



Engineers for Social Responsibility Inc
PO Box 6208
Wellesley Street
Auckland 1141

ESR SUBMISSION ON “NEW ZEALAND’S CLIMATE CHANGE TARGET DISCUSSION DOCUMENT”, MINISTRY FOR THE ENVIRONMENT, MAY 2015

Introduction

Engineers for Social Responsibility Inc. (ESR) is an independent group of engineers who consider that being knowledgeable in the field of technology means that they also have a special obligation to the public at large. ESR has taken a particular interest in responses to climate change and has produced a number of peer-reviewed papers which can be accessed through our website at www.esr.org.nz.

General Comments

The Discussion Document sets out the issues relatively clearly and succinctly. However, the discussion reads like a series of excuses for avoiding or delaying action. Continuing to delay action is not a way forward. The following sets out a number of the issues raised in the discussion document and our responses.

New Zealand should take a special position as a leader in reducing oil use given our geographic isolation and the exposure of our economy to imported oil. As a developed island nation, we should take a leadership position in representing the Pacific peoples adversely affected by ocean acidification, sea level rise and storm severity. As a country that values nature, we should take a special position of leadership in working out the value chain for re-forestation and re-wilding native ecosystems. Devoting effort and resources to being a leader will put our innovators in the position to develop businesses, systems and products with export value.

1 “New Zealand is a special case”

Every country is a special case and has its unique challenges. As a developed country with many potential sources of renewable energy, New Zealand is actually in a very strong position to take action. At present there are new renewable electricity generation plants consented but not built, with a combined capacity of 3000MW (compared with our peak national load of approximately 9000MW). See Engineering Insight Vol 15/5 p28ff. That additional capacity could be used to achieve

emission reductions through the transition of transport energy demand from liquid fuels to electricity.

2. "New Zealand contributes only 0.15% of global emissions"

That does not in any way absolve New Zealand from contributing its 'fair share' of reducing the world's greenhouse gas emissions. We have a global responsibility to contribute effectively to reducing carbon emissions.

Since we are repeatedly told that New Zealand "punches above its weight" that emphasises the need to be seen to at least be taking our fair share of action.

In setting our national target for greenhouse gas emissions we should consider the maximum allowable global per capita emission rate to avoid disastrous climate change. Our proposed emission rate should be related to that rate. That is a fundamental measure of "fairness" that is bound to be raised at the greenhouse gas emission reduction negotiations in Paris.

3. "44% of New Zealand's GHG emissions are methane which has only a limited effect on long-term warming"

This statement is an intentional obfuscation of science. The life of methane emissions in the atmosphere compared with carbon dioxide is only relevant if means of reducing methane emissions are implemented. Until they are, the methane gas emissions continue to make a significant contribution to global warming.

The shorter life of methane in the atmosphere means that it is more important in the short to medium term than in the long term. That means that we should assess its effects on a 20 year rather than a 100-year time horizon (see IPCC 4th and 5th assessments reports). On that basis the impact of methane is much more significant.

4. "New Zealand is on track to meet its current 2020 target of 5% below 1990 levels" (even though our gross emissions are 21% above 1990 levels!)

This "achievement" is possible by comparing our current emissions net of forestry reductions with 1990 gross emissions, which did not take forestry reduction into account, and by including "emission reduction units" bought internationally to offset our emissions. It was not achieved through serious attempts to reduce New Zealand's domestic greenhouse gas (GHG) emissions. Creative accounting is not a responsible approach to this serious issue.

5. The proposed continued use of carbon offsets to meet our emissions targets

The continued reliance on emission reduction units or their future equivalent assumes that buying such units will be less expensive to the economy than reducing emissions domestically. That may not be the case if such units reflect the true cost of carbon emissions. At present they most certainly do not.

Relying on external emissions reduction units is also just a way of avoiding taking the appropriate action to reduce our own emissions, which we have a strong responsibility to do.

6. *“In the next 15 years forestry planted in the 1990s is expected to be harvested meaning that these forests will no longer provide a significant carbon sink over this period”*

The document does not refer to ongoing deforestation and the effects this will have on future net GHG emissions. This deforestation is encouraged by the very low value of the emission reduction units which are a consequence of deliberate government policy.

7. *The discussion document states that 17% of NZ’s GHG emissions are from the transport sector. It also states that our low population density has contributed to a high per capita use of road transport.*

The reality is not that simple. Part of the reason for New Zealand’s high use of road transport is the priority given to investing in road network expansion. Current government transport policy for example continues to prioritise investment in the so-called “roads of national significance”.

Auckland is attempting to change travel behaviour through investing in public transport, but is held back by government insistence that costs be met by ratepayers. Viable alternatives such as revenue from fuel charges or tolls or, better, congestion charges - which both raise revenues from road users and reduce demand for congested road space - are deliberately pre-empted. This has to change.

Transport is one obvious area where New Zealand can reduce GHG emissions in the short to medium term. However, current transport policy places a very low priority on reducing GHG emissions, and far too little emphasis on reducing demand for car travel by providing good alternatives.

Our ability to generate electricity from renewable sources is an opportunity to electrify the transport network and thus reduce greenhouse gas emissions.

8. *According to the discussion document, based on a \$50 per tonne carbon price the impact on average annual household consumption would be a reduction of \$1,800 per annum for a 40% reduction below 1990 levels compared with the \$1,270 for a 5% reduction.*

This calculation does not take into account the ability of the government to offset household cost increases by using the revenue from the carbon charge to reduce other taxes and charges. It also takes no account of the benefits from reducing our fossil fuel imports, which currently cost around \$7 billion a year, or from the increasing employment opportunities as we replace fossil fuels with other alternatives and new developments, or the simple win-win strategy of better encouragement for householders and industry to avoid wasting energy.

The discussion document makes no mention of the cost of the climate changes that will result from a business as usual approach. That cost could be very large. It is accepted that droughts are likely to be longer and more severe and floods are likely to be more severe as global warming proceeds. That could have a very substantial effect on our agricultural production.

9. *“New Zealand has one of the highest levels of renewable electricity generation in the world (around 80%) leaving less room to reduce emissions in this area”*

True, but this should be seen as an opportunity not a challenge. What matters is not our current percentage coming from renewables, but our ability to improve on this percentage. We are in a much stronger position to do this than many other countries are.

10. *“Our population has grown by 31% since 1990 compared with the OECD average of 18%”*

A fair point when looking at total percentage increases in national gross emissions, but of far less relevance when comparing gross emissions per capita. As the document points out, New Zealand’s per capita GHG emissions at 17 tonnes are among the highest in the world.

11. *“We are contributing to the Global Research Alliance on Agricultural Greenhouse Gases”*

The discussion document makes it clear that methane emissions from animals are a major part of our greenhouse gas emissions. Sheep and cattle are ruminants and as such they rely on methane forming anaerobic bacteria to digest cellulose. That means production of methane is an essential by product of their digestion process. It is unclear how much reduction in methane emissions can realistically be achieved by the inhibitors or genetic adjustments that are being researched.

Specific Recommendations

1. Emissions Reduction Targets

The case for interim exemption of agricultural emissions due to practical difficulties in reducing methane emissions by livestock, would be much more convincing if New Zealand demonstrates a serious and sustained commitment to reducing its non-agricultural (carbon dioxide) emissions.

The discussion document should be exploring different ways that dairy operations can be helped to re-organise their operation to both treat the effluent they produce on an industrial scale, and to produce biogas which they can use to provide much of their energy needs.

A common target for EU countries is an 80% reduction in emissions by 2050 compared to 1990 levels, though some countries are aiming even higher than this.

The targets should be based on gross emissions figures, or on net figures after allowing for permanent re-establishing of native bush. Allowing credits for forestry trees, and then removing these credits when the trees are harvested, just complicates the carbon charging system for no long-term benefit, and makes assessing progress on meeting our targets more difficult and confusing.

In our view, the long term aim must be to achieve an 80% reduction in 1990 gross greenhouse gas emissions by 2050.

To advance towards this target while recognizing the current practical difficulties in substantially reducing New Zealand’s agricultural emissions, we consider that, at a minimum, New Zealand should commit to the following:

- By 2030, the CO₂ emissions in New Zealand from the production and use of coal, oil and natural gas will be reduced to no more than 13.5 million tonnes (i.e. 40% less than the gross fossil hydrocarbon emissions in 1990).
- A plan will be in place by 2020 for further reducing fossil hydrocarbon CO₂ emissions in New Zealand so that they are no more than 4.5 million tonnes in 2050 (i.e. 80% less than in 1990).

- CO₂ emissions from cement making and other non-combustion sources will be reduced as far as practicable.
- The carbon content of the New Zealand biosphere (i.e. trees, vegetation, soil and vegetation derivatives; including biofuels) will be quantified accurately and will be increased as far as practicable.
- Methane discharges to air from all sources in New Zealand will be quantified accurately and will be reduced as far as practicable.
- Other greenhouse gas emissions (i.e. N₂O etc.) will be reduced as far as practicable.

The 2030 and 2050 targets committed to by the New Zealand government should be accompanied by firm interim targets which will be used to ensure that emissions reductions remain on track.

2. Carbon pricing

Either introduce a carbon charge or alter the emissions trading scheme to ensure that the cost of the units is a true reflection of the costs of carbon emissions. Compared to a trading scheme, a carbon charge is simpler and less costly to administer, it is always quite clear what the charge is and the revenue flows directly to the government. There has already been at least a decade of delay in setting an effective carbon charge and putting those revenues to work providing benefits to New Zealand by bringing our economy into line with the best in Europe and Japan regarding energy efficiency.

The carbon charge could be set at a relatively low value initially, say \$25 per tonne, then increased progressively over a period of 5 years to reach an internationally agreed level. If there are delays in reaching an internationally agreed level, then the carbon charge reached at the end of the transition period needs to be sufficient to drive the changes needed for New Zealand to meet its own targets. It also needs to adequately reflect the damage the emissions are causing.

The discussion document refers to an IPCC carbon price estimate of \$60 to \$200 per tonne by 2030. Future work may well increase that estimate.

The revenues from carbon pricing should be used to compensate low income households which are disproportionately affected and to fund measures which reduce New Zealand's dependency on fossil fuels.

There is a strong argument that carbon charges should also apply to exported goods and services. Reducing or removing carbon charges from exports, as currently happens under the ETS through the provision of free emissions units to some exporters, has two major adverse effects. First it means that we are effectively providing fossil fuel subsidies on these exports by not pricing them to reflect the damage caused by the emissions during their manufacture. And second, we are weakening the financial incentives for the New Zealand suppliers and manufacturers to reduce their emissions.

3. Transport

Empower the major cities to introduce congestion charges which both manage demand for private vehicle travel in congested peak periods and raise revenues. Alternatively, empower councils to raise revenues from road users through tolls or a fuel tax for investment in measures which will reduce GHG emissions and help achieve long term sustainability objectives.

Use some of the revenues from carbon pricing to support investment in public transport, walking and cycling. These investments should be integrated with higher density, mixed use developments which include affordable housing.

Complete the electrification of the NIMT between Auckland and Wellington and electrify the rail line linking Hamilton and Tauranga to reduce New Zealand's GHG emissions and reduce our dependency on fossil diesel for the movement of freight.

Take steps to significantly increase the use of electric vehicles. These could include the provision of fast charging stations on the major inter-urban routes and interim subsidies reducing the cost of electric vehicles.

Set minimum emissions standards and fuel efficiency requirements for vehicle imports at least equal to the EU standard.

4. Energy Production & Exploration

Firmly and unconditionally commit to increasing the proportion of electricity generated sustainably to 90% by 2020, and to 95% by 2030.

Phase out the use of coal for electricity production by 2025.

Re-organise the electricity market to reflect the real cost of generation and to increase the cost of peak power generated by gas and coal. Allow the power companies to profit from efficiency investments, and thus to make more money by selling less electricity and by well-designed and implemented demand side management. Work with the utility companies to develop a local renewable energy protocol to encourage large users to install solar PV that matches with their load profiles.

Discontinue all direct or indirect subsidies to fossil fuel companies including companies engaged in exploration activities.

5. Agriculture and Forestry

Ensure that government policies encourage investment in sustainable forestry as certified by international organisations, but preferentially, re-forestation and re-wilding as a carbon sink. At a minimum do not indirectly encourage deforestation as is currently the case.

Continue with, and accelerate current initiatives to fence off and plant around water ways.

Continue to encourage steeper areas to be used for forestry or returned to native bush.

Continue to support work on how to breed and raise animals in a way that produces lower emissions.

Continue work on how to replace fertilisers having high carbon footprints with more environmentally friendly alternatives

Make it clear to farmers that they have a responsibility to reduce methane and nitrous oxide emissions and that they cannot assume that they will remain insulated from carbon pricing in the future.

6. General

Alter the Resource Management Act to make consideration of climate change issues acceptable when dealing with proposals that may have harmful environmental effects, when these are being considered via resource consent applications or in other manners.

Continue current initiatives to reduce domestic and business reliance on external energy supplies through use of insulation, more efficient lighting, solar water heating, solar power for peak demand management and load reduction, etc.

Ross Rutherford
President
Engineers for Social Responsibility Inc
Ph (09)4103457 or 021740746
ross.rutherford@ihug.co.nz