

Consultation on setting New Zealand's post-2020 climate change target

Question 1.

- (a) I agree with these objectives.
- (b) The long-term transition to a low-carbon economy is the most important. I think that access to export markets will become increasingly conditional on implementation of a low-carbon economy.

Question 2.

The relatively high rating of the contribution of agriculture to GWP (Global Warming Potential) through methane emissions (Figure 2 of the discussion document) is based on the use of a 100 year time horizon by the IPCC (IPCC WG1 Fifth Assessment Report). That report notes that “the choice of [this time horizon] is subjective and context dependent” (page 27). The IPCC report also notes that in regard to non-CO₂ greenhouse gases such as methane “their impacts become progressively less for longer time horizons”. The long term persistence is covered in section 6.1.1.1 of the IPCC WG1 report. It is unfortunate that the IPCC has glossed over this feature in the calculation of the GWP of greenhouse gases. (The GWP of methane as measured relative to CO₂ for a 100 year time horizon is the basis of Figure 2 in the discussion document). In “Atmospheric Lifetime of Fossil Fuel Carbon Dioxide”, David Archer, et al (Annu. Rev. Earth Planet. Sci. 2009.37:117-134.) , the authors state that “generally accepted modern understanding of the global carbon cycle indicates that climate effects of CO₂ releases to the atmosphere will persist for tens, if not hundreds, of thousands of years into the future.”

The use of a specific time horizon is an example of future discounting. This topic is covered indirectly in the Stern report (Stern, Nicholas. 2007, “The Economics of Climate Change: The Stern Review”, Cambridge, UK: Cambridge University Press) and further explored by reviewers of that report. At the heart of this debate is how to discount the future relative to the present. The IPCC has implicitly applied a strong discount factor to future generations by truncating the GWP calculation at 100 years.

Forestry sinks are also an important means of meeting nett emissions targets but New Zealand needs to understand that such land is locked up in perpetuity (not just 100 years or some other convenient time frame). Furthermore the strategy of putting additional land aside for new plantings each year can only be adopted for a finite number of years.

I suggest that New Zealand's targets be dealt with in two parts:

- (1) Agricultural emissions have a low reduction target because:
 - a. The IPCC's figure for the GWP of methane discounts the future too strongly.
 - b. As an efficient producer of food New Zealand should not reduce the quantity of food produced, especially as the world is predicted to experience food shortages in the coming decades.

- c. Decreases in the rate of emissions per unit production are dependent on future research.

(2) Non-agricultural emissions have an ambitious reduction target.

Question 3.

Again referencing the Stern report, the economic cost of adaptation to climate change is taken as 20 times the cost of mitigation within the current century and the cost of ‘climate stabilization’ has been estimated at 1% of GDP. The numbers in Table 1 of the discussion document range between 1.5% and 2.0% of household consumption in 2027. In spite of the added cost I would support the higher target (40% below 1990 levels, at a cost of a 2% reduction in household consumption).

Question 4.

I think that the development and adoption of new technology (including agricultural technology) is the most important.

Question 5.

New Zealand should identify the critical technologies and the gaps in the appropriate sciences. This should be used to establish and participate in international research collaborations.

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