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CHRISTCHURCH NEW ZEALAND

14 April, 2009

Christchurch City Council,
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Dear Sir/Madam

RE: DRAFT LONG TERM COUNCIL COMMUNITY PLAN 2009-19

SUBMISSION FROM PROF. DAVE KELLY

- I DO wish to discuss my submission at the hearing.

Summary
An overview of my points (each explained in detail below) is that:

- New Zealand is likely to have to make cuts of at least 40% in greenhouse gas (GHG) emissions by 2020, just at the end of this LTCCP period
- Making such cuts is going to be very hard, but very important to avoid major negative effects on food production, sea level rise and human wellbeing
- It is not clear how we can cut GHGs by 40%, but it is absolutely clear how **not** to do it, which is the plan laid out in this LTCCP, ie to increase spending on motorways and high-volume roads for motor vehicles, while reducing to very low levels spending on active transport (cycling and walking)
- I therefore request that the LTCCP be changed to provide meaningful budgets for cycling and walking, sensibly funded by reducing spending on large roading projects.

Introduction

Thanks for the opportunity to make this submission on the LTCCP. I am a professor of ecology at the University of Canterbury where I have taught for 24 years, and a resident of the inner city. My main research area is in plant-animal interactions but I have taught over the last 15 years on human population, world food supply, and climate change. Therefore climate change is not my main academic speciality, but it is one I have followed increasingly closely. I have the advantage of having good access to the latest scientific literature, a good training in how to evaluate the merits of conflicting claims, and the ability to pursue these lines of study during work time. I have no vested interest in any particular outcome in terms of greenhouse gas emissions or global warming (eg no research grants dependent on certain states), beyond wanting my 7 year old son to grow up in a city and a world that are livable.

In my opinion this LTCCP fails to pay anything like enough attention to the clear and growing risks posed by global warming. The scientific case was fairly clear by 10 years ago; the mood of public opinion moved to generally accepting the arguments perhaps 5 years ago; but what has not

happened yet is the necessary next step of change in political systems to reflect this. The National Government has set a target of a 50% reduction in GHGs by 2050, but has done nothing to make any contribution in this direction, presumably on the grounds that it's so far in the future that changes can be put off until later. However this LTCCP spans the period in which recent scientific work says that we will have to start making major cuts.

Explanation of specific points, and changes requested

New Zealand is likely to have to make cuts of at least 40% in greenhouse gas (GHG) emissions by 2020, just at the end of this LTCCP period

This seems like a large cut, but it is the current stated aim in Germany, and it seems likely that New Zealand will be faced with making at least this large a cut. The need for such large cuts so soon comes from much recent work which shows climate change is accelerating. For example, global emissions of GHGs have been rising at 3% per year recently, compared to only 1% per year in 1992. Recent data from the last few years show the Arctic Ocean might be completely free of sea ice within a decade, compared to previous estimates which had this by mid-century.

Even the most recent (Fourth) IPCC report (2007) did not have such drastic predictions, but this is because the IPCC is a large and very cautious body which requires agreement from many scientists and politicians from across the globe. Its 2007 report was based on a cautious interpretation of the data available up to 2005 or early 2006. The science is moving much faster than that. Also the IPCC basically leave out some possible feedback loops on the grounds that they are unable to estimate them with enough certainty. Recent evidence suggests that these may be already under way and should be taken account of. There are many good up-to-date summaries of the current state of knowledge, and I list a few at the end of this submission.

Making such cuts is going to be very hard, but very important to avoid major negative effects on food production, sea level rise and human wellbeing.

The key reason for making strong cuts in GHGs is to try and keep the climate below the level where runaway feedback loops take over and warm the planet beyond our control. Two of the most important feedback loops are loss of albedo when sea ice like that in the Arctic Ocean melts (so instead of reflecting away 90% of the sunlight from white ice, the dark sea absorbs most sunlight, speeding warming); and the release of methane from frozen soils in the tundra and chilled deep sea deposits (methane is a strong GHG).

The scientific consensus is that to be safe we should keep warming below 2 ° as above this level feedbacks are likely to kick in. We have already warmed 0.8 ° leaving only 1.2 ° of headroom. To keep below 2 ° of warming, we have to keep atmospheric CO2 concentrations below about 450 ppm or so, the official European Union target. Pre-industrial CO2 was at 280 ppm and it is currently at 387 ppm and rising. Moreover, some very well informed scientists like James Hansen think that 450 ppm is too high and we ought to keep it below 400 ppm (a level likely to be breached in the next few years) and longer term need to get it back down to 350 ppm. We can overshoot the target for a short time, but then have to get CO2 back to a "safe" level fairly quickly to avoid the worst effects. All this would be difficult, but is probably necessary to stop runaway warming that would over a couple of centuries lead to high levels of warming (perhaps 6-10 °).

It is important to realise how negative the effects of global warming are likely to be. Firstly, the conservative IPCC predictions don't sound too bad, such as a medium scenario of warming by 1.3 ° C by 2040. However, since the oceans warm more slowly than the land, a global rise of 1.3 ° means a rise on the land of 2 °, and a rise of more like 4-5 ° in the polar regions. Also, it now looks as

though the current trend is moving along above the worst-case IPCC scenario, giving credible predictions in the order of 2.6 ° higher global mean by 2040 (see Dyer 2008 page 16).

There will be two major negative effects, on food production and on sea level rise. Food production is already going to be hard pressed to keep pace with the increase in human population from the current 6.7 billion (more than double that of the 1950s) to the projected 9 billion around 2050. Unfortunately, climate change of 2-4 ° warming is likely to reduce food growing capacity by around 20% in Africa and 30% in India, for example. The "breadbaskets" of the world (areas with very fertile soils and good rainfall, such as the American Midwest, the wheat belt of Western Australia, etc) are likely to suffer decreases in rainfall. Extra rain may fall elsewhere but without good soils, this will not completely compensate. In short, climate change is likely to lead to a real risk of very large scale starvation in some parts of the world, which in turn poses great risks of civil unrest, warfare between countries, mass immigration and so forth.

Sea level rise is a slower effect but very negative, and very relevant to Canterbury. The conservative IPCC estimation is for a rise of 0.23 m by 2040, which doesn't sound too bad until you realise we may lose most of Southshore in a storm. More recent scenarios predict sea level rises of more like 0.5 m by 2040. More worrying still is the fact that if runaway warming gets under way, we would be committed to the eventual melting of most of the Greenland and Antarctic icecaps with sea level rises of more than 10 metres over time. Obviously, this would drown not only Lyttelton Port and much of Bangladesh and Kiribas, but bring the sea level into Cathedral Square or beyond. These effects would be slow and take several centuries to be complete, but the time period in which we have the chance to stop them becoming inescapable is much shorter and probably only measured in a few decades.

It is not clear how we can cut GHGs by 40%, but it is absolutely clear how NOT to do it, which is the plan laid out in this LTCCP, ie to increase spending on motorways and high-volume roads for motor vehicles, while reducing to very low levels spending on active transport (cycling and walking)

So how does this LTCCP shape up in light of these facts? Very poorly, especially in comparison with even the last LTCCP (despite the last one being written at a time when the data on global warming were not so dire). In this LTCCP's total transport budget of around $663 million over 10 years, only $5M is allocated to new cycleways (down from $21M suggested by staff). Only about $2M is allocated to new walkways. There are some large items for walking and cycling, but these hide the fact that the budget is essentially just maintenance ($48M of the $50M for walking is for footpath resurfacing), or is money being spent in sub-optimal places driven by other needs (eg the $10M for cycleways alongside the Southern Motorway, which really should be a charge on Transit NZ as this only relieves some of the negative effects of building a motorway and is not in a place where cycling most needs money spent; or eg the counting of cycle lanes on new bus routes as a plus for cycling when they are in places selected to benefit buses). Meantime there is major expenditure proposed on a range of new roads, to deal with traffic congestion predictions based on continuing growth in motor traffic of 2% or whatever per year.

Clearly if New Zealand has to make any meaningful decrease in GHG emissions (let alone 40% by 2020) traffic will not be growing at the past rates, it will have to be decreasing. Whatever the mechanism for this (eg a carbon tax or trading scheme) people will be driving less. These expensive new roading projects will be completed just as they are realised to be useless.

Even if all the above arguments about global warming were completely wrong, it is likely that increased fuel prices driven by peak oil will have the same effect of reversing traffic growth, and reversing the movement of people out to live further from work. In mid 2008 with petrol over $2 a litre, there was a noticeable reduction in congestion in Christchurch.

Therefore the spending priorities in the LTCCP look extremely dubious.

It could be argued that cycling would be nice, but Christchurch residents just don't do it. This is false, because Christchurch has retained a higher modal share of cycling for journeys to work than most other NZ cities (most recent Census figures were around 6-7% I think), and the CCCs own commuter count data show an increase in cycling of 25% between 2003 and 2008. Some of this increase is probably due to increases in fuel prices etc, but I think also some was coming from the fact that in the late 1990s and early 2000s, Christchurch had a widely-agreed Cycle Strategy in place, several effective cycle planners on the staff, and budgets that had increased from the previous meagre amounts (which this LTCCP proposes to return to). This allowed important major projects like the Railway Cycleway to be built. The count data show that even modest expenditures on cycling facilities can have a definite effect on cycle numbers. And of course, more cyclists getting to work means fewer cars in the rush hour, thus cheap cycle projects can lead to the delaying of expensive car projects.

I therefore request that the LTCCP be changed to provide meaningful budgets for cycling and walking, sensibly funded by reducing spending on large roading projects.

At a very minimum, I think the budget for new cycleways should be returned to the $20M or so level that the cycle planners say they could sensibly use. Another $10M should be allocated to new walkways. In a roading budget of over $600M this is chicken feed and easily found by reducing one of the car projects.

If the council does not show more resolve in dealing with global warming by encouraging sustainable transport in general and active (zero-emission) transport in particular, I think the scientific data are that we will all live to regret it.

Thank you for the opportunity to comment.

Futher reading

For longer summaries of many of the points made here, the best place to start is "Climate Wars" by Gwynne Dyer (2008). I would strongly recommend that any policymaker take the time to read this book, which has citations to other sources throughout. There are also shorter articles in New Scientist magazine such as pages 29-33 of the 28 February 2009 issue.

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