Productivity Commission Low Emissions Draft: AgResearch Ltd. submission 6th June 2018

General comments

The commission has drafted a comprehensive draft report in a complex area. New Zealand needs to take holistic approach to low emissions ensuring that any focus on low emissions is explored and addressed within the land and water system taking into account community and economic goals.

We would encourage the commission to take more consideration of land use and land use change which is an integral part of primary production vitality and profitability. It will be important to give consideration to future land uses – and the flow on economic, social, cultural and environmental impacts on rural communities.

The commission should look to expand its source of potential solutions to include those that are currently available to address a wider set of the environmental issues (erosion, water quality, loss of indigenous biodiversity, poor match of enterprise with land capability, etc.) and the growing demand for services beyond food and fibre from our landscapes by region.

We would recommend considering the role of riparian and the role of restoration alongside the protection of indigenous fragments in pastoral landscapes, wetlands, etc.

Our experience with informing the setting of nutrient limits for fresh water management is the choice of allocation policy has an impact not only on the biophysical solutions that can be attained but also on social issues particularly inequity and justice. This is particularly noted with less developed production systems of which Māori land is a large proportion. Ensuring a full system analysis around allocation and management of emissions is undertaken to understand and mitigate the negative unintended consequences is recommended.

Innovation

Inclusion of the role of innovation is to be commended. The call for Government investment in R&D and infrastructure that supports high-emissions technologies to cease immediately is a critical step to starting to overcome NZ's current lock-in, in our innovation system and infrastructure, to high-emissions technologies. Areas to strengthen are:

a. Recognising that innovation is not only new technologies. For example, there are social (e.g. communities organising themselves to reduce emissions (Northland Climate Change group is an excellent example) and business (entire businesses built around having low-emissions) innovations already underway in NZ that could contribute to the transition to a low-emissions economy. Widening the scope of investment in innovation (beyond technological) would enable NZ to leverage these other innovations already underway. This concept is one that has been adopted in the EU in innovation for transitions (e.g. FARMPATH project) and has been demonstrated in energy transitions by University of Otago Centre for Sustainability
b. Agree that in many areas NZ will be a technology taker – and avoids us reinventing the wheel. Though the contribution of GHG emissions from NZ livestock farming and our large share of renewable energy in electricity production may mean there are not as many technologies already out there to address our needs. However, in adapting existing technologies from elsewhere there is a need to recognise that investing in the process of adaptation is significant in itself. Turner et al. (2016) in identifying barriers to innovation

delivering benefits, found that NZ currently under invests in the process of adaptation when entrepreneurs test and adapt an innovation in the real world

c. On NZ's record as an innovative economy being mixed. Turner et al. (2016) identify barriers to successful innovation in the agricultural sector – a lack of coordination across research, development and extension, with some activities being counter to others (cross-sector policy focused on low-emissions can help encourage coordination – not just investment in low emissions technologies as suggested in the document), and a lack of investment in the process of adaptation by entrepreneurs (which is hampered in NZ by our large share of SMEs) which results in the innovation process stopping before the innovation has been tested and adapted in the real world.

Turner, J. A., Klerkx, L., Rijswijk, K., Williams, T., & Barnard, T. (2016). Systemic problems affecting co-innovation in the New Zealand Agricultural Innovation System: Identification of blocking mechanisms and underlying institutional logics. NJAS-Wageningen Journal of Life Sciences, 76, 99-112. http://dx.doi.org/10.1016/j.njas.2015.12.001

On policies for an inclusive transition it is very encouraging to see recognition that any transition has the potential to create winners and losers if the transition is allowed to be disruptive. By giving explicit recognition to the potential for negative economic and social impacts to be borne more by some groups than others this disruption can be "managed". It would be beneficial to

a. widen the scope beyond low-income households (though they should remain the priority) to include businesses and other community members. For example, livestock farming is a significant contributor to emissions and will need to make a significant transition itself (e.g. to more multifunctional enterprises and landscapes)
b. also think beyond shielding groups from the costs (e.g. income tax cuts, minimum wage increases) to explicitly looking for opportunities for groups to benefit in the transition, e.g. training to work in the new low-emissions businesses of the future

Final suggestion is for New Zealand to look to the approaches to transition, such as in the EU, which recognises that transitions are inherently uncertain and emergent, and therefore traditional planned approaches that focus on reducing uncertainty will not work. For example, see work on Sustainability Transitions and the Sustainability Transitions Research Network.

It would be useful to consider gains made by and differences between different types of farming through the use of innovation for example: Abstract from Proceedings of the New Zealand Grassland Association Gore 2012 volume 74: Has the eco-efficiency of sheep and beef farms changed in the last 20 years? A.D Mackay, A.P. Rhode, I Power and M.E. Wedderburn.

"It is timely, with farming within biophysical limits as an emerging feature of the future operating environment for the sector, to explore whether the substantial productivity gains seen in the sheep and beef sector over the last 20 years translate into improved ecoefficiency and a reduction in the sector's environmental footprint. In this paper the changes in the relationship between inputs (e.g., livestock numbers, nutrients) and outputs (e.g., meat and fibre, greenhouse gas (GHG) emissions, nitrate) of the MAF Sheep and Beef Farm Monitoring models that cover hard hill country (Gisborne and Central North Island) and easy hill finishing (Manawatu) over the last 20 years were explored using the Overseer nutrient budget model. For the hard hill country extensive sheep and beef farm operation, the productivity gains made since 1989/90 translate into significant eco-efficiency gains, including a 47% increase in saleable product/ha (107 to 167 kg per ha), 21% reduction in nitrate leaching per kg of saleable product (0.065 to 0.054 kg N per kg animal product) and 40% reduction in the GHG emissions per kg of saleable product (27 to 19.2 kg CO_2-e per kg animal product). The improvements have come through increased meat production. In contrast, the contribution from wool has been unchanged since 1989/90. These eco-efficiency gains, however, did not extend to include an overall reduction in N leaching or GHG emissions per hectare. In the easy hill finishing operation, where the MAF model farm size more than doubled over the last 20 years, there was little change in the eco-efficiency, but again also little change in total emissions. As we move to an operating environment where there are limits on emissions to the environment, understanding how to quantify eco-efficiency and monitor changes in this performance indicator becomes more than just an academic exercise."

Chapter 10 Land Use

Page 248: Reducing stocking rates

Reducing stocking rates will only directly reduce GHG emissions if the total amount of feed eaten by the smaller herd is lower. This is because GHG emissions are directly linked with dry matter intake, rather than the number of animals per se. Focus may need to shift from "peak cow/animals" to "peak pasture/peak feed" to ensure total feed production or imports for livestock is reduced.

Comments on Q10.1 (page 263) Re agricultural emissions in the NZ ETS

The decision about the point of obligation is a trade-off between implementation and transaction costs, ease of monitoring, reporting and verification (MRV) and encouragement of and accounting for the adoption of on-farm GHG mitigation strategies.

The key driver of the transaction costs is the number of participants and the amount of information that needs to be used by the administering agency.

Question: What are advantages and disadvantages of the following options….:

- Full processor level

Advantages: lowest implementation and transaction costs compared to the other options listed; and easiest in terms of MRV.

Disadvantages: likely to encourage farmers to produce milk and meat as cost-effectively as possible, and does not encourage or account for adoption of GHG mitigation practices.

- Full farm level for (livestock) farms above minimum size threshold; processor level for all other livestock farms and for horticulture and cropping

Advantages: focusses on biggest emitters and encourages them to adopt GHG mitigation practices.

Disadvantages: inequity between landholders; highest implementation and transaction costs compared to the other options listed; and most difficult in terms of MRV.

- Full farm level for dairying only (above minimum size threshold); processor level for all other livestock farms and for horticulture and cropping.

Advantages: focusses on biggest emitters from dairy sector and encourages them to adopt GHG mitigation practices; second lowest implementation and transaction costs, and second easiest in terms of MRV, compared to the other options listed.

Disadvantages: singles out one sector; even more inequity between landholders.

Question: What other points of obligation approaches should the commission consider?

Another approach to consider under the NZ ETS is:

- Full processor point of obligation, but with farm-level rebates for use of GHG reduction practices

This approach is similar to the full processor point of obligation, with agricultural processors and fertiliser suppliers facing a uniform emissions cost for each animal received, unit of milk processed or unit of nitrogen fertiliser supplied; and any cost passed on to farmers. The difference is that farmers would receive rebates if they adopted GHG reduction practices when available (e.g. CH4 vaccines or inhibitors, low GHG animals, or nitrification and urease inhibitors). This relies on the processor receiving rebates from NZ ETS for the on-farm adoption.

In this context, the mitigation practices include those practices that reduce GHG emissions from animals or soils, over and above any gains that can be made through improved farm efficiency (e.g. improved N efficiency that can reduce fertiliser use, or optimised feeding to improved feed conversion efficiency of animals).

This option would incur lower implementation and transaction costs, than a farmer level point of obligation, but would still encourage and account for the adoption of on-farm GHG mitigation strategies.

The Commission should also consider policy options that sit outside the NZ ETS, e.g. production caps, limits on land use, catchment scale limit setting on GHG and/or land use.

Chapter 14 Waste

This chapter focuses on direct emissions from waste processing but does not seem to include anything on the effect that minimising food wastage has on GHG emissions associated with the production of that food. By reducing food wastage we can reduce the C footprint of agricultural products and meet global food demands with lower GHG emissions.