Response to Productivity Commission *Low-Emissions Economy* draft report

June 2018

Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata

The Productivity Commission's *Low-Emissions Economy* report is authoritative and comprehensive. I would like to comment on the way two issues are presented.

The first involves the relative importance of emissions prices. The second reflects on the risks of relying on forest sequestration.

Emissions prices are only part of a low emissions economy

The report rightly maintains that a strong emissions pricing mechanism is central. It also correctly maintains that such a mechanism needs to be complemented by strong innovation policies, the removal of barriers to investment, and stable institutions that can support the scale of economic transformation that is implied by the emissions reduction challenge.

But emissions price levels should be given less emphasis than they are in the report. And greater balance needs to be given, when talking about emissions price levels, to the interaction between supporting policies and emissions prices. Interactions that will tend to keep emissions prices down.

The modelling of mitigation pathways that is presented in the report is useful. The finding that 'all pathways are feasible' (p.57) is a compelling result. The scenarios used in the modelling have been well chosen, presenting several possible, low emission, futures involving a mixture of structural changes to the economy as well as technological improvements. The report also posts all the right caveats about how modelling should be used and what it can and can't tell us.

But, in the modelling, it is emissions prices that do all the 'work'. This is how the prices are presented and this appears to be the mechanics in the modelling.[1] The modelling indicates that emissions prices will need to rise significantly over the long term, from current levels of around $21 a tonne, to between $75 to $250 a tonne, to meet 2050 emission reduction targets. While these prices may be necessary to make the modelling work out, they are unlikely in practice – or at least they should be if the full policy suite is successful.

Innovation and technological change are what matter most for long term emissions reductions. Yet assumptions about innovation are inputs into the modelling and prices are the headline result. There is no explicit feedback loop, in the modelling, between emissions prices, or expectations about emissions prices, and investment in new technologies or new knowledge.

Modelling innovation is of course extremely difficult, and it is inevitably assumption driven. But the mitigation pathways and prices presented in the report are also driven by assumptions about innovation. So more attention to those assumptions and to innovation dynamics would be useful. The report overall is underweight in this area.[2]

There are good reasons to believe that the key factor in determining what a low emissions economy looks like will be investors' expectations and not emissions prices – or at least, not emissions prices on their own. Inducing scarcity, by driving up emissions prices, can back-fire, long term, if it drives innovation towards reducing the emissions intensity of 'dirty' technologies rather than reducing costs of zero emission technologies.[3]

The issue of the moment is how the transition to a low emissions economy can be made credible, spontaneous and self-perpetuating in the eyes of both investors and consumers. Prices will play a part, but it would be preferable to talk about emission prices as an incentive at the margin, designed to drive changes in the technological frontier. Managing the supply of permits will be one way of ensuring that price pressure is maintained. But how hard public policy is prepared to weigh on prices will to some extent depend on the ready availability of nascent technologies and their speed of penetration. Talking about emissions prices at hundreds of dollars a tonne has little credibility given that permit scarcity is a function of political decision making and institutions, which are capable of adapting to circumstances as much as technology and industry does.

If policy is successful, most people won't pay extremely high prices. Motorists are unlikely to pay any emissions price once the marginal price has made electric vehicles competitive – after which their costs are most likely to fall. It is a moot point whether, for industries without technological alternatives, governments would drive prices up to extremely high levels unless it was determined to close them without replacement. If a government intended to do that it would probably adopt a different approach, like regulation. We have seen this with the decision to end off-shore oil exploration and recovery.

For these reasons, emission prices should be seen as one of the key foundations of the policy menu, but not the overwhelmingly dominant one. It would be better if they were carefully presented as such.

Relying heavily on forest sequestration is risky

The report underplays the risks of relying heavily on sequestration by forests as a cheap and plentiful mitigation option (together with only modest reductions in gross emissions by 2050).

New Zealand has a long tradition of using substantial volumes of international credits and forestry offsets to meet its emission reduction targets. While this has helped to minimise the short-run cost of climate action, it has also masked an increase in gross emissions – which in 2016 were almost 20% above 1990 levels.[4]

The Paris Agreement encourages countries to conserve and enhance their forest sinks.[5] However, there has been international scepticism about relying heavily on carbon offsets from afforestation. The European Union, in particular, has voiced concerns about the environmental integrity of offsets from afforestation. They excluded such offsets in the EU ETS, and cited New Zealand's use of forestry offsets as a reason why they would not consider linking with our own ETS.[6]

In New Zealand, the use of forestry as an offset (taking a 'net' approach) dates back to the 1990s. It was promoted as a "bridging" option to buy more time, not as a long-run solution. But thirty years on, we seem no less dependent on it. There are two key risks in relying too heavily on forest sinks.

In the first place, the carbon stored in forests can be released back into the atmosphere. This could happen through intentional decisions to clear forests and not replant, but also through fire, pests, disease and storms decimating parts of the forest estate. Some of these risks will be aggravated by climate change itself.

There is also a significant risk that easy recourse to afforestation could further delay action to reduce gross emissions. Each tonne of emissions offset by forestry is a tonne not reduced at source. Relying too heavily on forestry could lead to continued high levels of gross emissions. Pressure to reduce these after 2050 could entail a more costly and disruptive transition than a deeper transition commenced earlier. The focus should, to the extent possible, be on looking to make lasting reductions in gross emissions. A tonne of emissions avoided and a tonne of emissions offset may be arithmetically equivalent but they can also reflect fundamentally different long term risks and fundamentally different long term value. The long term pay-off from investing in avoidance may exceed the pay-off from investing in offsets – even though the short term pay-off looks the same.

Careful consideration needs to be given to the degree to which forestry offsets can and should be used to 'buy time'. Equally, the case for mass afforestation in any particular terrestrial setting needs to be based on more than just a 'least-cost' climate mitigation imperative.

To explore the policy implications of these risks, the Productivity Commission might consider undertaking some further modelling runs and sensitivity analysis in the following areas:

- Scenarios in which greater reductions in gross emissions are achieved by 2050 (consistent with pathways to deep reductions in gross emissions in the second half of the century)
- Investigation of the effect of putting quantitative limits or discount rates on forestry offsets to achieve New Zealand's emission reduction targets

Rt Hon Simon Upton

Parliamentary Commissioner for the Environment

Notes

1. Although the mechanics of the modelling is not as transparent as it might be. For example, page 49 of the report says "the three technology scenarios have impacts on demand, production patterns, jobs and prices across the New Zealand economy". But it is unclear if this is what the models are actually doing and if so, how?

2. Some prominent names were missing from the report, in terms notable contributions to research on innovation and climate policy e.g. Newell, Popp, Pizer, Fischer, Johnstone, Jaffe, Grubb, Edenhofer, Goulder, Gans, Smulders.

3. See, for example: Gans, J. S. (2012). Innovation and Climate Change Policy. American Economic Journal: Economic Policy, 4(4), 125–145, Di Maria, C., & Smulders, S. (2017). A paler shade of green: Environmental policy under induced technical change. European Economic Review, 99, 151–169; and van der Meijden, G., & Smulders, S. (2017). Carbon Lock-in: The Role of Expectations. International Economic Review, 58(4), 1371–1415.

4. Ministry for the Environment, 2018, New Zealand's Greenhouse Gas Inventory 1990-2016, p.1.

5. Paris Agreement, Article 5: *"Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases … including forests."*

6. EU Commission, Options and Implications of Linking the EU ETS with other Emissions Trading Schemes: note, IP/A/CLIM/IC/2007-119. P.21; Also see NZ Herald, March 2011, 'NZ-Europe ETS link a long way off, says official'.