



Dairy for life

SUBMISSION ON PRODUCTIVITY  
COMMISSION ENQUIRY: LOW  
EMISSIONS ECONOMY

2 OCTOBER 2017

FONTERRA CO-OPERATIVE GROUP LIMITED

## 1. OVERVIEW

### *Our approach to climate change*

- Agriculture depends upon a stable global climate, and is adversely impacted by the effects of climate change such as extreme weather events, flooding, drought, spread of pests and disease, and rising sea levels. To prevent temperature rises above 2 degrees, Fonterra supports the Paris Agreement and the transition to a low emissions economy.
- By the mid-century we wish to be on our way to using 100% renewable energy in New Zealand (with any remaining fossil fuel emissions being offset), with unavoidable biological emissions from food production as low as possible through the use of breakthrough technologies, best practice and limited offsetting that creates shared value for farmers and our communities. We aspire to make a significant contribution to global emissions reduction through enabling and sharing world leading mitigation knowledge and innovations.
- Fonterra and our farmers account for a quarter of New Zealand's greenhouse gas (GHG) emissions and we have a responsibility to contribute to the New Zealand Paris Agreement target. We will continue to take action to mitigate our emissions, such as:
  - **For our manufacturing sites** - we are committed to reducing our absolute emissions and we are actively investigating alternatives to coal, investing in technology to improve our energy efficiency, and introducing biofuel and electric vehicles into our tanker and light fleets respectively. A significant challenge for us is one third of our plants in New Zealand still use coal to process our milk and near-term transitions within today's known technology and infrastructure costs would not be economically viable.
  - **For our farmers** - we are investing in breakthrough mitigation technologies and have recently launched the Dairy for Climate Change Action Plan, which is the Fonterra / DairyNZ framework for contributing to the Paris Agreement. It includes a phased approach to mitigating emissions, with Phase One focusing on education and awareness, piloting on-farm reporting, and researching mitigations on demonstration farms. There are currently limited mitigation technologies but as technologically viable solutions become available, we will seek to play a lead role in implementing and distributing them throughout our supply chain.
- The transition to a low emissions economy is going to have significant costs. However, if actively managed, it could have significant opportunities (e.g. job creation and market opportunities). The transition requires a coordinated response and business, Government and civil society need to work together on solutions, including:
  - Creating a clear vision and phased plan for managing the transition, focusing on the most welfare maximising / cost minimising mitigation options first;
  - Public / private investment partnership for renewable energy and efficiency;
  - A significant increase in public / private innovation partnerships to significantly reduce emissions through the entire supply chain and link this to the customers; and
  - Creative policy solutions allowing New Zealand companies to contribute to the Paris Agreement through offsetting while building the New Zealand brand through shared value.
- A global approach must be taken in order to prevent carbon leakage, especially for food production. Due to our efficient pastoral grazing system and healthy cows, New Zealand dairy farmers are amongst the most emission-efficient in the world. We produce less than half the world average (0.9 vs. 2.5 kgCO<sub>2</sub>e/kgFPCM) and less than a quarter of the world's least efficient producers (7kgCO<sub>2</sub>d/kgFPCM). There is no global benefit to shifting milk production from New Zealand to (less efficient) milk producers elsewhere. New Zealand's most significant opportunity to contribute to global emissions is to help other countries become more efficient.
- The transition to a low emission economy needs to be actively and carefully managed to optimise environmental, social and economic wellbeing. In particular:
  - While more information is needed, evidence suggests dairy is an emissions-efficient source of nutrition and plays a key role in supporting the nutritional needs of a growing population; and
  - Globally, 240 million people are directly or indirectly employed by the dairy industry, and dairy contributes over \$8 billion to regional New Zealand economies.

### *Our policy positions*

- We wish to see further direction and certainty provided for climate policy and we support the Parliamentary Commissioner for the Environment's recommendation for a Climate Act, including emissions budgets and requiring the announcement of policies to assist with meeting these budgets.
- We support the New Zealand Emissions Trading Scheme (ETS) for addressing fossil fuel emissions. However, the ETS is currently insufficient to address market failures and incentivise significant mitigation action (for the ETS to be effective for us, the price required would be so high it would have significant and disruptive costs for New Zealanders). The ETS should be complemented with other measures such as a low emissions vision for New Zealand, a clear transition plan, significant public / private investment and innovation partnerships, and creative value added offsetting schemes.
- For biological emissions, until there is alignment with competitors and significant mitigations available on-farm, we support agriculture's exclusion from the ETS. Instead we support the Dairy for Climate Change Action Plan as the framework for how dairy will contribute to the New Zealand Paris target.
- New Zealand is well placed to leverage our low emission advantage in the global market place, however, current policy settings are not optimised for this. For a New Zealand business to make a carbon neutral claim on their product, they would have to voluntarily purchase compliance units to completely offset the emissions associated with that product, cancel the units to receive verification, and then also meet the ETS liability for that product. It is essentially paying for the same emissions twice and this needs to be addressed so business can fully offset their emission once and make a carbon neutral claim from this. More creative policy solutions are needed, and we need to further consider the following questions:
  - How do any voluntary offset actions count toward the New Zealand Paris Agreement?
  - How can businesses use offsets to make carbon neutral claims on their products while contributing to the Paris Agreement target – avoiding any 'double counting' and paying for the same emissions twice? When a business voluntarily purchases compliance units to make a claim, instead of cancelling these, they could be surrendered to the Crown, however, there would need to be assurances that there is no double counting or reallocation of units.
  - How are more abatement activities in New Zealand officially recognised? The former Carbon Farming Initiative in Australia, which issued carbon credits backed by AAUs to projects, provides a good example.
  - How can we ensure the significant riparian planting planned is recognised as offsets and count towards the Paris Agreement?
  - How can we establish international partnerships where New Zealand businesses can work with developing countries to mitigate emission in return for carbon units?
- International offsets should play a role in New Zealand's management of emissions given we export such a significant amount of food (and food production will always create emissions). However:
  - New Zealand must not rely solely on international units and needs to build long term resilience and brand recognition by moving to 100% renewable energy over time; and
  - There needs to be a robust framework in place to ensure environmental interiority of any units used to meet the New Zealand Paris target.
- We are in favour of a global policy framework for food emission to be developed that prevents carbon leakage and incentivises knowledge sharing, collaboration, and shared value offsetting opportunities.

## 2. ENQUIRY QUESTIONS

- Below we have provide detailed answers to specific questions asked in the Issues Document that we do not address above.

### ***Q1 How can the Commission add the most value in this inquiry?***

- The Commission can add value by taking the following approach:
  - Providing evidence based, practical advice that takes into account how to maximise environmental, social, nutritional, and economic wellbeing while transitioning to a low emission economy.

- Taking a global perspective – considering New Zealand’s competitive advantage in a low emission future, and how to avoid carbon leakage.

**Q2 Chapter 3 of this issues paper mostly looks at ways to reduce emissions directly at their source. What other approaches would help identify opportunities to effectively reduce emissions?**

- Given NZ’s role as an exporter, we need to consider how the price of mitigation and/or offsetting can be passed on the consumers.

**Q3 To what extent is it technically and economically feasible to reliably measure biological emissions at a farm level?**

- Fonterra is currently undertaking a pilot of on-farm reporting as part of our DairyNZ / Fonterra Dairy for Climate Change Action Plan. We are working with at least 100 farmers to test the robustness and effectiveness of on-farm reporting.
- Emissions at farm level are not directly measured, but can be modelled and estimated using modelling programmes such as Overseer that rely on the collection of farm information (animal numbers, feed, fertiliser etc) and then using pre-determined emissions factors and farm system interactions to produce an emission per unit of product estimated number per farm.
- This approach has been used for nitrogen leaching within regional plans. However, version changes in Overseer combined with soil updates and other science information continually improving and altering the model have provided challenges with consistency and confidence from farmers.
- On-farm reporting systems are costly to implement, requiring system design, data processing, and a large numbers of skilled advisors to model farm system reduction scenarios with farmers and then monitor actions implemented.
- There is a possible opportunity to combine the on-farm GHG reporting system with the nitrogen recording programme and this is being considered as part of the Dairy for Climate Change Action Plan on-farm reporting pilot.
- An Inventory farm model is also an option and is likely to be lower cost. This would not model all the complexity of the farm system and mitigations. However, it could be suitable for a breakthrough technology such as a GHG vaccine or inhibitor that reduces GHG emissions by a significant level.

**Q4 What are the main opportunities and barriers to reducing emissions in agriculture?**

- In order to effectively drive change in sustainability, four components are needed:
  - Measurement of the problem;
  - Objective / target for solving the problem – i.e. what is the expectation;
  - Mitigation tools, practices and capability for achieving the objectives; and
  - Incentives to drive adoption of tools and practice to achieve the objective.
- In New Zealand current challenges for reducing on-farm GHG emissions includes:
  - No robust on-farm GHG emissions measurement system (however, this is being piloted through the Dairy for Climate Change Action Plan);
  - No agreed agricultural sector target and uncertainty on the expectation for the sector in meeting the Paris target;
  - Limited effective mitigation options for reducing biological emissions (such as methane vaccines, low emission animals or nitrous oxide inhibitors); and
  - Limited incentives to drive change (such as clear policy guidance or market mechanisms to incentivise farm management practices to reduce emissions).
- The most significant opportunity for reducing biological emissions is the successful development of a breakthrough mitigation technology. This is why Fonterra is a long term investor the Pastoral Greenhouse Gas Research Consortia, which is undertaking world leading research into breakthrough technologies such as a methane inhibitor, methane vaccine, low emissions cows, and low emissions feeds.
- There are currently emissions reduction opportunities from farmers’ continued efforts to reduce their impact on water quality and improve productivity. An improvement in cow productivity has been the major

driver of on-farm dairy emissions intensity reducing 20% over the last 25 years (without these gains, biological emissions from agriculture would be 40% higher than they currently are).

- Whilst there will continue to be emissions co-benefits from actions to address water and productivity, it is anticipated that these may start to slow as the existing known suite of farm management tools becomes more costly to implement (and due to diminishing returns from cow productivity's impact on emissions intensity – i.e. the more productive the cow, the smaller the emissions intensity improvements from a given increase in milksolids per cow).
- Given some emissions will always be produced from food production, it is important to consider economically viable options to reducing net emissions. Given limited resources, the first priority should be reducing actual emissions where this is possible without having a negative impact on livelihoods and food security (e.g. allocate funding first to energy efficiency). However, offsetting is likely to play a role in addressing biological emissions in the future and the New Zealand policy settings need to be revised so New Zealand can best utilise the opportunity and create shared value. In particular:
  - Businesses should not have to purchase NZ units for emissions they have voluntary offset in order to make a carbon neutral claim;
  - Voluntary purchase of compliance units for climate neutral claims should count towards the New Zealand Paris target.
  - International partnerships should be established where New Zealand businesses can work with developing countries to mitigate emission in return for carbon units.

#### **Q5 What are the issues for government to consider in encouraging alternative low-emissions land uses?**

- Issues to consider include:
  - Level of investment and potential debt held in the dairy farm;
  - Lack of alternative land uses that can support this investment and / or debt;
  - If there was a significant land use change away from livestock, this would create stranded asset risks for processors. This could have significant flow on effects to employment and income generation in rural communities. Capital raised by cooperatives is also linked to production so a decrease in production will have significant financial implications for a cooperative;
  - When considering the most appropriate land use, nutritional security considerations should also be considered. For example, one of the lowest emissions options for land use would be to plant sugar, or to plant trees, however, this would not address global development goals of providing nutrition to a growing population. A products emissions-efficiency of nutrition (based on a nutrition quality index) should be factored into land use consideration;
  - Competitive and comparative advantage - a key advantage for New Zealand is our productive pasture system;
  - Soil Sequestration, including the potential benefits to soil sequestration from livestock pasture systems, and the impact on soil sequestration from conversions; and
  - Full life cycle assessment of land use.

#### **Q7 What policies, including adjustments to the New Zealand Emissions Trading Scheme, will encourage more sequestering of carbon in forests?**

- The following policies should be considered:
  - The removal or revision on the forestry size requirements for participation of the Emissions Trading Scheme – this would encourage the planting of marginal land and allow for the recognition of riparian plantings;
  - Riparian planting should count towards the New Zealand Paris target. We see considerable merit in Enviro-Mark Solutions' proposal that a son or daughter to the Permanent Forestry Sink Initiative be created that:
    - Could use 2000 or 2005 as a base year instead of 1990 (given the satellite resolution in 2000 is of a quality that can better pick up if there was existing planting already in place); and
    - Bodies/aggregators oversee the record keeping needed for assessment/audit and managing transactions on behalf of an aggregation of land parcels to reduce costs to the

individual landowner. The aggregator could be a trust or a cooperative acting on behalf of the aggregation.

- As suggested in the ETS review Technical Forestry report, change to an averaging approach to incentivise afforestation of marginal land and remove financial liability when deforestation occurs, provided forest is re-planted;
- Reduce risk and create more certainty to plant forests;
- Incentives for more planting; and
- Reduction in the administration burden for land owners.

#### **Q8 What are the main barriers to the uptake of electric vehicles in New Zealand?**

- There has been a number of initiatives to look at the barriers and how these could be overcome – for example:
  - Ministry of Transport work on EV's: <http://www.transport.govt.nz/ourwork/climatechange/electric-vehicles/>
  - EECA has compiled a lot of information to assist the public with assessing EV's – this can be located on their website: <https://www.eecabusiness.govt.nz/technologies/electric-vehicles/>
  - Low emission contestable fund established.
- Fonterra has also assessed the adoption of EV's within its own light fleet and identified the following barriers/risks from EV adoption:
  - The distance travelled by the fleet is too great for reliable EV use;
  - How to manage the financial implications for transitioning personally assigned vehicles (e.g. costs for charging at home, fringe benefit tax);
  - Costs and locations of charging infrastructure;
  - Ensuring that batteries from EV's are recycled in a sustainable way;
  - Total cost of ownership of EV's versus other vehicles.
- Despite these barriers, Fonterra recently committed to transition 100 of its light vehicle fleet to be electric vehicles (EV's) by 2019. This commitment was made along with other New Zealand businesses such as AirNZ, Westpac, and Mercury.
- Fonterra is supporting this initiative to help NZ build the critical mass it needs to increase EV uptake and reduce greenhouse emissions from transport. The scale of Fonterra's light fleet means transitioning only a small proportion can help increase demand and EV infrastructure.
- There are currently no EV alternatives for Fonterra's heavy truck fleet and milk collection tankers.

#### **Q9. What policies would best encourage the uptake of electric vehicles in New Zealand?**

As stated in response to Q8, there have already been policies put in place to help encourage the uptake of EV's. For example:

- Road User Charge (RUC) exemption for light electric vehicles until 31 December 2021.
- RUC exemption for heavy electric vehicles until they make up 2 per cent of the heavy vehicle fleet.
- Review of tax depreciation rates and the method for calculating fringe benefit tax, for electric vehicles to ensure electric vehicles are not being unfairly disadvantaged.

Fonterra supports these initiatives noted above.

Additional initiatives that could assist with increasing the uptake of EV's in NZ could include:

- Ensuring that the importation of second hand EV's is simple and low cost to assist with overcoming the upfront purchase cost barrier;
- Identifying and removing any barriers to EV charging station installations;
- Review building standards and assess if there should be a standard for a minimum number of EV charging stations for certain building types.

**Q10. In addition to encouraging the use of electric vehicles, what are the main opportunities and barriers to reducing emissions in transport?**

- Improvements to New Zealand's roading infrastructure assists with improving transport emissions. Developments such as the Mount Messenger bypass, the Waikato expressway, and the Northern roading network all assist with improving the efficiency of the roading networks.
- There is an opportunity for increased road to rail for movement of products. To do so, the barriers for this should be identified (e.g. why is freight moved by road transportation intercity rather than rail), and then solutions could be implemented to overcome the identified barriers.
- There may also be an opportunity for increased passenger rail services between large cities (e.g. Auckland-Hamilton-Tauranga) which could assist with traffic congestion.
- There may also be an opportunity for further development of the biodiesel industry within New Zealand.

**Q11 What are the main opportunities and barriers to reducing emissions from the use of fossil fuels to generate energy in manufacturing?**

- The Consultation Paper notes three potential technology options to assist with energy efficiency improvement. There are many other opportunities that are available for businesses to undertake to improve the energy efficiency of their processes – as well as opportunities for Government to assist with this. For example, EECA could widen the Minimum Energy Performance Standards (MEPS) to a wider range of industrial equipment.
- Fonterra has been focusing on improving the energy efficiency of its operations since FY03 and has made a 16% improvement in the energy intensity of its production since this time. Fonterra would be willing to share the details of the activities it has undertaken to achieve this with the Productivity Commission to help inform what other opportunities may be available for others to also undertake.
- The Consultation Paper example of the Waste Minimisation Fund investment into burning tyres to make cement is a good example of public intervention to address private sector unwillingness to invest in technology that provides a public good in order to stimulate the transition to a low emissions economy. There may be further opportunities for such partnerships with industry to overcome barriers to transitioning to lower emission energy sources.
- Some of the barriers to reducing emissions from the use of fossil fuels to generate energy in manufacturing include:
  - Significant investment in existing infrastructure that has a long asset life;
  - Limitations on wood biomass volume availability;
  - Increased operational costs to transition to use electricity – including the costs associated with transmission of electricity to a site;
  - Timing of transmission infrastructure build not matching industry timing;
  - Capital costs to install new infrastructure to enable the use of wood biomass or electricity energy sources.
- Fonterra would like the opportunity to discuss in detail the barriers it has to transitioning from fossil fuels with the Productivity Commission.

**Q12 What changes will be required to New Zealand's regulatory, institutional and infrastructural arrangements for the electricity market, to facilitate greater reliance on renewable sources of energy across the economy?**

- One of the potential barriers to large scale electrification, is the speed of response from Transpower to build the required capacity in the transmission network to meet the increased demand (current estimate of 5-7 years). There are potential changes to the regulatory framework that could assist with overcoming this barrier. As noted in response to Q11, there is also a significant cost barrier to transitioning to electricity.
- Fonterra would like the opportunity to discuss with the Productivity Commission in further detail what potential changes could be undertaken to assist with overcoming the barriers.

**Q14 Apart from the regulation and operation of the electricity market, what are the main opportunities and barriers to reducing emissions in electricity generation?**

- Improved forecasting of demand could assist with providing certainty on investment in electricity generation assets.

**Q16 What policies and initiatives would best promote the design and use of buildings that produce low greenhouse gas emissions?**

- As noted in the Consultation Paper, education and training on low-emission options for people designing, constructing, installing, and using buildings would assist. Improved availability of information for home owners and commercial building owners on what they could incorporate into their new builds, or how to retrofit their existing buildings, could also assist.

**Q17 What are the main opportunities and barriers to reducing emissions in waste?**

*Operations*

- As noted in the Consultation Paper, the best way to reduce emissions from waste is to first reduce the amount of waste, then look at reuse opportunities. Reuse includes the potential to generate electricity or gas from the waste stream (waste to energy). Fonterra has a large biogas facility at its Tirau site that utilises one of the waste streams to generate biogas, which is then co-fired with natural gas in the boiler. Fonterra is currently assessing if there are other options for biogas generation from any of its waste streams, and one of the factors that will be considered on whether or not to proceed with any plant, will be the capital cost.
- There may be an opportunity for industry and Councils to work together, rather than in isolation, on waste solutions (e.g. landfill diversion, waste utilisation). Assistance may be required to overcome barriers preventing these parties from working together (e.g. financial risk, technology risk).

*On-farm*

- Dairy farms do accumulate and store significant volumes dairy effluent as part of their operation which over time releases a small amount of methane. This methane can be captured and with a generator produce electricity for the farm. However, with the cost of technology needed for this, it is not currently a economically viable option for farmers. <https://www.dairynz.co.nz/media/2546503/energy-capture-systems-effluent-tech-note.pdf>
- Running biodigester systems effectively requires experience and skill.
- Combine dairy effluent from a large number of farms to a centralised site for bioenergy capture run by experts is unlikely to be economic due to the cost of transporting the effluent to a centralised location.
- Good management of dairy effluent as a liquid fertiliser and reducing time the effluent is stored in ponds/tanks would reduce the methane emitted.

**Q18 Policies to lower emissions from particular sources, technologies and processes can have interactions with emission sources in other parts of the economy. What are the most important interactions to consider for a transition to a low emission economy?**

- Policies should also be cognisant of the potential for unintended consequences by identifying these, and minimising any adverse impacts. As noted in the Consultation Paper, an unintended consequence of encouraging EV uptake, could be to require additional electricity infrastructure (generation, transmission and distribution assets) to be built to deal with a new peak from charging EV's. There are options to mitigate this (e.g. timing of when they are charged) but these mitigation options need to be led by a party that is incentivised to do so for the benefit of NZ Inc, and it is currently unclear where this responsibility would lay.

**Q19 What type of direct regulation would best help New Zealand transition to a low-emissions economy?**

- New Zealand has an abundant source of renewable energy, in particular in the electricity sector. Overcoming the barriers for adoption of the use of renewable energy for industrial process heat and transport, may require some form of direct regulation to enable an economic transition to use them.

**Q20 Acknowledging the current review, what changes to the New Zealand Emissions Trading Scheme are needed if it is to play an important part of New Zealand's transition to a low-emissions future? Summary of questions / Issues paper 67**

- Please see Fonterra's ETS Submission April 2016 – attached.

**Q22 What type of support for innovation and technology would best help New Zealand transition to a low-emissions economy?**

- A step change is needed in public/private innovation partnerships to achieve a transition to a low emission future while maintaining and enhancing economic opportunities, and protecting community welfare. The negative economic consequences of New Zealand's low emissions future options (e.g. as identified in the Globe report) are significant. Therefore, innovation must be part of the solution.
- In addition to further research for breakthrough mitigation technologies, a significant public/private partnership piloting low emissions supply chain (including farm) technologies, while linking this to customers would be beneficial.
- Further support is needed for on-farm adoption of existing and future low emission practices. While emissions can be lowered through good practice on research farms, this is very difficult to replicate at scale on farms due to capability and limited extension/knowledge transfer resources. A mixture of one-to-one advisors and group workshops is needed for adoption.
- As noted in the Consultation Paper, there may be a case to complement existing commercial research and development with public support for developing clean technologies. There needs to be a balance between the support for "blue sky" research into game changing options, and the practical support of commercialisation and implementation of the research so that emission reduction happens.

**Q23 How can New Zealand harness the power of financial institutions to support a low-emissions transition?**

- Fonterra recognises that financial institutions play an integral role in financing the infrastructure needed to transition to a low emissions economy. Financial institutions can also provide support (e.g. tools, expertise, guidance) to encourage customers to also disclose climate related risk exposure and carbon emission profile.
- However, financial institutions or 'green finance' offer limited opportunities for supporting Fonterra's transition to a low emission economy.
- In Fonterra, capital comes from our supplying shareholders based on the milk supplied. There is a highly competitive and rigorous internal Capital allocation process in Fonterra in order to maximise returns to shareholders and deliver our strategy, including sustainability, health and safety, food safety and quality, compliance, and our Turning the Wheel value add strategy.
- Fonterra is open to alternative sources of 'green finance', however presently there is marginal benefit to do so. Traditional advantages of 'green funding' such as access to new pools of investor funds do not apply to Fonterra given the Capital structure in place.
- Fonterra has a strong credit rating enabling access to competitively priced debt via the financial markets. Presently there is no clear economic benefit to encourage using debt capital markets to fund energy and emissions reduction projects.
- Fonterra is aware of the potential reputation benefits associated with 'green finance' but is also cognisant that these are considered in context with the additional costs associated with current issuance costs (e.g. obtaining independent verification and ongoing reporting and auditing).

**Q26 What are the main uncertainties affecting New Zealand businesses and households in considering investments relevant to a low-emissions future? What policies and institutions would provide greater confidence for investors?**

The main uncertainties are:

- Domestic climate policies;
- International policies – alignment with competitors and barriers to market (e.g. from tariffs and residues);
- Energy supply; and

- Costs of transitioning (both capital and operational costs).

**Q28 Is New Zealand's current statutory framework to deal with climate change adequate? What other types of legislation might be needed to effectively transition towards a low-emissions economy?**

- We wish to see further direction and certainty provided for climate policy and we support the Parliamentary Commissioner for the Environment's recommendation for a Climate Act, including emissions budgets, and requiring policies to be announced to assist with meeting these budgets.

**Q31 What types of analysis and underlying data would add the greatest value to this inquiry?**

The following analysis will be important for informing the enquiry:

- A whole economy marginal abatement approach to determine the most cost effective and benefit maximising way to transition to a low emissions economy. I.e. make changes first that are win-win (e.g. energy efficiency), followed by lower cost options (e.g. electric transport), followed lastly by the most costly mitigations (e.g. reducing biological emissions).
- Global analysis considering New Zealand's competitive advantage in a low emissions future.
- Impact of different land use on individuals and New Zealand's economic and social prosperity.
- Detailed review of the benefits, hurdles (including review of the regulatory settings), of increasing the total primary energy supply towards using renewable electricity.

**Q37 Should New Zealand adopt the two baskets approach? If so, how should it influence New Zealand's emissions reductions policies and long-term vision for the future?**

- We consider there to be a rationale to treat methane differently in policy due to the short lived nature of methane.
- We are conscious of the risk that if there is an overshoot of carbon emissions (as is projected), the main method to reduce GHG emissions is for large scale, urgent reduction in methane emissions (carbon storage is also an option but requires further development). In an extreme event, this could encourage Governments to set strict regulation on livestock products and methane (California has already regulated for a 40% reduction in methane from livestock, and many jurisdictions including China, many European countries and some states in the US are introducing bans on certain fossil fuel energies). This is a significant risk for the New Zealand agriculture sector.

**Q40 What does your long-term vision for a low-emissions economy look like?**

- Our vision for the New Zealand in the mid-century is:
  - To be close to 100% renewable energy in New Zealand, with any remaining fossil fuel emissions being offset. For the dairy industry, this would be achieved through a dramatic reduction in energy requirements for process heat from innovative energy efficiency technologies combined with cost improvements in renewable energy options.
  - For the unavoidable biological emissions from food production to be as low as possible through the use of breakthrough technologies, best practice and some offsetting that creates shared value for farmers and our communities (e.g. planting to prevent erosion and help restore water catchments, dairy development, high value product claims).
  - For Fonterra to continue to be a world leader in producing sustainable emission-efficient dairy nutrition, and creating economic prosperity for our farmer shareholders and our communities.
  - For Fonterra and New Zealand to be making a significant contribution to global emissions reduction through enabling and sharing world leading mitigation knowledge and innovations.

– END –

Fonterra is a global dairy nutrition company, owned by 10,500 farmers and their families. Fonterra is the largest processor of milk in the world<sup>1</sup> and is the preferred supplier of dairy ingredients to many leading food companies. We are also a market leader with our own consumer dairy brands in New Zealand and Australia, Asia, Africa, the Middle East and Latin America. Fonterra is one of the world's largest investors in dairy research and innovation drawing on generations of dairy expertise to produce more than two million tonnes of dairy ingredients, value added dairy ingredients, specialty ingredients and consumer products for 140 markets.

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<sup>1</sup> For the year ending 2016, Fonterra processed 19 billion LME with revenue of \$19 billion.