been entirely unproductive.

#### Privacy of natural persons

A digital version of this submission is available on request to [george.preddey@xtra.co.nz](mailto:george.preddey@xtra.co.nz)