

2050 : Costs vs Benefits

The fundamental question raised by the 2050 zero carbon proposal can be put simply: Is targeting such an early year worth the price? Or is the proposed 2050 cure worse than the disease of waiting a little longer?

Governments and corporations everywhere answer similar questions all the time by cost-benefit analyses. But climate policy is an exception. No cost-benefit study of any kind is included in the 160-page Regulatory Impact Statement (RIS) that accompanies the 'Zero Carbon Bill'.

We have a Government modelling estimate that the economic losses will amount to a massive \$300 billion or about \$200,000 [*corrected 15 Sep 2019*] per household. Is that a fair share for New Zealand?

Our current gross emissions are about 28 metric tonnes per household, so the modelled price might be slightly over \$1,000 for each tonne reduced. Is that reasonable value for money? Why do no ETS themes reflect such a high cost? How can airlines and others "offset" a tonne of CO₂ at a fraction of that price? Are more cost-effective methods available?

If the Paris Agreement targets a zero carbon period *after* 2050, why would New Zealand (a leading proponent of the Agreement) want to target an earlier period?

Exorbitant costs

As part of the RIS, the Government has published the results of modelling which it commissioned from NZIER to gain some order-of-magnitude feel for the economic impact of selecting 2050 as the target year.

The NZIER [final report](#) suggests a fall-off in productivity causing a GDP loss of between 10% and 22% by 2050 – a result described as "[breathtaking](#)" by former Reserve Bank chief economist Michael Reddell: "As one comparison, high end estimates of the GDP gains from preferential trade agreements (such as CPTPP or the proposed new one with the EU) tend to be about 1 per cent each."

Reddell [also says](#):

"We will give up – well, actually, take from New Zealanders – up to a quarter of what would have been their 2050 incomes, and in doing so we will know those losses will be concentrated disproportionately on people at the bottom... But it is hard to see what is in it for New Zealanders – lagging badly behind other advanced countries on productivity anyway, with constant complaints about child (and other) poverty) – to just happily sign in to such a huge economic sacrifice? And for what?"

But even these ballpark estimates are woefully understated. In a carefully considered paper "[The price of feeling good](#)", Tailrisk Economics concludes that the Ministry's consultation process was a sham, that the modelling was manipulated and deficient (hiding many negative economic impacts), and that the world is unlikely to follow us to a 2050 zero carbon target.

No NZ Climate Benefits

But the RIS says it is not possible to identify *any* quantifiable benefits at all. When we achieve net zero emissions, that is an improvement in the global position of only about 0.1%, which could have no discernible impact on the future global mean surface temperature (GMST).

The Ministry's Consultation Document strongly implied that New Zealand regions would experience less future warming (and therefore avoid weather extremes) if the country could achieve the 'Zero Carbon' target. This implication was wholly unwarranted. Future average temperatures within New Zealand are not related in any way to this country's own greenhouse gas emissions.

New Zealand's efforts cannot deliver any discernible global benefits either. See the science discussion in the Annex. On the contrary, Tailrisk Economics [assesses](#) that "climate change may have a small positive impact on New Zealand this century."

2050 not science-driven

The selection of the year 2050 for decarbonisation is a purely political choice and could have no relationship to any estimation of its likely effects on future temperatures either at home or abroad. Rather, its stated driving force is "leadership at home and abroad."

Both the Explanatory Note and the RIS recognize that no climate effects could arise from New Zealand choosing 2050 over any later date. This decision cannot impact on the physical world – only on the world of marketing and spin.

This is the only conclusion to be drawn from the official [National Interest Analysis](#) regarding the [Paris Agreement](#) which was approved by all Parliamentary parties in 2016, and relies upon international comity as the only reason for New Zealand to volunteer an emissions reduction. This formal document is undoubtedly correct in stating that we "cannot be seen to free-ride on climate change."

But that is the only rational and legitimate ground for taking domestic climate action, and it does not point to a 2050 target.

The very same reasoning appears in the [climate change policy](#) in the Labour Party 2017 manifesto: *"New Zealand must do its part, along with the rest of the world, in reducing climate pollution. It is not good enough to say we are too small to matter... Kiwis are not shirkers."*

Few would disagree that New Zealand's aim must be doing its fair share – not re-interpreting the IPCC reports or the Paris Agreement and not leading the world.

In any event, setting distant targets is little more than bluster. As leading climate scientist David Frame [says](#):

"The real issue for New Zealand is not the targets, but achieving the targets. It is not ambition we lack, but action. Current policy will not get us to the targets we have set. This is also the case in other developed countries. The answer is to work on the policy, not to fiddle with the targets."

Appetite for pain

Professor Frame goes on to dismiss the climate activists who criticise the 'inadequacy' of every target and every policy in every country at all times:

"These assessments are a "view from nowhere" in the sense they are made by people who do not have to consider the trade-offs necessary for decarbonisation to take place. They do not need to worry about economic performance, social cohesion and the other things that actually form the main parts of what we expect from governments in liberal democracies."

The fact is that every government intervention in the cause of climate change causes inefficiencies and distortions in our economic fabric which reduces our standards of living and our quality of life. Climate policy is all dark clouds and there is no silver lining. It is all pain and no gain for New Zealand, *except* to the narrow extent that we may be tangibly incentivising and supporting our trading partners in their efforts to reduce a potential planetary threat.

Activists use the euphemism "ambition" to describe the estimated upper limit to any country's appetite for climate policy pain. Endless Pew surveys have established that most people are prepared to support climate action but only up to the point where the cost to their own households exceeds US\$10 per month (call that about NZ\$200 per year). The New Zealand ETS *already* exceeds that general worldwide pain threshold by about 4-5 times.

There is no reason to believe that middle New Zealand will be prepared to lead the world in climate masochism. Average kiwis did not participate in the Government's misleading consultation process in 2018 and certainly did not know that (in the words of a [former chief economist of the Reserve Bank](#)) :

"I would be surprised if ever before in history a democratic government has consulted on proposals to reduce the material wellbeing of its own people by up to 25 per cent."

Emission drivers

Predictions of future temperature changes rely crucially on scenarios, and the IPCC has made considerable use of the *Kaya Identity* – which states that emission levels are largely driven by population × GDP per capita × energy intensity × carbon footprint of energy.

By the standards of the developed world, New Zealand's population has rocketed over the past decade, and we are also said to have enjoyed a 'rock star' economy. It could be expected from those statistics that our energy-related emissions would have gone through the roof. But that has not happened because our *energy intensity* has been steadily improving – as a result of cumulative small changes in many relevant technologies. In fact, the country's overall energy intensity (units of energy per unit of GDP) has been consistently declining for over 30 years.

We *could* achieve high targets, with relatively low pain levels (for current residents), by cutting off the net inflow of migrants and encouraging net outward migration. Or we could simply induce an endless economic recession by changing the Reserve Bank's policy targets to include emissions reduction¹ – if higher 'ambition' is required. Or perhaps reduce all speed limits to 20kph or ration domestic flying, or put an import ban on cell phones or cars, or adopt one of the "four cheaper ways to influence world opinion" [put forward](#) by economist Ian Harrison.

¹ As seems to be favoured by the current Governor

Conclusion

The onus of showing that 2050 is the best target year lies upon its proponents. So far, the evidence is totally lacking.

As senior Australian climate scientist Garth Paltridge [has put it](#):

“Whether we should do anything now to limit our impact on future climate boils down to an assessment of a relevant cost-benefit ratio. That is, we need to put a dollar number to the cost of doing something now, a dollar number to the benefit thus obtained by the future generations, and a number to a thing called “discount for the future”... It is extraordinary that horrifically large costs can even be contemplated when the numbers for both the future benefit and the discount for the future are little more than abstract guesses.”

Annexe : Global Temperature Impacts

To begin assessing the global benefit from any climate policy it is necessary to identify the temperature consequences of two hypothetical cases – the first being a ‘Business as Usual’ (BAU) scenario, which provides the counterfactual to the second scenario in which emissions are reduced by the relevant policy. ‘Temperature’ means the GMST (measured in air just above all land and ocean surfaces).

There are endless opinions on scientific, economic and other complexities contributing to the recognition and attribution of human-driven GMST changes and the welfare impacts of such changes. However, for New Zealand legislative purposes, the only tenable approach is to simply adhere to the findings of the Assessment Reports of the UN Intergovernmental Panel on Climate Change (IPCC), the Fifth² of which (AR5) was signed off on behalf of the New Zealand Government in Stockholm, Sweden, during September 2013.

AR5 offers a table of possible BAU temperature levels by 2050 and 2100 respectively, which range from beneficial to dangerous, but offer no probabilities. Users are left to make their own subjective³ selections, on a “believed most likely” basis, of two key inputs:

- an equilibrium climate sensitivity (ECS)⁴ within the range 1.5° – 4.5°C
- a future emissions scenario (RCP) within the forcing range 2.6 – 8.5 W m⁻²

² Although Working Group 1 (WG1) of the Sixth Assessment Report is now in draft, it is not due to be published until April 2022.

³ IPCC/AR5/WG1 is unable to offer an opinion on either input, but notes that averaging is not an option. The range of possible 2050 and 2100 temperature outcomes is critically dependent on each.

⁴ The climate sensitivity metric required for application of the Table is known as the ‘Transient Climate Response’ (TCR).

An important third imponderable is the likely future impact of natural internal variability⁵ or natural forcing (e.g., volcanoes). Although WG1 is silent on this point, it does find⁶ that “*more than half* of the observed warming” in the period 1951-2010 was human-caused – by a combination of greenhouse emissions and land use changes. That leaves the possibility that up to half the 0.65°C that was observed (i.e., about 0.3°C) could have been natural.

Activists and the media generally choose a dramatic “worst case” approach – despite the fact that the estimated mathematical probability of that combination is much lower than the onset of either the next glaciation or a ‘little ice age’.

Then there is the complex question of quantifying the damage that could be avoided if the major future emitters – China, India, USA, EU and Russia – were able to achieve ‘zero carbon’. That is even more complex. Recent Nobel prizewinner William Nordhaus says that “from the standpoint of economic rationality” it is optimal to keep warming the planet to about [3.5°C over preindustrial levels](#). Professor Richard Tol’s [2009 paper](#) found that all published research found initial economic welfare from climate change and was “in sharp contrast to the urgency of the public debate and the proposed expenditure on greenhouse gas emission reduction.”

Despite the economists, the objective of the UNFCCC Paris Agreement is to restrain GMST from rising by more than 2°C above its calculated level of 14.10±1.00°C in about 1875. It has risen to 14.97°C over the last 140 years – an average of only 0.06°C/decade.

During the past half century, GMST has been rising at an average rate of about 0.13°C/decade – and, if this trend is projected forward, the 16.10°C limit would not be reached before 2100. But there is widespread concern that exponential growth⁷ in annual global emissions might accelerate this trend to cause the remaining “headroom” of about 1.13°C to be dissipated much earlier.

The Paris Agreement, relying upon voluntary reductions by 2030, could potentially reduce the ‘business as usual’ (BAU) GMST of 2100 by [about 0.2°C](#) in aggregate, as long as none of the reductions are achieved by ‘carbon leakage’. This rather modest contribution has been accepted, and indeed welcomed, by the international community.

⁵ Such as the El Nino Southern Oscillation (ENSO), the Pacific Decadal Oscillation (PDO), the Atlantic Multi-decadal Oscillation (AMO), solar cycles, ocean thermocline changes, etc.

⁶ This was an ‘expert judgment’. I discuss [elsewhere](#) the lack of relevant evidence. It is important to note that there is no consensus or even majority view between climate scientists on these three confounding issues.

⁷ CO₂ accumulates in the atmosphere over long periods. However, the warming impact of increments of atmospheric CO₂ diminish logarithmically as ‘saturation’ is approached.