the ROYAL SOCIETY of NEW ZEALAND
TE APĀRANGI

GAZETTING NEW ZEALAND'S 2050 EMISSIONS TARGET

Submission from the Royal Society of New Zealand

The 2009 Copenhagen Accord

The Royal Society of New Zealand applauds the Government for being part of the United Nation's Cancun Agreements which accepts the need for "reducing global emissions so as to hold the increase in global average temperature below 2 degrees Celsius above pre-industrial levels, and that Parties should take urgent action to meet this long-term goal **consistent with science and on the basis of equity**… and to consider strengthening the long-term goal in relation to a global average temperature rise of 1.5°C".[1]

The Government recently proposed to gazette a greenhouse gas emissions reduction target of "-50 by 50", i.e. a 50% reduction in national net greenhouse gas emissions from 1990 levels by 2050, as New Zealand's contribution to keeping global warming below 2°C. The Royal Society of New Zealand applauds the Government for wishing to formally commit to a long-term target and for setting in motion the steps needed to achieve it.[2] However, a 50% reduction target is at the lower end of what is considered globally necessary to meet a target of no more than 2°C warming above pre-industrial levels.

"Consistent with science" - The 50% target and the chances of avoiding dangerous climate change

The mitigation studies assessed by the IPCC for its Fourth Assessment Report suggest a reduction in global CO2 emissions of 50-85% by 2050 would be required to hold global temperature increases to 2-2.4°C above pre-industrial levels, with emissions peaking during the period 2000-2015.[3] More recent analyses suggests that with current emissions reductions targets, global temperature rise could significantly exceed 2°C, a limit accepted by most governments as marking the beginning of dangerous levels of climate change.[4] Should all nations collectively achieve a 50% cut in greenhouse gas emissions by 2050 (an optimistic goal given the allowable emissions growth in non-Annex I nations), the chances of exceeding 2°C warming are estimated at 12-45%.[5]

1 UNFCCC, "Cancun Agreement", 2010, Outcome of the work of the Ad Hoc Working Group on long-term Cooperative Action under the Convention. UNFCCC, FCCC/1.COP.16.
2 Ministry for the Environment, "Gazetting New Zealand's 2050 Emissions Target", http://www.mfe.govt.nz/publications/climate/nz-2050-emissions-target/
3 IPCC Fourth Assessment Report, Synthesis Report, Table 5.1 http://www.ipcc.ch/publications_and_data/ar4/syr/en/mains5-4.html
4 Anderson, K., and A. Bows, "Beyond 'dangerous' climate change: emission scenarios for a new world" 2011, Phil. Trans. R. Soc. A, 369, 20–44, doi:10.1098/rsta.2010.0290 http://rsta.royalsocietypublishing.org/content/369/1934/20.full.pdf
5 Meinshausen, M., N. Meinshausen, W. Hare, S. C. B. Raper, K. Frieler, R. Knutti, D. Frame, and M. 5 R. Allen, "Greenhouse-gas emission targets for limiting global warming to 2°C". 2009, Nature, 458, doi:10.1038/nature08017
http://www.iac.ethz.ch/people/knuttir/papers/meinshausen09nat.pdf

The Cancun Agreement does not discuss acceptable levels of risk of exceeding 2°C warming. **The Government should make explicit the level of risk of failure that it considers acceptable.** We recognise that defining acceptable levels of risk ultimately requires value judgements that cannot be made by science, but must be informed by science. We suggest that the scientific evidence of the irreversibility of climate change, the cumulative effect from emissions of carbon dioxide and other long-lived greenhouse gases, and the risk of major system changes such as accelerating loss of polar ice sheets all support a precautionary approach.[6]

"On the basis of equity" - Burden sharing and equity

The IPCC has assessed a range of studies around the implications of emissions targets based on analysis of many alternative ways of defining equity amongst nations and sharing the responsibility of collective emissions reductions. Those studies suggest that emissions from industrialised countries would need to be reduced by 80 to 95% by 2050 relative to 1990 levels to contribute equitably to global collective emissions reductions that can limit warming to 2-2.4°C.[7]

The government's proposed long-term target of a 50% emissions reduction is in stark contrast with the target emissions ranges proposed or legally enshrined by industrialised countries such as the US, Europe and Japan which all go towards the 80% mark. Given different starting points, adhering to these different targets would mean that in 2050, New Zealand's per capita emissions would be about five times that of Europe, and about twice as high as that of the US.

Such a growing discrepancy appears inconsistent with the government's other stated goals of contributing fairly to an effective global agreement on climate change, and of being seen as a good international citizen and maintaining our "clean and green" brand upon which much of our economic performance through agricultural imports and tourism rests. The government should consider including quantitative economic or social analysis of the consequences of, or justification for, being so significantly out of step with other developed countries.

In summary

The Royal Society of New Zealand welcomes the opportunity to comment on the proposed emissions target and would like to highlight the Society's previous statement that "reducing the future impact of climate change will require substantial reductions of net emissions of greenhouse gases".[8] We hope to see a new target for substantial reductions that meets the responsibilities and objectives that successive New Zealand governments have already and repeatedly accepted.

For further information, please contact
Dr Jez Weston
jez.weston@royalsociety.org.nz

6 Solomon S, Plattner G-K, Knutti R et al "Irreversible climate change due to carbon dioxide emissions", 2009, Proceedings of the National Academy of Sciences 106(6): 1704-1709
Ramanathan V, & Feng Y "On avoiding dangerous anthropogenic interference with the climate system: Formidable challenges ahead", 2008, Proceedings of the National Academy of Sciences 105(38): 14245-14250;
RSNZ "Emerging Issues – Sea Level Rise", 2010 http://www.royalsociety.org.nz/publications/policy/2010/emerging-issues-sea-level-rise/
7 IPCC Fourth Assessment Report, Working Group III, Box 13.7, Stabilisation category I
http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter13.pdf
8"Climate change statement from the Royal Society of New Zealand", July 2008 http://www.royalsociety.org.nz/organisation/panels/climate/climate-change-statement/