

*Action on
agricultural emissions*

Technical
appendix

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**International
context and
the risk of
emissions
leakage**



International context and the risk of emissions leakage

1. Purpose

The Committee heard concerns about two risks of pricing agricultural emissions prior to action by other countries to reduce emissions. They are:

1. Impacts on New Zealand's competitiveness; and
2. The risk of emissions leakage.

This paper sets out the analysis of those risks.

2. Background

Under the Paris Agreement, countries are required to submit Nationally Determined Contributions (NDCs) regarding the actions and commitments they are prepared to take to support its goals. Out of the agreement's 196 signatories, a total of 103 countries submitted NDCs that include intentions to reduce greenhouse gas emissions from agriculture. However, the nature of commitments varies significantly across countries.¹

New Zealand and all other developed economies have committed to economy-wide absolute emission reduction targets for 2030. Many developing countries have made only qualitative commitments to implement actions to reduce emissions and left the scale of implementation open or adopted quantitative targets only in terms of a reduction in emissions intensity or relative to a business-as-usual baseline. The differentiated approach to NDCs and related policy choices raises several concerns for New Zealand stakeholders:

1. If producers in other countries do not face the same pressure and compliance enforcement to reduce emissions from agriculture, will this result in decreased international competitiveness and reduced exports?
2. If New Zealand exports less livestock products, will other, possibly less efficient, producers produce more food and emissions, and could this result in global emissions remaining unchanged or even rising?

¹ OECD (2019) The impacts of climate change mitigation policies in agriculture: finding the balance. Joint Working Party on Agriculture and the Environment. COM/TAD/CA/ENV/EPOC(2019)9/FINAL. OECD, Paris. pp22

3. Competitiveness and impact on exports

A concern expressed by stakeholders is whether New Zealand's livestock sector is likely to lose competitive advantage because of domestic climate policy, and if so, how much and how quickly?

While New Zealand is unique in considering an industry-wide compulsory pricing mechanism for agricultural greenhouse gases, many of our key competitors also have sector-specific targets and related policies. Even though some of those policies do not target greenhouse gases directly, they may indirectly raise costs of production, but not necessarily by as much as if greenhouse gas emissions were fully costed (see Box 1 below). This suggests that New Zealand producers may be unable to pass on higher costs of production from GHG pricing internationally because these costs are not fully shared by our competitors.

However, producer costs in all markets will continue to evolve through changes in labour markets, production systems, food safety requirements and health and safety regulations. This makes it difficult to assess the scale of the potential loss of competitiveness due to climate policy in New Zealand in the future, compared to the range of other factors that determine New Zealand's overall competitiveness in international markets.

Box 1: What are other countries doing about their agricultural greenhouse gases?

The Committee commissioned OECD staff to undertake a review of a targeted set of countries that are significant exporters of meat and milk in potential competition with New Zealand.² This review indicates that New Zealand is currently the only country actively considering a compulsory emissions price on biological greenhouse gas emissions from agriculture, although the option has been discussed repeatedly, most recently in Ireland.³

However, several of New Zealand's global competitors have adopted greenhouse gas emission targets specifically for agriculture, or targets for gases generally not covered by existing emissions trading schemes, such as the target of 30% reduction in non-ETS emissions across the EU by 2030. Some of those countries have implemented market-based mechanisms for agricultural greenhouse gases or for afforestation schemes on agricultural land (e.g. Australia, California, several Canadian provinces); however, these currently mostly function as voluntary offset schemes which limit their uptake.

Most of New Zealand's key competitors in western Europe and North America also have stringent targets and policies to limit pollution from nitrates, phosphorus and ammonia, reflecting EU directives as well as national policies and targets. Constraints on these pollutants drive production efficiency and indirectly limit greenhouse gas emissions and/or production increases. Several countries including China employ price mechanisms for these gases (such as taxes and trading schemes) as well as limits.

² Henderson and Frezal (2019) International scan of greenhouse gas mitigation policies in agriculture. Report produced for the Interim Climate Change Committee, Wellington. pp41

³ Joint Committee on Climate Action (2019) Climate Change: A Cross-Party Consensus for Action. Report of the Joint Committee on Climate Action. Houses of the Oireachtas, Dublin. pp150

Several countries (e.g. Australia, Ireland) are actively promoting afforestation, reduced land clearing and revegetation to reduce net greenhouse gas emissions including through pricing. These policies affect agricultural production and greenhouse gas emissions indirectly via land-use change.

Support mechanisms for research, tools and awareness are diverse and growing especially in Europe. Many support systems under the EU's Common Agricultural Policy are conditional on environmental performance. In parallel, there is an increasing range of industry initiatives to benchmark greenhouse gas emissions at farm level, run pilot programmes to reduce emissions, and use those as part of branding campaigns. Examples include the Irish Origin Green and Smart Farming Programme or the Brazilian Roundtable on Sustainable Livestock, European cross-country initiatives such as Life Carbon Dairy and Life Beef Carbon, and targets and programmes promoted by companies such as Royal Friesland Campina, Vreugdenhil Dairy Foods, and Arla.

Several factors influence the rate and extent to which New Zealand farmers might reduce their production and exports:

- A reduction in ruminant livestock production could arise from de-intensification of ruminant production or land-use change away from ruminant production.
- De-intensification of dairy production can occur via tactical decisions on a year-to-year basis, but strategic choices to reduce production levels through farm system changes are constrained in the short term by debt repayment and infrastructure investments.⁴
- A profitable land-use alternative must exist for land-use to change. In most areas the only plausible candidate to replace dairy is horticulture, but expansion in that sector is slow and constrained by non-price barriers.⁵
- Land-use change from sheep/beef to forests may happen more quickly, particularly if policy strongly encourages reforestation, but the land most likely to be converted to forestry, or retired into natives, tends to have lower than average meat production.

Modelling suggests that emissions pricing with a high level of free allocation would drive very little production change in the dairy sector in the near term.⁶ In the sheep and beef sector, the reduction in total production in response to pricing of agricultural emissions is also expected to be small, because any additional land-use changes are expected to primarily occur on land with low productivity. A far bigger driver for change is expected to be the price reward for carbon sequestration in forestry (see Technical Appendix 6 on distributional effects).

⁴ Kerr and Zhang (2009); Reisinger et al (2018)

⁵ Dorner et al (2018); Journeaux et al (2017); Kerr and Olssen (2012)

⁶ Kerr and Zhang (2009); Productivity Commission (2018); see also Technical Appendix 6: Distributional impacts of agricultural climate change policy and supporting technical material from Riggs et al (2019)

4. Emissions leakage

If emissions were to increase overseas due to New Zealand implementing policies to reduce its domestic emissions, this situation is known as emissions leakage. Some stakeholders have pointed to the risk of emissions leakage as a key argument against any climate policy that could result in reduced product output. The risk of emissions leakage is difficult to quantify precisely, but some of the factors that contribute to emissions leakage can be assessed.

Whether emissions leakage occurs depends fundamentally on the nature of emission targets adopted by our competitors. If a competitor country has adopted an economy-wide emission target, while that target lasts, any increase in its agricultural emissions would be compensated by an equal reduction of emissions in other sectors.

Our key competitors for dairy are other developed countries in Western Europe and North America (within the United States, California is a key milk exporter). Apart from the United States, which has announced its intention to withdraw from the Paris Agreement, these countries all have adopted economy-wide emission targets. Within the United States, California has set and recently strengthened a state- and economy-wide emissions target. These competitors also have highly efficient production systems with broadly similar emissions per unit of product to us.⁷

In addition, many of our competitors are already implementing policies that constrain their livestock production through measures to reduce pollutants related to water and air quality, and are beginning to implement direct climate policies.

Up to 2030 emissions leakage could occur only if these countries do not honour their existing commitments. Post-2030, leakage could occur if rising agricultural emissions leads these countries to adopt weaker post-2030 emission targets than they might have done otherwise. This risk is difficult to quantify as future targets depend on broad economic and geopolitical considerations.

For red meat exports, the risk of leakage could be greater as not all competitors are based in countries with economy-wide targets, and emissions intensity of production by some competitors (e.g. in Latin American countries) tends to be higher. However, the New Zealand red meat sector is increasingly trying to differentiate its product from commodity markets based on environmental and quality credentials (e.g. via the Taste Pure Nature brand initiative led by Beef and Lamb New Zealand). If successful, red meat production and exports will over time become less determined by producer costs than by market premiums and market access generated by a consistent brand.

⁷ The available evidence from global literature reviews suggests that New Zealand is amongst the producers with the lowest carbon footprints, but there is insufficient evidence to claim that New Zealand is the producer with the lowest footprint (Clune et al 2018; Gerber et al 2011, 2013; Ledgard et al 2011; Reisinger et al 2017). Comparisons between countries are hampered by the fact that different methodological choices can have a significant bearing on results, and emissions intensities can vary widely within countries (Sense Partners 2018). Targeted, like-with-like comparison of emissions per unit of food between New Zealand and its key competitors, and analysis of which emissions intensities would be displaced first by climate policies, would be necessary to determine New Zealand's relative position more unambiguously (see also Sense Partners 2018).

5. Conclusion

The above analysis suggests that reductions in export volumes due to the pricing of agricultural emissions will be modest in the near term. There appears to be a low risk of emissions leakage in the near term for dairy, given the presence of economy-wide emission targets and constraints on production increases from both climate and non-climate policies in most competitor countries and their high production efficiency. The situation is less clear for the red meat sector given the broader range of competitors, but the move to extract value from high environmental integrity will reduce the risk. In addition, the moderate rate of land-use change induced by agricultural emissions pricing at low carbon prices constrains the potential for leakage.

These considerations lead the Committee to conclude that while some emissions leakage may occur, the risk of perverse outcomes (i.e. a net increase in global emissions because of emission reductions within New Zealand) is very low, at least in the near term.

Consequently, the risk of leakage does not appear high enough to provide a convincing argument for New Zealand not to implement policies to reduce its own emissions, especially since the detailed design of policies (see Technical Appendix on free allocation) can further reduce this risk.

In the longer-term, livestock product substitution resulting from changes in global market preferences and/or synthetic proteins may have more influence on product volumes than domestic climate change policy.

The Committee conducted only a qualitative analysis of the risk of emissions leakage. Future assessments about leakage risk would benefit from a more quantitative assessment. The Climate Change Commission should work with government and industry to improve our quantitative understanding of leakage risk to improve the evidence base for future decisions.

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