



**SUBMISSION ON NEW ZEALAND  
EMISSION TRADING SCHEME REVIEW  
2015/16**

30 April 2016

**FONTERRA CO-OPERATIVE GROUP LIMITED**

## 1. SUMMARY

- 1.1. Fonterra supports a transition to a low emissions global economy and we recognise our responsibility to contribute to global emissions reduction efforts. We welcome the opportunity for consultation on the New Zealand Emission Trading Scheme (NZ ETS) Review 2015/16.
- 1.2. We believe an important objective of the ETS is to help transition New Zealand to a low emissions economy. We believe the ETS could be improved to better achieve the following features:
  - Policy certainty and transparency to minimise volatility and to inform long-term decision making;
  - Sufficient supply of emission units to meet obligations under the ETS;
  - Settings that drive emissions-efficient nutrition production;
  - Settings to encourage forestry and planting of marginal land;
  - Settings to help businesses achieve their climate change mitigation and reporting ambitions; and
  - Setting to allow confidence in the environmental integrity of any international units.
- 1.3. Fonterra recognises a broad range of policies and initiatives are needed to reduce New Zealand's net emissions from the public and private sector. We have in place a number of initiatives to reduce our emissions intensity including:
  - **Energy-efficiency** - Fonterra is investing in clean technologies and resource efficient upgrades. For example, we have implemented over 230 energy-efficiency initiatives since 2009 as part of our site-by-site energy Blitz programme.
  - **Alternative energy sources** – We believe a transition away from coal will be the only sustainable future for dairy production and we are working to identify reliable, cost effective renewable energy sources for our manufacturing sites and fleets. For example, we are actively investigating renewable energy sources such as solar, miscanthus, and wood biomass, and we are a foundation partner of Z Energy's new biodiesel plant.
  - **Breakthrough technologies** – Fonterra is investing in ground-breaking research being undertaken by the Pastoral Greenhouse Gas Research Consortium to reduce on-farm emissions. This includes research into low emission feeds, methane inhibitors and vaccines.
  - **Industry collaboration to encourage good practice** - Fonterra is active in global climate solutions across the dairy and wider agriculture sectors.
- 1.4. While we are making good progress for reducing the emission-intensity of our products, we still have a number of challenges we are working to overcome. For example:
  - For the majority of alternative renewable energy sources, there is currently an insufficient volume available to sustain our operations long term and there are large financial barriers to overcome.
  - There are currently no mitigations available to significantly reduce agricultural on-farm emissions without decreasing production.
- 1.5. Fonterra seeks to work collaboratively with the Government, industry and interested stakeholders to:
  - Identify and progress solutions to overcome challenges to transitioning to alternative energy sources; and
  - Identify an alternative framework for the treatment of agricultural on-farm emissions and better understand the challenges and opportunities for New Zealand agriculture in the transition to a low emissions global economy.

## 2. INTRODUCTION

- 2.1. Fonterra welcomes the opportunity for consultation on the New Zealand Emission Trading Scheme Review 2015/16. This submission responds to the questions included under 'Other issues' in the Government's NZ ETS Review 2015/16 Discussion Document. Fonterra also submitted on the ETS Review's 'Priority Issues' on 19 February 2016.
- 2.2. This submission first sets out Fonterra view on the desirable strategic objectives and key features of the ETS, and possible improvements for the scheme. The remainder of the submission sets out Fonterra's approach to climate change and response to the question in the Discussion Document on barriers to reducing GHG emissions.

### 3. THE NEW ZEALAND EMISSION TRADING SCHEME

#### *Strategic objectives of the Emission Trading Scheme*

- 3.1. Fonterra considers the ETS to be an important and useful tool for the Government to incentivise emission reduction and meet New Zealand's international obligations.
- 3.2. When considering the technical questions outlined in the Discussion Document, it is important to first consider the strategic intent of the ETS and guiding principles. This would give guidance to the optimal technical options.
- 3.3. We believe an important objective of the ETS is to help transition New Zealand to a low emissions economy.
- 3.4. We believe the ETS should have the following features:
  - Policy certainty and transparency to minimise volatility and to inform long-term decision making;
  - Sufficient supply of emission units to meet obligations under the ETS;
  - Settings that drive emissions-efficient nutrition production;
  - Settings to encourage forestry and planting of marginal land;
  - Settings to help businesses achieve their climate change mitigation and reporting ambitions;
  - Setting to allow confidence in the environmental integrity of any international units.

#### *Possible Improvements to the Emissions Trading Scheme*

- 3.5. Fonterra believes the current NZ ETS settings could be improved to achieve the above features. The below table outlines some of the current issues with the NZ ETS and possible solutions.

Optimal NZ ETS features	Current issues	Possible solutions
Policy certainty and transparency to minimise volatility and to inform long-term decision making	<p>There is substantive political uncertainty regarding policy settings of the NZ ETS.</p> <p>The price of NZUs is highly volatile and difficult to forecast.</p>	<ul style="list-style-type: none"> <li>• A cap and auction system would be a more predictable system as it would allow modelling of NZU price scenarios.</li> <li>• Centralised NZU price forecasting (e.g. produced by the Treasury).</li> <li>• Policy certainty for the treatment of forestry accounting rules.</li> <li>• Consideration of price stability policy options.</li> <li>• Government work with business and other stakeholders on the appropriate long term design of the NZETS, in order to ensure strategic alignment.</li> </ul>
Sufficient supply of emission units to meet obligations under the ETS.	As discussed in the Government's NZ ETS Review Discussion Document, the quantity of NZUs provided each year through forestry and free allocation is less than the amount participants need to meet their emission obligation each year.	<ul style="list-style-type: none"> <li>• Some access to international markets.</li> <li>• Auctioning of NZUs.</li> <li>• Policy settings to encourage afforestation.</li> </ul> <p>Any policy changes to increase the carbon price or increase demand for NZUs (such as a phased transition to full obligation) should be introduced at the same time as changes to increase supply.</p>
Settings that drive emissions-efficient nutrition	Internationally, there is not a policy framework to incentivise food production to be as emission-	<ul style="list-style-type: none"> <li>• Government continue to look at policies that incentivise investment in agricultural and food processing mitigation</li> </ul>

production.	efficient as possible (e.g. incentivise emission-efficient, nutrient dense products). New Zealand would be competitive under such a global framework given the emission efficiency of our agricultural production.	technologies. <ul style="list-style-type: none"> <li>• International collaboration and alignment on policy settings to encourage the production of emission-efficient nutrition.</li> <li>• An alternative policy framework for biological agricultural emissions that considers settings to drive emission-efficient nutrition production.</li> </ul>
Settings to encourage forestry and planting of marginal land	<p>There are currently requirements regarding size of forest, limiting the incentive to plant marginal land and small areas.</p> <p>Post-1989 forest owners may be deterred from participating in the NZ ETS because of the potential financial risk associated with having to surrender units at harvest.</p>	<ul style="list-style-type: none"> <li>• Remove or revise size requirement to encourage the planting of marginal land and recognise riparian planting.</li> <li>• As suggested in the ETS review Technical Forestry report: <ul style="list-style-type: none"> <li>○ Change to an averaging approach to incentivise afforestation of marginal land and remove financial liability when deforestation occurs, provided forest is re-planted.</li> <li>○ Recognition of the carbon stored in harvested wood products.</li> </ul> </li> </ul>
Settings to help businesses achieve their climate change mitigation and reporting ambitions	<p>When there are barriers in place to mitigation, the ETS creates a cost for a business and decreases funding available for investment in mitigation technologies.</p> <p>The current ETS does not allow a business to attribute NZUs purchased from forestry to count towards net emissions reduction.<sup>1</sup></p>	<ul style="list-style-type: none"> <li>• Investigate recycling back some of the ETS costs into mitigation activities, technologies or infrastructure. For example, California recycles the revenue from their auction system into mitigation activities and support to those negatively impacted by climate change and air quality.</li> <li>• Investigate options to allow using NZUs from forestry to lower a business's net emissions under an accreditation scheme.</li> </ul>
Setting to allow confidence in the environmental integrity of any international units	Concerns have been raised previously in New Zealand regarding the environmental integrity of international units previously available in New Zealand.	<ul style="list-style-type: none"> <li>• Ensure sufficient transparency of audit requirements in issuing countries.</li> </ul>

### Fonterra's response to the Emission Trading Scheme

- 3.6. Fonterra includes ETS price scenarios into its capital asset planning for energy related investments. As there is no publically available forecast for carbon prices that provides long term pricing (i.e. 10 years) information, Fonterra utilises its own internal scenarios. These are based upon potential policy settings and market conditions that could arise to influence carbon prices over a 10 year period.
- 3.7. As this assessment is scenario based, it results in the carbon cost providing a range of potential impacts on a project. This economic analysis is used in assessing an energy-efficiency investment and alternative energy source investments.

<sup>1</sup> However, if a company overseas who does not face ETS costs offsets its emissions through a voluntary carbon offset forestry programme, they could be accredited to be net zero emissions.

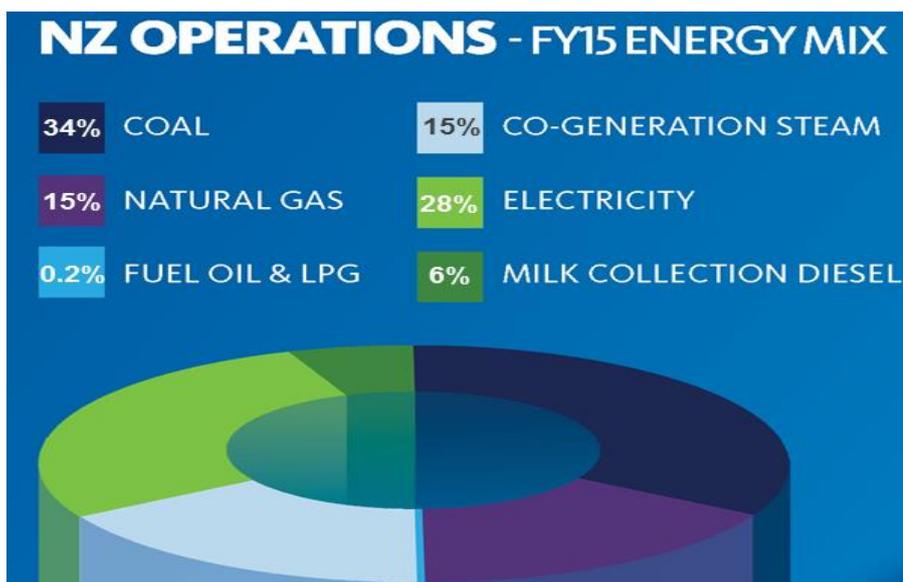
## 4. FONTERRA'S APPROACH TO GHG EMISSIONS MITIGATION

- 4.1. The following section responds to the Discussion Document's question on barriers to reducing emissions, as well as outlining what action Fonterra is taking to mitigate GHG emissions for our:
- Processing emissions (10% of our emissions);
  - Transport emissions (5% of our emissions); and
  - On-farm emissions (85% of our emissions).

### *Addressing Fonterra's processing emissions*

- 4.2. Fonterra is committed to improving the emissions and energy-efficiency of our products and seeking cost-effective renewable energy sources. Every year we report on the emissions intensity of our products (for both the operations emissions we directly control and on-farm emissions) in our annual report.
- 4.3. Our energy used per tonne of product manufactured by Fonterra's New Zealand operations has decreased by 16.8% since 2003. The amount of energy saved last season alone, is enough to power every home in Wellington City for two years.
- 4.4. Fonterra's New Zealand processing and transport emissions come from a range of different energy uses (Figure 1). Coal is the biggest source of our GHG emissions post the farm gate, with 10 out of 29 New Zealand Fonterra manufacturing sites still using coal (7 of which are in the South Island).

**Figure 1: Fonterra NZ operations energy mix for FY15**



- 4.5. We believe a transition away from coal will be the only sustainable future for dairy production. Fundamental considerations such as the availability of lower emissions energy sources (i.e. security and reliability of the energy source), installed infrastructure, and the significant cost differentials in energy sources mean that the transition to lower emission energy sources is a long term strategy requiring significant capital investment.
- 4.6. We are actively investing a number of alternative energy sources and working to overcome challenges. For example:
- **Wood biomass** – Fonterra has been investigating the use of wood biomass at numerous sites and we have included the option of co-firing wood biomass with coal in the recently proposed Studholme plant expansion. Major challenges include securing long-term volume within 100km radius of our sites and significant capital and operating costs.
  - **Miscanthus** – Fonterra has conducted trials to co-fire Miscanthus with coal in our boilers. There are challenges regarding the large volume of Miscanthus required to replace coal and land area and type required to grow crop on.

- **Solar** – like some of Fonterra’s farmers, Fonterra has installed solar technologies at our Te Rapa farm, and are now investigating solar options at other sites. Challenges include intermittent supply, scale of installation required and capital cost.
  - **Wind** – Fonterra has investigated wind energy. The location of wind does not always match site location, wind has intermittent supply, and large capital costs.
- 4.7. A significant barrier for transitioning to an alternative energy source is the capital required to replace current installed infrastructure (i.e. coal boilers). Fonterra boiler lifespan is typically 30-50 years, although this can be longer or shorter due to operational and maintenance practices. Therefore there are few upcoming opportunities to replace coal boilers.
- 4.8. Because no alternatives are viable right now does not mean we will settle for using fossil fuels for the foreseeable future and we are constantly exploring options to move out of coal. In addition, we are constantly working to improve our energy-efficiency and have undertaken numerous ‘energy blitzes’ across the sites, resulting in over 230 large energy-efficiency initiatives being undertaken since 2009 (in addition to business as usual initiatives to improve operations).
- 4.9. We would welcome working with the Government on identifying and overcoming barriers to alternative energy sources. For example:
- Wood Biomass – encouraging and securing sufficient supply for large scale operations.
  - Recycling additional ETS costs into mitigation technologies.
  - Electricity – how to increase the amount of electricity in the total primary energy supply of NZ (i.e. displace fossil fuel use with New Zealand’s predominantly renewable electricity).
  - Energy-efficiency – how to share best practice with other industrial users and improve the efficiency of our current assets (e.g. the potential for condensing economisers to be installed on all boilers to improve efficiency by approximately 5%, or accelerate the application of minimum energy performance standards to apply to a wide range of industrial equipment).

### **Addressing transport emissions**

- 4.10. Fonterra is constantly looking to improve the emission-efficiency of our milk tankers and car fleet. Our milk tanker fleet has decreased the litres of diesel required per 100km travelled by 10% since 2010.
- 4.11. Fonterra is a foundation partner for Z Energy’s new biodiesel plant. We will utilise approximately 14 million litres per annum of biodiesel in our central North Island milk tanker fleet. This will provide an estimated 4% reduction in emissions per tanker that utilises the biodiesel.
- 4.12. We need to ensure any changes to our milk tankers do not displace the ability to carry milk as this would result in increased truck movements and outweigh any decreased emission gains (i.e. any changes to the combustion system that result in it being heavier than current system, will mean that less milk can be carried per tanker, resulting in more truck movements required to collect same amount of milk).
- 4.13. For electric vehicles (EVs), we are currently considering the following uncertainties:
- Whether EVs could travel the large distances in rural areas as required by our fleet, what charging infrastructure is available throughout the country, and what the residual fuel cost would be associated with the vehicles.
  - Implications for structuring employee agreements around costs of personally assigned vehicles.
  - What the residual value of EVs could be.

### **Addressing on-farm emissions**

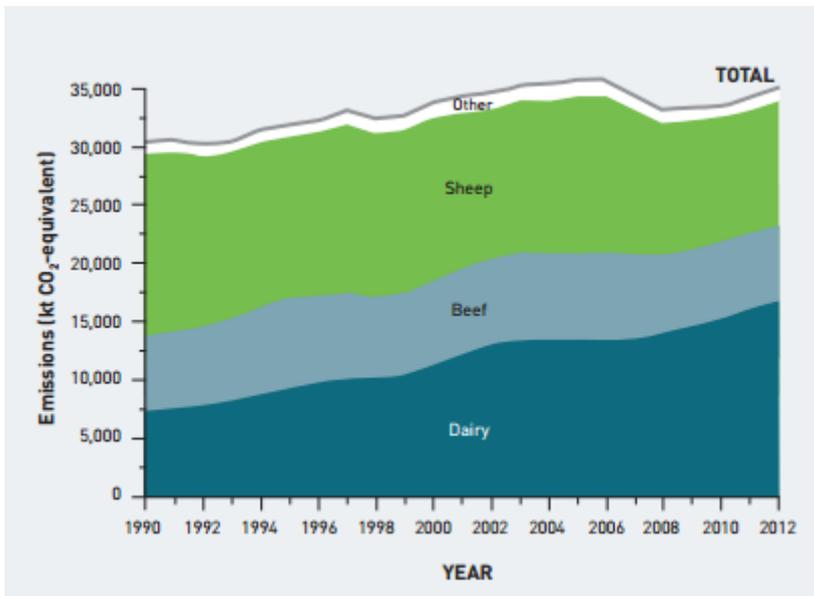
- 4.14. The New Zealand dairy industry’s on-farm GHG emissions have increased significantly over recent decades as dairy production has increased (Figure 2). This has been caused by increased methane from cows belching, and increased nitrous oxide from fertiliser and livestock effluent.
- 4.15. While absolute emissions have increased, methane and nitrous oxide emissions per kg milksolid have decreased by 21% between 1990 and 2014, largely driven through production efficiency gains. Full life cycle on-farm emissions per kg milksolid in New Zealand are the lowest they have been in 10 years<sup>2</sup> and are expected to continue decreasing.

---

<sup>2</sup> Fonterra 2015 Annual Review

4.16. There is also evidence that New Zealand is one of the most emissions-efficient milk producers in the world<sup>3</sup> and that milk is a relatively emission efficient source of nutrition.<sup>4</sup>

**Figure 2: New Zealand's total greenhouse gas emissions, and emissions intensity, by agricultural sub-sector including nitrogen fertiliser use (1990-2012)**



Source: NZAGRC, *New Zealand's National Greenhouse Gas Inventory 2014*

4.17. At present there are limited mitigation options available to significantly reduce agricultural nitrous oxide and methane absolute greenhouse gas emissions. Nonetheless, Fonterra is committed to:

- Improving the GHG emission per kg of milksolid;
- Supporting farmers to adopt good management practices on-farm to meet industry requirements;
- Supporting industry to develop science and technology solutions on-farm;
- Sharing knowledge and capability to support the development of emissions-efficient nutrition globally;
- Reporting transparently on progress; and
- Building resilience to climate variability.

#### *Farm practices and capability*

4.18. Very small reductions could be achieved on-farm by altering a number of current farm practices including:

- Using less nitrogen fertiliser;
- Increased use of low nitrogen supplementary feed;
- Using biodigesters or flares;
- Improved reproductive performance, resulting in reduced number of replacement animals needed on-farm. This results in fewer non milking cows producing GHGs which would lower emissions on-farm.

4.19. The key focus for the industry in improving the performance of these mitigation practices are as follows:

- **Improving the capability level across the base** – this takes time to address and requires a continued national multifaceted approach.
- **Decreasing N fertiliser** – N fertiliser can be a highly cost effective way of producing feed. However, decreasing N fertiliser does not necessarily imply lower pasture production, but would require more careful management of nutrient flows.

<sup>3</sup> FAO (2010), *Greenhouse Gas Emissions from the Dairy Sector A Life Cycle Assessment*, and United Nations Framework Convention on Climate Change (UNFCCC) (2012)

<sup>4</sup> Doran-Browne et al (2015)

- **Biodigesters** – the two main challenges for this mitigation are that given New Zealand's pasture based farming system, this technology can be utilised on only a small number of farms, and the cost of this technology is prohibitively high.
  - **Replacement rate** – Improving reproductive performance requires considerable skill and has been an industry concern for many years. Hence improving reproductive performance to a significant extent nationwide will be a difficult challenge.
- 4.20. To help overcome these challenges, Fonterra works with farmers through our farmer facing Supply Fonterra programme. This includes supporting farmers to lower their nitrogen input on-farm through our Nitrogen Management Programme.
- 4.21. In addition, nitrogen management and productivity improvements are a large focus for DairyNZ extension and research programmes. For example, DairyNZ invests in the Primary Growth Partnership programme 'Managing GHG emissions'. This includes work streams that are:
- Developing a greenhouse gas emissions advisor qualification;
  - Researching farm practices for reducing greenhouse gas emissions and the possible impact of these on other factors, e.g. water, production, food safety; and
  - Assessing the best model for farm level measurement of greenhouse gas emissions.

#### *Knowledge gaps*

- 4.22. At this point in time, there is limited research to identify other good management practices which can be applied on- dairy farms which result in reduced nitrous oxide and methane emissions. This is partially due to the cost of undertaking field trials and partially due to the difficulty in measuring emissions from dairy cattle. Livestock breathalysers have been used in the past during field trials to measure emissions; however they are unreliable and costly. While there is some interesting research underway across the country, it would be useful to explore further research opportunities with DairyNZ and the Government.
- 4.23. There is also currently limited research available on the interaction between biological emissions mitigation and water quality mitigations. Research underway by AgResearch and Motu will help address this gap.

#### *Adoption of breakthrough technologies*

- 4.24. Fonterra invests in research to find breakthrough on-farm mitigation solutions through the Pastoral Greenhouse Gas Research Consortium (PGgRC). New technologies are being developed by PGgRC and NZAGRC. The technologies under development include:
- Identifying low methane feeds that can help reduce GHG emissions;
  - Developing a methane vaccine to inhibit methane production;
  - Identifying genetic markers of naturally low methane- emitting sheep and cattle;
  - Identifying suitable inhibitors against methane generating microbes;
  - Developing and extending new and existing technologies and management techniques to reduce nitrous oxide emissions and nitrate leaching; and
  - Identifying opportunities to increase the carbon content of New Zealand grassland soils.
- 4.25. Widespread adoption of an effective vaccine/inhibitor package, together with low-emitting animals, has the potential to deliver large emissions reductions. The next steps are to:
- Determine the effectiveness of these technologies;
  - Commercialise the technologies and ensure market acceptance; and
  - Implement programmes to ensure high rates of adoptions of mitigation technologies.
- 4.26. Although promising results are being obtained and these solutions have significant potential, it is important to note that the technologies are not guaranteed and timeframe for commercialisation, market acceptance and on-farm adoption is uncertain.
- 4.27. Further work needs to be done on delivery systems of a methane inhibitor in order for New Zealand's pasture-based farming system to be able to benefit from this technology. The dairy industry is closely involved in the development of these inhibitors and is also monitoring technologies being developed overseas, some of which may be closer to market.

*Global collaboration*

- 4.28. Fonterra is active in global climate solutions across the dairy and wider agriculture sectors. Fonterra is extremely active in forums encouraging collaboration, sharing best practice, and investing in research to find solutions to reduce emissions and encourage emissions-efficient nutrition. Fonterra currently:
- Deputy chairs the Dairy Working Group of the Sustainable Agriculture Initiative;
  - Chairs the International Dairy Federation; and
  - Actively participates in the Dairy Sustainability Framework and Global Dairy Agenda for Action on Climate Change.

*Transparent emissions reporting*

- 4.29. Fonterra is committed to reporting transparently on emissions and:
- Reports annually on our manufacturing and on-farm emissions intensity;
  - Reports to each farmer their farm's nitrous oxide emissions through its Nitrogen Management Programme; and
  - Is working with researchers and the dairy industry to develop fuller farm level emissions reporting.

*An alternative framework for biological agricultural emissions*

- 4.30. Fonterra supports investigating an alternative framework for addressing biological agricultural emissions. An alternative framework should aim to:
- Achieve minimised global agricultural emissions, avoiding emissions leakage to less efficient producers;
  - Maintain New Zealand's competitive advantage, both in farm system competitiveness and with international competitors;
  - Consider biological agricultural emissions in the context of global food security and economic development;
  - Recognise the nutritional value delivered per greenhouse gas emissions released producing products;
  - Encourage efficient resource use, supporting the achievement of other sustainability outcomes, in particular water and biodiversity outcomes; and
  - Give consideration to the availability of economically viable mitigation options for agricultural emissions.

**5. WORKING TOGETHER TO ADDRESS CLIMATE CHANGE**

- 5.1. Fonterra seeks to work collaboratively with the Government, industry and interested stakeholders to:
- Identify an alternative framework for the treatment of agriculture. Fonterra would welcome further dialogue on key challenges and opportunities for New Zealand agriculture in the transition to a low emissions global economy.
  - Identify and progress solutions to overcome challenges to transitioning to alternative energy sources.

– END –

**About Fonterra**

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>5</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.

<sup>5</sup> For the year ending 2015, Fonterra's sales volume was 4.3 million MT with revenue of \$8.8 billion.