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New Zealand Productivity Commission,
PO Box 8036,
The Terrace,
Wellington 6143 – submitted on-line

Submission: Low Emissions Economy

We wish to make submission on the Commission's draft report exploring how New Zealand could transition to a low emissions economy.

1. **Compliance with Terms of Reference**: The terms of reference envisaged the need for different tools, asking the Commission to consider "different pathways along which the New Zealand economy could grow and develop" (p ii), yet the report ignores the many opportunities this could provide and focuses principally on economic policy responses. As such it does not meet the expectations of the Terms of Reference.
2. **Scenarios**: The presented scenarios are limited, failing to explore a realistic, wide range of the potential interactions within and between the different economic sectors.
3. **Transport Fuel Issues**: Neither electricity or petroleum fuels are valuable without a use – yet these uses are what drive the production of GHG. While the draft report focuses on light transport, Statistics NZ's energy use surveys identified five industry groups having 90% or more of their energy coming from petroleum – logging (99%), aquaculture (87%), fishing (100%), road freight (97%), road passenger (96%) and construction (89%). If these industries are going to continue to exist, they will require far more than just increasing prices through an Emissions Trading Scheme (ETS). The increased prices may come into immediate effect, but it will take many years to change the fuel used by the fleet - including vehicle size and technology.
4. **Electric Vehicles**: At first sight the proposal to encourage use of electric vehicles appears sensible, but a more detailed view suggests that this may not be the case. Research has shown that the use of battery-electric vehicles (BEVs) in New Zealand will indeed reduce emissions if they replace petrol vehicles, because they will be recharged from low-emission New Zealand electricity. However, world-wide the situation is different because global electricity generation is not mostly from renewables. Studies have found that the manufacture and use of BEVs in countries with a world average electricity generation-mix results in similar emissions to petrol or diesel vehicles. Since NZ is not a manufacturer and given that manufacturers need a global market to justify manufacturing, the importing of BEVs to New Zealand means that globally emissions may not be reduced, although they might reduce in NZ. The penetration rate of BEV used in the draft report is very high.

   The most effective form of transport electrification is likely to be in vehicles which are shared in occupancy and which obtain their power directly, rather than through batteries. Transport focus needs to be on trains, light rail and trolleybuses. For private powered transport the only long-term low-carbon solution is probably electric bicycles, which have the low emissions as for pedal-powered bicycles.
5. **Food Production:** The scenarios are very limited as to potential future food production. In particular, dairy production has much higher emissions per litre than, for example, soymilk production, which dairy seeks to replace. The Commission's focus on maintaining the dairy industry would suggest that NZ is

trying to raise global emissions rather than to decrease them. This does not seem to be a satisfactory long-term strategy for a low-carbon world, nor one suitable for New Zealand.

6. **Buildings - Low Emissions Materials**: The draft report puts much emphasis on the use of "low-emissions materials" (p 387) while it also (p 389) speaks of using "passive solar" and "measures to flatten energy demand" to reduce the need for thermally generated electricity at peak times. The low-emissions materials mentioned are mostly wood, which their promoters claim will not only reduce embodied energy emissions but will also provide "a carbon sink for the life of the building". Table 15.1 (p 386) shows results for the embodied emissions of three different forms of construction, but as the calculations are for the UK the figures are unlikely to be of relevance to the situation in New Zealand because of a very different mix of energy sources, so these figures should not have been used to project possible emissions saving.

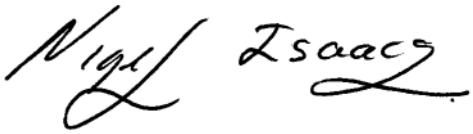
   Important factors not discussed regarding the increased use of wood include what happens when the building is demolished to the sequestered carbon and what happens to the preservatives and adhesives used to make the timber either durable or structurally adequate. However, the principal problem is that the lightweight buildings that result from the use of wood for construction are seriously inadequate for passive solar to be effective, as pointed out on page 390. This means that the use of low-emission materials for construction might result in higher lifetime emissions due to increased energy consumption. There is already considerable NZ research on this topic, yet the submissions used to prepare the draft report appear to have been accepted without question.

7. **Buildings – NZ Building Code**: Firstly Recommendation 15.1 assumes there is to be a review of the NZBC (referenced to "Swannix, 2017") yet communication with both the Minister's office and MBIE has been unable to discover such a review. Secondly, the NZBC is concerned with the design and construction of new buildings – it (as currently legislated under the Building Act 2004) has no requirements for existing buildings except where they are being modified, and even then, only within a prescribed list of requirements (Section 112 –fire, disabilities) which do not include issues of relevance to GHG emission.

8. **Buildings – existing buildings**: It is likely the majority of future GHG emissions will come from existing buildings – yet the draft report does not even consider how to reduce these emissions. The Commission's attention is drawn to "The carbon footprint of New Zealand's built environment: Hotspot or not?" by Jeff Vickers & Ben Fisher (https://www.thinkstep.com/content/carbon-footprint-new-zealands-built-environment-hotspot-or-not) which provides an alternative view based on consumption of the importance of the built environment within NZ's domestic GHG emissions.

9. **Need for quality data:** The report is commended for recognising the need for high quality data, not only on the energy and GHG supply, but also the demand. It is clear that the lack of end-use data is a major constraint to helping develop the most appropriate strategies to reduce New Zealand's GHG emissions

   We thank the Commission for the opportunity to comment on this draft report



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