NUFFIELD
NEW ZEALAND

Global Vision, Leadership and innovation in Agriculture

Defining our Kaupapa:

New Zealand's role in the future of global agriculture

Jessica Bensemann

2016

Table of Contents

Acknowledgements

There are many people that have got me to this point today. Not just throughout the last year of this amazing Nuffield journey, but also through life before Nuffield that allowed me to reach this point.

Firstly, thank you to my parents Roy and Yvonne Bensemann who taught me all I know about what hard work and determination can achieve. Both of you are an inspiration to me. You should be extremely proud of what you have created, and the legacy you have left in the farm and your family. You created in me a drive to make things better, and to always do what is right and fair. Equally important in my journey has been my beautiful sister, Amy Street. Thank you for always being there, calming the drama, and always knowing exactly what to say to be supportive. It means so much, and I am very excited for the journey you are on with Lewis and Zoe.

I would also like to acknowledge my friends, old and new, in New Zealand and around the world that have supported me along the way. Special thanks to those that hosted me; a familiar face and a home cooked meal were much appreciated during seven months of travel.

Thank you to the many wise heads throughout the industry who have mentored me throughout my career. Thank you for being so supportive, listening, opening my eyes, and providing advice. The New Zealand agriculture sector is lucky to have such willing mentors to provide a hand-up for young people. It is an asset to the industry how willing people are to open their door and pull up a chair for a chat.

This report is built from hundreds of conversations that occurred over the last year. I relied on the willingness of strangers to be prepared to talk openly and frankly about the agriculture sector policies and activities in each country visited. People were amazingly receptive, honest, and interested in sharing their own experiences in challenges and opportunities facing their agriculture sectors. The challenge of sustainable food production is an issue the world is facing together. While we may all take different responses to the challenge, the impact is global, and the solutions cannot be developed in isolation.

Thank you to each of you, who shared insights that have enabled me to come to the conclusions in this report. I hope this can be the start of a conversation that continues to develop as a source of truth for the power of openness and collaboration among countries. So much more can be achieved through working together and learning from one another, than we could ever do in isolation.

No-one understands Nuffield like those that have gone before and can understand without explanation your latest wins or struggles. Thank you to all the Nuffield alumni for their support, the Nuffield team of Anne and Desley, and the Board of Trustees. Thanks to the advisors and mentors along the way who assisted me in clarifying what insight I could provide. Special thanks to Hamish Gow, who helped me identify very quickly the message I wanted get across.

The people that understand your journey best are the people that go through it with you. Special thanks for the laughs and support from my fellow 2016 Nuffield scholars, Richard Fowler, Tom Skerman, Sam Lang and Bede O'Connor. Very warm thanks also to 2014 Nuffield scholar Mel Poulton whose enthusiasm and support got me over some bumps along the road. The questioning and challenge you provided enhanced my ability to gain insights along the way much faster than I could have alone.

Special thanks to Nuffield partners

Strategic Partners

Programme Partners

Service Partner

About the Author

I am currently working for the New Zealand Aid Programme as Development Manager Agriculture within the Ministry of Foreign Affairs and Trade. Growing up on a sheep and beef farm in the Sherry River, South West of Nelson, I developed a love of wide open spaces, animals and farming people. I also spent a lot of time dreaming about escaping and travelling to experience what the rest of the world had to offer.

I completed a Bachelor's Degree with Honours in Economics from Victoria University in Wellington, and a Master's degree in AgriCommerce from Massey University Palmerston North. A growing passion to work towards improving the situation for farmers led me to work for Meat and Wool New Zealand for a period in the Trade Policy and then Economics divisions. It led me offshore with Volunteer Services Abroad, working with a wonderful group of cocoa and taro farmers that had initiated the first steps of women's cooperatives.

My role at MFAT enables me to work with the best of both worlds. The New Zealand aid programme draws on the best of New Zealand agriculture expertise and technology and adapts it to meet the needs of farmers in developing countries. The knowledge New Zealand has gained throughout our agriculture development can be shared to improve the farming conditions for farmers across Africa, Latin America, Asia and the Pacific. There is also plenty that New Zealand can learn from working with these countries, sharing knowledge and collaboration generates much better outcomes than either side can do alone.

Travelling for Nuffield has reinforced to me that New Zealand has an important role to play in the future of agriculture and food production globally. I am excited to be a part of that future, and will attempt to influence in a positive way the journey New Zealand takes down that path.

Scholar Contact details

Email: Jessbensemann@gmail.com

Phone: +64 27 365 7288

Executive Summary

Our economy is founded on excellence in primary production and exporting this produce around the world. Given our isolation and abundance of agricultural production, New Zealand has responded to the challenge of distance between the production base and markets through a focus on operational excellence. Continual improvement in productivity and efficiencies along the supply chain from perfecting a pastoral based farming system has enabled New Zealand to compete internationally regardless of distance.

Historically the United Kingdom and Europe were our main markets, with counter-seasonal demand. Therefore, the main goal was to produce more volume at a cost competitive price. Over the years New Zealand has diversified away from the traditional markets towards more emerging markets of Asia, particularly China. This pivot has been enabled through Free Trade Agreements that have allowed New Zealand product preferential access.

New Zealand will face new challenges as the global trading environment moves on from a period of liberalization. This presents significant challenge for New Zealand and a cause to reconsider how we could overcome the market production dislocation challenge. The New Zealand agriculture sector have strategies associated with greater internationalisation and market orientation, however there is limited evidence of implementation. The paradox between market orientation, greater internationalisation and a continued focus on operational excellence needs to be recognised.

If New Zealand wants to overcome the market production dislocation in a new way, it is useful to draw on the lessons of other small economies. This report investigates the market production dislocation of five other countries, and the ways by which each country has developed an eco-system to overcome this challenge. A framework is presented that sets out the importance of recognising the why, the how and the what of an eco-system to overcome the market production dislocation.

Understanding the why, clarity of purpose, or in New Zealand's case our kaupapa is critically important to establish to overcome the market production dislocation. Kaupapa can be defined as the principles and ideas which act as a base or foundation for action. Each country was found to have a burning platform that either forced change, or presented an opportunity to change. The inherent culture of each country combined with the burning platform challenge led to the purpose, or why, for change. Once the why is understood, the systems and leadership, and nature of value creation and realisation can be developed. These are secondary concepts, and can only be developed once a clear why is expressed.

New Zealand agriculture lacks a clearly defined kaupapa and this makes it impossible to create change within the industry. Without a guiding star, there is no chance to make difficult decisions or trade-offs. The paradox of market orientation and operational efficiency will continue to create conflicts within the agriculture sector and wider economy. Leadership for change needs to come from the creation of a united industry body that represents all sectors of the agriculture industry. The critical mass generated from such an organisation will be powerful when speaking on behalf of all New Zealand growers and farmers.

New Zealand can use this moment in history as a chance to redefine our kaupapa, and come together through collaboration. Success will come when New Zealand speaks with one voice when asked what the agriculture sector stands for. The paradigm of globalisation is shaky, and the opportunities for innovative business models due to global connectivity are higher than ever before. Now is the time for action.

1 Introduction

Agriculture commodities are produced, sourced and traded from all corners of the world to be combined and processed into food products purchased by consumers. The nature of agricultural production in each region is determined by the agro-ecological characteristics of the soils, water resource, and seasonal temperature. Historical influences such as consumption preferences and colonial imperialism has left a lasting legacy with regards to the types of products produced around the globe.

In some parts of the world, the location for production and consumption is one and the same. In other parts, there are varying degrees of disconnect between the location of production and consumption. A dislocation between production and the market impacts on the agricultural systems set up in these countries. Each country will respond to this challenge in a different way.

This report looks at the challenge of dislocation across several different countries and compares that to how New Zealand has adapted as an isolated agriculture producing nation. With a solid production base, and a small population, the disconnection from consumers has influenced the nature of our agriculture production and trading systems.

1.1 Problem Statement

The New Zealand agriculture sectors risk becoming irrelevant in traditional commodity based supply chains, as our relative cost of production make us less competitive. Given changes in technology and socio-political drivers, there is a need for New Zealand agribusiness to adapt or become irrelevant. These same changes present opportunity for New Zealand, but it will require new thinking and new behaviour.

Government and industry bodies that are looking to support the internationalisation of New Zealand agribusiness companies need to respond to this challenge by putting in place appropriate systems that can overcome inherent challenges and market failure. There is a role for government and industry bodies to challenge the status quo, break down barriers to information and greater connectivity, support risk-takers, and encourage innovation. It will ultimately be businesses and farmers who will need to take on the risk of doing something different.

New Zealand is not alone in confronting challenges to greater economic prosperity in the agriculture sector. A number of small, relatively isolated countries also rely heavily on agricultural production and trade for economic prosperity. New Zealand has an opportunity to learn from the experiences of these countries in overcoming challenges from a disconnection between production and the market.

1.2 Research questions

1. How have other countries set up their agriculture systems to overcome a production and market dislocation?
2. How could New Zealand create or enhance an eco-system to better support the connection between production and the market?

This report explores some primary concepts related to the need to enhance the connection between production and market in New Zealand agriculture. It explores the development of these concepts from a theoretical point of view through the literature review, before demonstrating their application through the use of a number of case studies.

Information presented from the case study countries of The Netherlands, Ireland, Israel, Singapore and Chile provide insight to answer question one. These insights provide a framework to apply to New Zealand and answer question two in the discussion section. Recommendations are presented for the agriculture industry, and government based on this analysis of the New Zealand context.

1.3 Context

The New Zealand government's Business Growth Agenda (BGA) is focused on growing exports, in particular increasing the success of productive and innovative business competing in world markets (New Zealand Ministry of Business Innovation and Employment, 2015). The BGA sets a target of lifting the ratio of exports from 30 to 40 percent to Gross Domestic Product (GDP) by 2025. As part of achieving the ambition of the BGA, the primary sector has set a target of doubling exports to $64 billion in real terms by 2025. This presents an ambitious target and business as usual will not suffice in achieving it.

The broader agriculture sector including horticulture and viticulture plays an important role in the New Zealand economy; employing 1 in 5 people, contributing roughly 3 percent of total GDP ($8bn of $250bn in year ending June 2016), and just over half of merchandise exports (New Zealand Ministry for Primary Industries, 2016; Coriolis, 2014; Coriolis, 2014; Coriolis, 2013). Primary sector exports in 2016 were $36.7 billion up 3 percent on the previous year. An average growth rate of 9.5 percent per annum is needed to reach the BGA target (New Zealand Ministry for Primary Industries, 2016).

Several reports have concluded that while New Zealand has the right enabling environment for economic growth, our performance relative to comparable small, isolated economies is lacking. A deficit in research and development, productivity, and international connectedness is seen to be holding New Zealand back (Shangqin, McCann, & Oxely, 2009).

While the policy and institutional environment is deemed to be suitable for economic growth, New Zealand has fallen behind other comparable small economies in a number of performance measures such as GDP per capita, and levels of innovation and internationalisation (Hendy & Callaghan, 2013; De Serres, Yashiro, & Boulhol, 2014; Shangqin, McCann, & Oxely, 2009). These elements make up part of the eco-system for innovation and internationalisation. Improvements in the eco-system can unlock potential for greater prosperity.

To explain the concept of eco-systems, we can refer to the natural example of a forest. A forest is an extremely complex system with many interactions, which are largely self-organised. All plants compete for light, water and nutrients and the success of some will come at the expense of others. Big trees like kauri and totara create niches for the smaller plants that need their shelter. The same can be said for businesses in an economy. As is found in natural eco-systems, diversity is also an important factor for the health and prosperity of an economy (Hendy & Callaghan, 2013).

In the New Zealand agriculture sector, we can also see examples of tall kauri such as the large dairy, meat and horticulture companies. These companies are surrounded and supported by a network of small and medium companies including other exporters, and agri-tech companies, and thousands of farmers and growers. Each company has different knowledge, innovation and relationships. The health of the eco-system depends on the support systems and links between companies that encourage connections to be built. Cooperatives continue to dominant a large proportion of agriculture processing and exporting. This is predominantly the result of a desire by farmers for collective ownership of the next stage of their supply chain as a risk management tool.

Support systems include government funding and industry bodies support for R&D and extension, and market access and information. Links include the level of collaboration that is encouraged across the industry to work together and share information. New Zealand lacks an R&D funding eco-system for collaborative innovation compared to other OECD countries. There is more of a tendency for each company to try and go it alone (Hendy & Callaghan, 2013). A more developed eco-system would assist in agriculture value created in New Zealand through increased knowledge, innovation, and relationships.

New Zealand is a small, open economy that is distant from its major overseas markets and highly dependent on international linkages (Deakins, Battisti, Perry, & Crick, 2013). Supporting the development of a more internationally competitive economy is a key policy target for the Ministry of Business, Innovation and Employment (MBIE), the New Zealand Treasury, and the Ministry of Foreign Affairs and Trade (MFAT). The Government is focused on improving the enabling environment through increased market access, promoting exports through leveraging the value of the New Zealand brand, and ensuring that resources flow to the most productive areas (New Zealand Ministry of Business Innovation and Employment, 2015).

The Ministry of Foreign Affairs and Trade is tasked with improving market access for New Zealand businesses. This is supported through the Ministry for Primary Industries that supports growth of New Zealand agriculture exports by growing and protecting New Zealand's productive base, keeping access open to international markets, and better understanding global consumers.

New Zealand Trade and Enterprise (NZTE) is the agency focused on promoting New Zealand exports. It works directly with New Zealand companies to support them undertake market research, develop connections directly in markets, and facilitate market entry through direct people-to-people assistance. NZTE also promote New Zealand products through trade shows and fairs, which is another avenue for New Zealand companies to make international connections. Other organisations in New Zealand that support the international growth of companies includes the various Business Councils promote closer trade relationships and connections between New Zealand and a partner country or region.

MBIE covers off policy related to business growth including research and development programmes, development of human capital and business enterprise development. This includes supporting Callaghan Innovation, set up to help New Zealand businesses succeed through technology. Agricultural based research is carried out across a number of universities and crown research institutes across New Zealand.

1.4 Peak commodity production

We can no longer double exports by doubling production. New Zealand's agriculture revenue growth so far has been dominated by increased volume and commodity prices shifts (KPMG , 2015, p. 30). If the focus remains to capture value by improving productivity while being subjected to global commodity prices New Zealand will shortly reach a point of diminishing returns on investment. We have hit that point already in some sectors (Fraser, Ridler, & Anderson, 2014).

New Zealand has developed a base of knowledge around pastoral based farming in a system that has been perfected over the last 100 years. Research into technical inputs, productivity improvements, extension systems, and processing technology has contributed towards enhancing the competitiveness of New Zealand agriculture internationally.

A change in land use between sectors towards higher return sectors, such as horticulture and dairy where possible, has allowed overall agriculture industry growth. Irrigation has enabled this land use change in

many areas, such as the introduction of dairying into the wider Canterbury region. Increasingly restrictive environmental constraints and limitations around irrigation investment are likely to put a limit on the potential for further growth based on land-use change.

Global supply has managed to keep up with an increase in demand for agriculture commodity products. While short term misalignment of supply and demand results in price changes, overall commodity prices have remained stable. New Zealand is heavily dependent on export markets to sell our agriculture production, and while an important supplier of global trade in some products such as milk powder, lamb, apples, and kiwifruit, we have limited ability to influence prices received. Commodity prices fluctuations have a major impact on returns to New Zealand farmers.

In light of increasing volatility in international milk production and prices, it has become clear that New Zealand cannot maintain an advantage in production of primary products. Productivity gains have enabled increased volume in New Zealand, and retained our ability to compete on cost on the international markets. However, in a country with high labour costs, and increasing compliance levels, we will not be able to compete in this low-cost space against growing international competitors such as South America and China.

1.5 Retreating globalisation

Globalisation covers a broad spectrum of international integration and movement including people and migration, goods and services trade, finance, culture, ideas, data and information. There have been several waves of globalisation throughout history, often generated by improvements in transportation and telecommunications. It was largely assumed that globalisation would be a one-way street, with regions and countries becoming more and more integrated. The emergence of threats to national security and identity have recently generated an increasing swing away from globalisation towards increased protectionist policies.

Our agricultural economic prosperity has been built upon preferential market access in key markets such as the United Kingdom, Europe, the United States, and then in to emerging markets of China and the rest of Asia. The timing of the New Zealand Free Trade Agreement with China has been fundamental to the offtake of the expansion of New Zealand's milk production. We have benefited hugely from a world of uneven trade access created through historical trade relationships and first mover advantages in FTAs. This has lulled us in to a false sense of security that our markets have preference for New Zealand products above others, and this is seldom the truth. It would seem that we can no longer bank on further improvements in trade access, or even take the current situation for granted.

Free trade is being used as the scapegoat for the economic doldrums felt across many parts of the Western world. This feeling has manifested in recent democratic decisions such as the United Kingdom's vote to leave the European Union and the election of Donald Trump, a staunch anti-free-trade advocate, as President of the United States. Arguments can be made for and against protectionist policies, and while potentially no more sensible, they are far more plausible for economies with sizeable domestic markets.

For countries such as New Zealand, heavily reliant on exporting the majority of their agriculture production, this is an unwelcome and unnerving trend. Exporters trust that other countries will abide by the international rulebook of liberal economic assumptions: if everyone sticks to what they are comparatively good at, then we'll all be better off. While New Zealand has had to continually fight hard

for improved trade access, and to ensure other countries stick to the rules, it would seem that not only has the rulebook has changed, but we may now be playing a different game.

If a global leader such as the United States starts to flout the rules, this sends a signal to other countries that is ok to throw up protectionist barriers despite international or bilateral obligations. It weakens the adhesion that holds together an international trading system built on a long-established set of principles and norms. Principles and norms that New Zealand's economic success is dependent on.

Unless New Zealand can get in behind the border, and build relationships and connections domestically in our key markets, we risk being locked out, and searching the world for easily accessible, and likely lower value, markets for our products. Countries don't want to rely on importing for their domestic food security requirements. We are currently seen as a threat to the livelihood of their local producers. It is critical for New Zealand to offer more than just milk and meat. If we were able to offer a solution that responded to the challenges faced in a country looking to grow their own agriculture sector, this provides a much more attractive proposition as a trading partner.

A new paradigm of research and investment is needed to take New Zealand agriculture to the next level of development. This needs to be based on a much softer, more social side of agriculture and food production. It is based on intangible aspects of creating value that can't be measured by traditional metrics. New Zealand agriculture sector needs to pivot its focus from the behind the farm gate here, to setting the sights far more keenly on what's going on globally.

This pivot has both a reactive and a proactive purpose. New Zealand agriculture needs to respond to realities of global commodity production and what this means for our agricultural prosperity. There is also untapped opportunity to generate new areas for value creation that can draw on New Zealand's ability to be pioneers in agriculture. Examples of some of the changes that will impact on New Zealand agribusiness are set out below.

TABLE 1: CHALLENGES OF TWO WORLDS

Current World	Future World
Product Driven	Transformational Experiences
Operational Excellence	Customer Intimacy
Past = Future	Past ≠ Future
Hierarchical Leadership	Network Leadership
Bundled Vertical Integration	Flexible unbundled networks
Risk Aversion	Uncertainty management
Data Reliability and Repeatability	Observation, Insight and Foresight
Business Plans	Business Models
Closed Innovation and IP	Open Innovation
Continuous Improvement	Disruption

Source: (Gow, 2017)

The current ambition to double primary sector exports does not adequately capture the complexities of how to generate sustainable value from the agriculture sector. Just producing and exporting more volume does not add value in the long term. Getting this target right is extremely important as it sets the scene for government and private sector investment in infrastructure, research and development, land-use planning, and human capital.

1.6 Market-led paradox of New Zealand agriculture

There is a real paradox in New Zealand to be market focused, and have an in-depth understanding of our consumers, while recognising that they are spread across over 100 countries, and dozens of product categories.

New Zealand entered in to a period of world-leading economic reforms in the mid 1980's, including the removal of a number of support and protective measures across the agriculture sector. Fully embracing the free market ideology of the time, policies introduced committed to allow the market to determine the most productive use of resources. New Zealand raced ahead as the leader expecting others to follow with what seemed rationale economic policies. However; 30 years later most countries still employ protective measures for their own domestic producers at the expense of other exporting countries.

Sector strategy reports have been developed that provide vision, objectives and actions to generate value. A summary is provided in Appendix One which captures the key challenges and opportunities facing each sector at the time the reports were written. Each of the strategies has varying degrees of focus on the improvements needed at the farm or market level. An analysis of the market focused components of the strategy identifies that the sectors are looking improve in:

- Market research to better understand consumers;
- Product and production quality standards beyond international standards;
- Marketing and promotion strategies and activities including brands (generic or specific);
- Market access through lower tariff and non-tariff trade barriers;
- Differentiating products from competitors;
- Targeting of countries product is sold into; and
- Intellectual property rights for varieties and licencing.

All New Zealand agriculture sector strategies mention a need for a greater market orientation. The actions and behaviour of the New Zealand processor and exporter i.e. who their buyer is and the nature of the relationship; is critically important to take forward the strategies for each of New Zealand agriculture sectors. The fulfilment of any sector strategy relies inherently on the development and delivery of individual company strategies and business models that align the objectives of the broader strategy.

New Zealand is in a unique position globally as we have a large surplus of food production compared to most countries. With a domestic market of 4.5 million people, the majority (80-90% of all production) is exported due to our ability to produce relatively large volumes of meat, dairy, and horticulture. New Zealand has resource to produce 18 million tonnes of milk, 1 million tonnes of red meat, 500,000 tonnes of kiwifruit, and 350,000 tonnes of apples and pears annually. These figures equate to many times more than the amount consumed domestically (up to 40 times more in the case of dairy).

Most countries aim to meet their own food consumption requirements, and therefore total traded volumes of meat and dairy produce make up around 8 to 10 percent of total global consumption (United

Nations Food and Agriculture Organisation, 2015). New Zealand plays a more important role in the volume of produce traded across borders, accounting for one-third of global dairy, sheepmeat and kiwifruit exports.

New Zealand's agriculture development was founded on being the pantry of the United Kingdom, and has therefore a long tradition of exporting. Market diversification began early on, and intensified once the United Kingdom entered the European Union in the 1970's. Emerging markets, particularly China, have become a much more important component of New Zealand's export portfolio in the last decade. This pivot has been influenced by a range of Free Trade Agreements signed between New Zealand and emerging markets. Free Trade Agreements offer preferential access and a competitive first mover advantage. This was the case in China, where New Zealand was the first country to sign an FTA.

The chart below shows the diversification of New Zealand's export markets over the last fifteen years. The predominant feature is the growth of Asia, largely driven by China. European markets have experienced some growth but are relatively stable. There has been moderate growth in exports to North America markets, as well as Africa, off a low base.

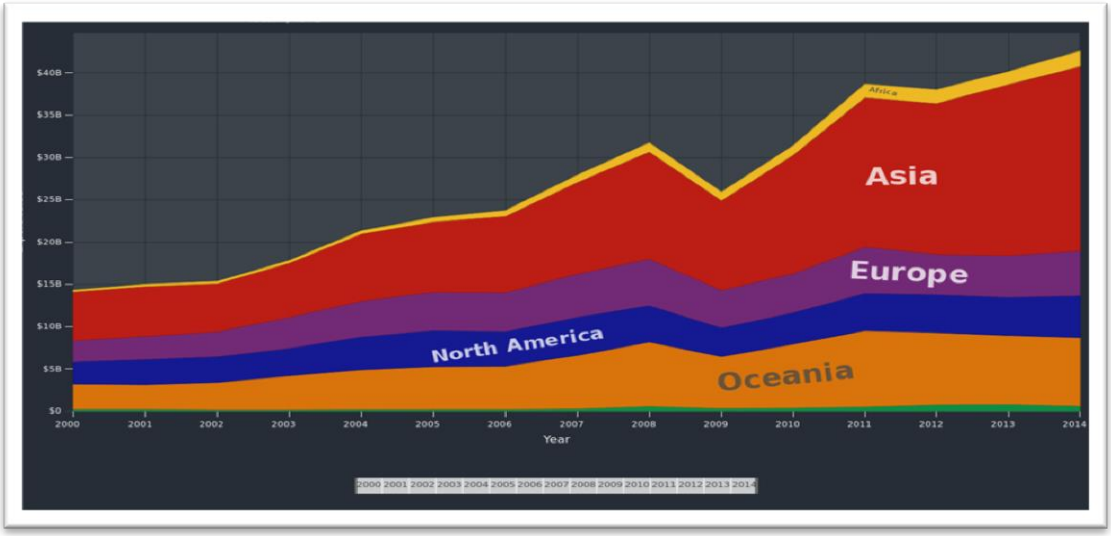

FIGURE 1: NEW ZEALAND EXPORT MARKETS ALL PRODUCTS US$

Source: http://atlas.media.mit.edu/

Agriculture exports have a few key markets for at least half of the overall exports, with the remainder spread across a diverse number of markets globally. The seasonal nature of the pastoral based system and the perishable nature of the product (fresh liquid milk and chilled meat) means most is exported as shelf stable product.

Globally traded products tend to play a particular role in importing countries consumption requirements. This includes meeting a premium market niche (such as grass-fed infant formula, or Wagyu beef), complementing local production (such as New Zealand lean manufacturing beef going in to the United States), filling a deficit in protein production (such as milk powder into Asia and the Middle East), or meeting seasonal production gaps in northern hemisphere regions (such as New Zealand lamb in the United Kingdom).

The chart below demonstrates the growth in preserved milk exports over the last fifteen years. The increase in total milk production over this period has primarily been turned into milk powder. This has been supported by investments into necessary processing infrastructure throughout the country.

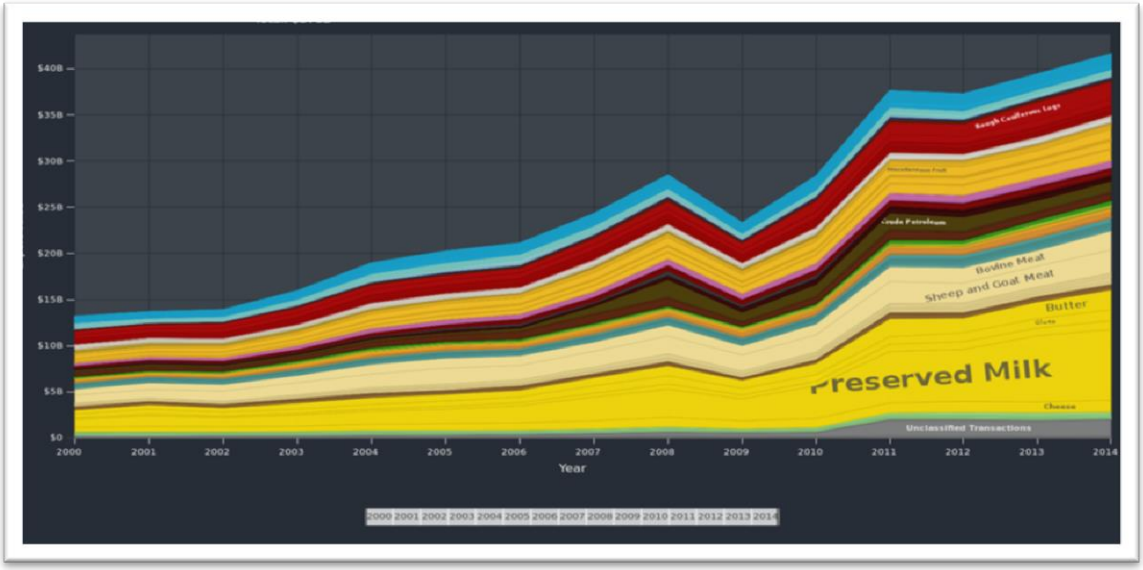

FIGURE 2: NEW ZEALAND GOODS EXPORTS ALL PRODUCTS US$

Source: http://atlas.media.mit.edu/

Just over one-third of dairy export revenue comes from whole milk powder (35 per cent), followed by butter and cream products (18 per cent), casein and protein products (14 per cent), cheese (13 per cent), and skim milk and butter milk powder (10 per cent). Infant formula and other dairy products make up the last four per cent and five per cent respectively (New Zealand Ministry for Primary Industries, 2016).

The majority of New Zealand lamb is processed between the months of December and May. This means that the amount sold as chilled product is limited to around 20 per cent of exports. Chilled product gets a 50 per cent premium over similar cuts of frozen product (Coriolis, 2014). Different cuts of the cattle or lamb carcass are sold in different markets depending on the consumer preference and level of premium value of the cut.

1.7 Summary

New Zealand faces challenges as a small, distant agriculture producing nation. We lack scale and close neighbours as consumers to easily provide in-depth market information, or networks for innovation. The seasonality of our production systems, and the perishable nature of our products require us to seek out the highest possible returns in over 100 different countries

A history as an agriculture trading nation has enabled us to become experts at identifying and responding to market drivers for meat, dairy and horticulture products. However, as has been the case for agricultural products around the world, these market drivers have required higher standards, and lower prices.

New Zealand will never generate more wealth from agriculture by continuing to do what we have done. The returns from producing commodity products will always revert to a long-term average that aligns with technological improvements, despite peaks and troughs along the way. Knowledge and innovation

are the only mechanisms by which to continually lift returns above those expected for commodity products. We need to figure out how to do things in ways that others can't, or won't do.

The national goal of doubling exports creates a strong emphasis on productivity and volume. At the same time, New Zealand aspires to become a global leader in premium products based on a brand of 100% pure New Zealand. Many companies tout a vision towards "value added" products, yet company behaviour and incentives continue to often promote volume over value. Investment into research and development continues to focus primarily behind the farm gate or processing end of the supply chain in New Zealand.

It is worthwhile exploring what factors may be prohibiting the transition of New Zealand agriculture from production focused to more of a market orientation. This can relate to internationalisation of companies, as well as what is needed to shift from a cost competitive focus to more strategic positioning of the sector.

2 Literature Review

The dislocation between production and the market requires some form of internationalisation by firms. The following section sets out some of the theory associated with the concept of internationalisation. When considering an approach for overcoming challenges associated with internationalisation and market positioning, it is useful to consider theoretical considerations related to strategy, which is also included below.

2.1 Internationalisation

One way to grow our exports is by looking to assist organisations in moving from solely exporting to internationalising. Internationalisation can be thought of as both a vertical movement up the supply chain with increasing levels of investment in to target foreign markets, or horizontally across the number of countries entered, how these are selected, and how far they are away from the home base. Each step in internationalisation requires the company to increase investment and make additional commitments of financial and human resource.

A business can shift from a domestic market focus, to exporting, to becoming a business integrated into global value chains, and eventually establishing a presence offshore (New Zealand Ministry of Business Innovation and Employment, 2015). In essence internationalisation means thinking globally, beyond the farm in New Zealand. It determines where and how New Zealand agriculture captures value from global opportunities.

New Zealand agribusiness firms typically follow the traditional model of internationalisation which includes low-risk, low-cost strategies. The historical set up of agribusiness firms has resulted in a number of large companies, with a long history of processing New Zealand's horticulture and agriculture products for export. Many of these firms evolved from state-owned enterprises or statutory marketing boards. One study found that many different types of entry mode were being used by New Zealand companies including exporting, investment (sales subsidiaries, acquisitions, and joint ventures), networks (strategic alliances), licencing and outsourcing. In many cases, a company would use more than one strategy simultaneously (Scott-Kennel, 2012, p. 20).

More recently SME's and service firms are likely to advance to more distant markets rapidly, leap-frogging the traditional incremental stages (Scott-Kennel, 2012). Exporters have been found more likely to have an office set up in emerging markets such as China and Hong Kong than traditional markets of the United Kingdom and United States. This could demonstrate that companies are looking to overcome challenges of psychic distance (Martin, 2015, p. 80). Psychic distance relates to the perceptions in the mind of an individual as to how he or she sees the difference between two countries.

A number of studies have looked to investigate what other factors may be holding New Zealand back from fulfilling its potential. Similar conclusions were made across two separate bodies of research into the challenges for New Zealand innovation and internationalisation (Martin, 2015; Scott-Kennel, 2012; Shangqin, McCann, & Oxely, 2009; Pedersen & Petersen, 2004; Tan, Brewer, Liesch, & Coote, 2014; Deakins, Battisti, Perry, & Crick, 2013). Distance from major markets and geographic isolation, scale of firms and size of the domestic market, the nature of the products produced, a deficit in knowledge, and limited international connections impact New Zealand's ability to harness greater gains from innovation and internationalisation. These factors can be split into inherent challenges such as distance, scale and product types, and systems challenges such as knowledge, innovation and relationships.

2.1.1 Distance, scale and products

Distance from markets with critical mass of consumers, and limited access to knowledge spill-overs from other faraway countries prohibits New Zealand's ability to innovate in general and in particular with respect to market related innovation.

The scale of the New Zealand domestic market has a positive and negative influence on the nature of internationalisation. The small size of the domestic market means that firms often need to internationalise much earlier in their life-cycle than in other countries with larger home markets (Scott-Kennel, 2012; Martin, 2015; Shangqin, McCann, & Oxely, 2009).

New Zealand firms tend towards early and incremental internationalisation via exporting to psychically proximate markets such as Australia and the United Kingdom in the first instance (Scott-Kennel, 2012). While this makes sense for business as an easy first step, it can be detrimental to the success of their internationalisation strategy. Companies will often underestimate the business differences in countries that they see as psychically close to New Zealand, and will therefore under-prepare and under-invest in the move offshore (Martin, 2015, p. 18). Closer markets will often present the most competitive environment to enter given the high level of existing companies operating there, which may result in market-entry failure or lower than expected returns (Martin, 2015, p. 108).

The type of products or services will impact of the nature of internationalisation of an industry. The more knowledge intensive or technologically advanced a product, the more likely a firm will employ a more advanced stage of internationalisation such as offshore offices, strategic alliances, and subsidiaries (Pedersen & Petersen, 2004; Tan, Brewer, Liesch, & Coote, 2014; Scott-Kennel, 2012; Deakins, Battisti, Perry, & Crick, 2013).

2.1.2 Knowledge, Innovation and Relationships

Currently New Zealand's economy is heavily reliant of production and export of primary products. Other countries such as Finland, Israel and Singapore have managed to overcome their small size and geographic isolation through greater economic diversity which has encouraged innovation, and an eco-system of companies that continue to thrive in this space. There is a need and an opportunity for New Zealand to diversify as well, for the sake of the continued growth of the agriculture sector.

Public and private funded R&D in New Zealand is around 1.5 percent of total GDP and well below the average of small advanced economies of 2.5 percent, and especially similar sized Nordic countries or Israel who are 4-5 per cent (Skilling, 2015). It has been found that there is a relationship between an increased in government R&D funding and a subsequent increase in private sector funding (Hendy & Callaghan, 2013). As a small, open economy, New Zealand accounts for a tiny portion of global R&D, and therefore global R&D progress is critical to New Zealand to lift productivity. Studies have shown that foreign knowledge is consistently an important factor in explaining the growth of productivity (Hall & Scobie, 2006).

Knowledge is non-rival and non-exclusive, which means that once an idea has been created, others can use that idea at no additional cost; and once it is out in the public everyone can make use of it. These characteristics generate positive externalities or spill-overs into the wider economy. There is a market failure in the level of business investment in to creating knowledge and therefore innovation.

Government plays a role in investing in the public good of knowledge through R&D funding. There is also a need to ensure investment and eventual dissemination of this knowledge through policies around intellectual property such as patents.

The complexity of products produced by a country has been found to impact on the level of innovation (Hendy & Callaghan, 2013). Products that require a lot of specialist inputs and expertise to manufacture are more likely to be associated with production of other complex products. Complex economies that make a range of products that few other countries can are often are associated with a stronger innovation eco-system and the ability to turn innovation in to marketable products (Hendy & Callaghan, 2013). New Zealand has a relatively low complexity index, as we tend to export many products that other countries can and do export (Hendy & Callaghan, 2013).

There is potential for more cross sector collaboration in R&D to heighten the chance of innovation. Diversity in ideas provides greater prospects for new companies or new products to pop up and create value where it didn't exist before, and where traditional companies may be too focused on business as usual to identify the opportunity. Government should back emergence of new companies in other sectors, as incumbent firms lack incentives to diversify away from business as usual that may end up disrupting their existing platform for success.

An NZIER report identified what they term the Rutherford Effect. This relates to the importance for certain New Zealand companies to have human capital such as intellectual manpower, and inventive capacity remain in New Zealand. This is due to the innate ability of kiwis to be problem solvers and trouble-shooters. NZIER differentiate this Rutherford Effect of a particular aptitude for thinking and experimentation, from the No. 8 wire mentality we are also known for. The paper proposes that the "she'll be right" attitude and making do with what we've got is detrimental to the development of sustained innovation (New Zealand Institute of Economic Research, 2015).

Knowledge is important to the firm's internationalisation process, and will often be gained through experience in other similar foreign markets. There are two different types of knowledge that can be acquired; explicit knowledge (market statistics, competition law, technical standard, import regulations) and tacit knowledge (learning by doing). This second requires operating in the country and learning about the values of the foreign country and cultural factors that impact the rules of the game (Pedersen & Petersen, 2004).

Knowledge and innovation alone are not enough to overcome a market production dislocation to internationalise. There must also be collaboration and connectedness to realise the true potential of the benefits generated from new ideas.

It is assumed that if business relationships and networks can enhance the knowledge gained by a firm in internationalising then this will reduce the uncertainty, and therefore speed up the level of commitment (Agndal & Chetty, 2007). However, this is not easily qualified, as it is not guaranteed that objective knowledge from a network can make up for experiential knowledge learned first-hand by the firm.

The nature of the business relationship between New Zealand firms and their trading partners is likely to be influenced by distance, scale, and product characteristics of the firm as covered above. New Zealanders are sometimes seen to have low levels of business pro-activeness, and operate in a relaxed, but transactional manner (Greene, 2012, p. 28; Herbst, 2009). This can be seen as detrimental to

business development, especially in countries that place high importance of establishment of relationships in business (Martin, 2015).

A key factor in the nature of relationships and internationalisation is whether a firm pursues a business relationship in a proactive or reactive manner. Entry into emerging markets at early stages of the firm lifecycle are often opportunistic or reactive (Martin, 2015). Firms may be approached from an interested buyer, or take up an ad hoc enquiry through an opportunistic situation.

This reactive approach to market entry is likely to impact on the level of commitment to building the relationship from the New Zealand side, and therefore would be detrimental to potential success (Martin, 2015). A lack of preparation and a struggle to be successful may then put firms off further investigation of offshore opportunities.

New Zealand and its psychically close markets that are often first selection in market entry, tend to operate on a transactional basis for business. This can create difficulties when a firm then enters a market where building the relationship is more fundamental to business operations (Martin, 2015).

2.2 Role of Government

The role of government should be to provide broad based policy that focuses on providing the correct incentives and signals to business and solving market failures (Greene, 2012). Market failure includes barriers to entry and exit, information imperfections such as a lack of awareness of potential market opportunities, and externalities such as the spill-over benefits from demonstration and knowledge externalities (e.g. a positive role model or intangible benefits from business working together) (Greene, 2012, p. 5).

Support should minimise the prevention of information flow from export markets, particularly emerging markets, and therefore reduce the psychic distance barrier to internationalisation (Martin, 2015). This includes ease of access to a firm's own international networks, such as business peers, professional advisers, industry bodies, and clients and distributors, to source information and advice. Market promotion agencies can play a role as "social network pivots for would-be market entrants so that gaps between markets and firms, especially where psychic distance is high, can be closed" (Martin, 2015, p. 114).

The social return from R&D investment is greater than the private return, and therefore there is a case for government to create incentives for investment. Government involvement comes with costs and risks, and incentives must be balanced with the need to make knowledge widely available after it has been created (Blakeley, Lewis, & Mills, 2005). Policy and regulatory responses need to account for this through mechanisms such as intellectual property rights, and open science funding.

2.3 The importance of strategy

Michael Porter played a leading role in theoretical considerations of business strategy in the 1980's and 1990's. Porter's idea of strategy is focused on differentiating between operational excellence and true strategic positioning. Operational excellence relates to performing a set of activities required to produce and sell produce better than rivals. Strategic positioning relates to "performing different activities from rivals, or performing similar activities in different ways" (Harvard Business Review, 2011, p. 2).

Operational excellence can be copied as other firms learn how to perform efficiency focused activities to the same standard; i.e. all firms can move towards the productivity frontier. The productivity frontier is

the "maximum value a company can deliver at given costs, given the best available technology, skills, and management techniques; it shifts outwards lowering costs and improving value at the same time" (Harvard Business Review, 2011, p. 3).

Operational excellence is necessary but not sufficient factor to achieve superior profitability. The ability to harness gains depends on the speed of diffusion of best practice to competitors, and the degree of competitive convergence (how alike companies begin to look). Competition in the operational excellence space ends up being zero sum game where one may win, at the expense of others in the industry for a certain time period, however the resulting price and cost pressure compromises a company's ability to invest in the long term (Harvard Business Review, 2011, p. 7).

Simultaneous improvement between cost and quality occurs only when a company begins far behind the productivity frontier or when frontier shifts outwards. At the frontier, Porter proposes that there is a real trade-off between cost and differentiation. Without trade-offs, there is no need for choice, and no need for strategy; performance depends wholly on operational effectiveness (Harvard Business Review, 2011, p. 20).

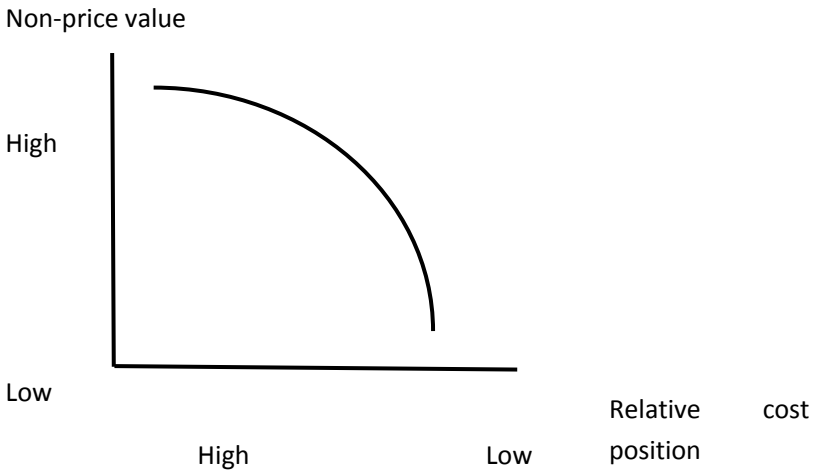

FIGURE 3: PRODUCTIVITY FRONTIER

Porter defines strategy as "creation of a unique and valuable position, involving a different set of activities" (Harvard Business Review, 2011, p. 4). Simply put "competitive strategy is about being different (Harvard Business Review, 2011, p. 8). A strategic position is not sustainable unless there are trade-offs with other positions that are incompatible, choosing what you will not do; otherwise competitors will attempt to copy. Trade-offs arise because:

- Otherwise there will be inconsistencies in image or reputation
- Different positions require different product configurations, skillsets, equipment, employee behaviour, and management systems, and
- Limits on internal coordination and control; companies that try to be all things to all people risk confusion in operating decisions (Harvard Business Review, 2011).

2.3.1 New Zealand application

The New Zealand agriculture sector has been successful in continually pushing the productivity frontier further out, through adaption of new technologies and management approaches. Investment in R&D has led to continual productivity improvements on-farm and in technology adoption in processing. New

Zealand has maintained a leadership position as a low-cost producer on the productivity frontier. The relative inefficiencies of livestock production in other countries have allowed us to maintain a strategic focus on operational efficiency, rather than strategic positioning.

World-leading quality standards in food safety and traceability; preferential market access to high value markets; a first-class business enabling environment; and an industry network of support services is a combination that has resulted in productivity and efficiency gains that many other countries have not been able to replicate.

The struggle to make trade-offs can be seen where New Zealand agriculture industry participants (farmers and processor-exporters) are not aligned in what would need to occur to position the company strategically as a high-value premium food producer; what group of customers to target; or needs to serve. To do so would require trade-offs that would likely increase costs such as spreading the season of production, paying more to some producers over others, or imposing strict environmental or animal welfare standards.

Several factors challenge the ability of agribusinesses in New Zealand to develop a strategic position other than operational excellence. Firstly, the seasonal nature of production which is the core competency of New Zealand's low cost production system, also results in limited ability to meet consumers' needs throughout the year. It forces processors to turn the raw material (milk or an animal carcase) into products that can retain shelf life (milk powder and frozen cuts of meat). This limits the chance to create value through meeting consumer needs or wants.

Furthermore, in the dairy and meat sectors, processors have to deal with range of products generated from the raw material. This distracts efforts away from creating value based on what the consumer wants, and instead effort is focused on finding a "home" for many various products with a plethora of end users.

2.3.2 Why is it so hard to have a strategy?

If a company is not operating at the productivity frontier, it seems there is no need to make trade-off in cost and value. Through this process, the "pursuit of operational effectiveness is seductive because it is concrete and actionable" (Harvard Business Review, 2011, p. 29). This has certainly been illustrated in New Zealand as we strive towards investment in improving performance indicators per hectare, per cow, per labour unit, per kilogram of dry matter, etc. Millions of dollars of investment and decades of research and extension has gone in to perfecting the farm system to produce more output per unit of input.

A Treasury working paper found that the investment in domestic R&D has generated an annual rate of return of 17 percent over a longitudinal study from 1926 to 2000. There are significant lags from the time of investment, to when the returns can be seen and this reflects the nature of technology adoption in farming (Hall & Scobie, 2006). Regardless, it is proven that this progress can be monitored and measured on every farm throughout New Zealand.

Pursuing a differentiation strategy that includes trade-offs mean entering into a world of unknowns. It requires buy-in from various stakeholders including governance, ownership and management for investment towards the long-term over short term gains. Often the desire or need to grow (such as an overcapacity of processing space) can limit the ability to implement strategy. The risk of losing sales in the short term, due to less features to reduce cost, or increased cost due to differentiation, goes against a growth motive. Revenue often can end up being pursued at the expense of profit.

2.4 Conclusion

The New Zealand agriculture sector faces challenges due to the dislocation between production and the market. This dislocation has resulted in operational excellence business models that focus on productivity, efficiency and scale. The eco-system within New Zealand has been set up to reinforce this focus. Government and industry funding and private investment has largely been focused on striving for continuous improvement, where returns can easily be measured. Connections into traditional markets of the United Kingdom and European Union and the nature of product have resulted in a transactional type of business model.

The trading environment for agriculture products will continue to change, and New Zealand can either proactively front-foot this, or wait and be forced to adapt. As a country heavily dependent on international trade access for a limited number of products, New Zealand is in a vulnerable position. A shift towards emerging markets and a new landscape of technology and social expectations around food provide a changing context for value creation. This presents an opportunity and a challenge for New Zealand.

New Zealand firms are currently engaged in many types of internationalisation. Studies suggest there is opportunity to improve the understanding and ability of firms to achieve greater success through internationalisation. The nature of New Zealand's internationalisation relates to inherent factors such as the historical framework for the large agribusiness firms, the challenges of small scale and large distance, and the nature of the products that are exported.

A commitment to knowledge, innovation and building relationships is critical for success when New Zealand firms are internationalising. Government support programmes designed to enable this to occur will greatly benefit the industry's ability to step-up in their offshore operations.

The literature review has provided a framework for research questions exploring the market product dislocation. Inherent factors such as geographic size, location and nature of agriculture products will impact on the eco-system for innovation and internationalisation. These inherent factors impact on how firms can operate to overcome a dislocation between the end market and production. Softer systems associated with the eco-system such as availability of market knowledge, sophistication of innovation and domestic and international connections contribute to the ability of industries to respond to these challenges.

3 Methodology

The findings presented in the following section are the result of interviews carried out during seven months of Nuffield New Zealand scholarship travel between March and September 2016. Countries visited were Ireland, United Kingdom, the Netherlands, Denmark, Italy, France, Israel, Qatar, Turkey, Ethiopia, Kenya, Tanzania, Singapore, India, United States, Brazil, Chile, and Colombia. Interviews were held with Government officials, primarily in Foreign Affairs, Trade and Agriculture Ministries; agribusiness companies including input providers, farmer cooperatives, processors, exporters, and retailers; Non-government organisations (NGOs) including farming organisations; universities and research institutes; and individual farm businesses across a wide variety of sectors.

Analysis was conducted by identifying key themes present across the range of interviews, more detailed analysis of a selection of case studies, combined with findings from the literature review. Case studies were compared using a framework under development of Hamish Gow, Professor of Agribusiness, at Massey University. This report is an early-stage inductive testing of this concept based on the identification of a production invention – market innovation paradox.

The objective of travel to Europe and Israel was to investigate how these countries were internationalising their agriculture sectors to overcome a market production dislocation. The Netherlands, Denmark and Ireland have traditional linkages internationally through colonies or missionary work especially into Africa and Asia. There has been a history of European agriculture companies going out into the world to pursue agricultural expansion, often through the exploitation of natural resources, labour and climatic conditions of other countries. This has generated linkages and a history of experience and learning between Europe and the rest of the world. Israel is renowned internationally as a global leader in agri-technology particularly in the fields of water, irrigation, and greenhouses. Israel has manged to take this technology and achieve success through global applicability, which has built international business connections.

South America and Africa were visited to assess how these regions are currently performing with regards to agriculture development, and what opportunities there may be in the future for New Zealand involvement. There are several New Zealand companies already operating in South America at farming, agri-technology, and processing levels, with less of a presence at this stage in Africa.

The initial focus of this report was on the applicability and transfer of New Zealand farming systems and expertise internationally, hence the focus on Latin America and Africa. During the course of the research, the topic was altered to focus on the internationalisation of New Zealand agribusiness in general. The absence of Asia in the research, particularly China, limits the conclusions that can be made, as these are key markets for New Zealand food and beverage products. New Zealand agribusiness companies have long been partnering with Asian business partners, and this trend is likely to increase as New Zealand business continues to pivot towards more emerging markets in the region.

Singapore, India, Qatar, Turkey, France and the United States were visited as part of the Nuffield Global Focus Programme; a six-week global study tour for a group of ten scholars from Australia, United Kingdom, Ireland, Canada and New Zealand. This organised study tour provided broader context for the research report through access to a wide range of organisations and individuals involved in agriculture across the world.

4 Findings

4.1 Introduction

Five different case studies are presented to provide insight into how other countries have set up their agriculture systems to overcome a production and market dislocation. The case studies paint a picture of how challenge and adversity have been turned into opportunity and success. Similarities are evident in that each country faces a challenge of a dislocation between a production base for agriculture and a consumer market to return value.

Each case study has a unique combination of eco-system components related to the market and product dislocation; a burning platform for change; culture; leadership; systems; value creation and realisation; and domains of activity. This process is presented through each of the five case studies with varying degrees of importance placed on each element. This framework and examples can then be analysed to better understand New Zealand's dislocation between market and production.

The challenge of dislocation has often resulted in a "burning platform" that has forced the government and industry to respond in order to maintain the potential for agricultural prosperity. Small export-focused economies such as New Zealand and the case studies are more at risk from trends that impact global trade and investment. Burning platforms can be the result of global events that impact at a national level. Equally domestic disturbances can generate a need to change.

The culture and heritage of a country is equally important in determining the way in which a country responds to the production and market dislocation. Each country demonstrates the influence of its culture in the way it approaches challenges domestically as well as determining the way in which they interact with the rest of the world. Each country has a unique culture and this can be captured by factors such as attitudes towards risk and uncertainty; individualism versus collectivism, importance of long term versus short term; communication style; and hierarchical factors of power (Letestu & Holmgren, 2012).

Every country has a unique heritage and identity with regards to what they feel proud of, their national psyche, and what they are known for around the world. This culture and heritage presents itself in the way a country conducts itself internationally, and the role they have taken as a cog in the global food system.

The combination of a burning platform and cultural elements combine to influence a country's response to the production to market dislocation. Leadership within government and or the industry is needed to drive change to overcome the burning platform. This change often results in short term costs and there may be winners and losers, which makes leadership vital to the process.

Each case study has a unique system that includes investments made into hard and soft factors of an economy to develop resources and capability. This includes public and private funding towards infrastructure, institutions, education and training, research and development, market or product development, and relationships.

To adapt or respond to the production market dislocation, each country has invested heavily to change the system. This investment has enabled the development of a new area of deep expertise, knowledge or ability that didn't previously didn't exist.

Each country is involved in different agriculture sectors. The product market dislocation is not about competitive advantage in a particular product. Various business models have been designed to capitalise on the creation of value achieved by the eco-system.

4.2 Ireland

"The Origin Green quality assurance programme and our investment in consumer insights provide scientific instruments for how we are marketing, and this provides brand resilience."

Declan Fennell, Sheepmeat Sector Manager, Bord Bia

Ireland is a small island country of 6.9 million hectares, of which 4.5 million is used for agriculture. A population of similar size to New Zealand with 4.6 million people, a key difference is the European Union market of over 500 million people on its doorstep, with open trade access. Ireland has a relatively rural population of around 40 percent of the population in 2015, while New Zealand is now only 15 percent.

Ireland has expanded into new markets outside of its main market the UK since joining the European Union in 1973. Ireland now has its sights set on global emerging markets and is exporting to 175 countries globally, with almost 30 percent of agriculture exports outside of the EU and UK.

Figure 4: Ireland production market dislocation

After facing economic challenges in the mid 2000's, Ireland re-prioritised the importance of its agriculture sector and invested to become a globally competitive food and beverage exporting country. An important part of this has been Ireland's ambition to position itself as a global leader in sustainable food production. Ireland has developed agri-food brand around story of sustainable production, targeting top end consumers within the European Union and beyond. This brand draws on the Irish culture of storytelling, and warmth of being open to other cultures and people based on the Irish tendency throughout history to have a large diaspora around the world.

4.2.1 Collaborative agriculture approach

A system to support the internationalisation of Irish agriculture has been developed through the Origin Green programme. Origin Green aims to have every farm and food manufacturing business in Ireland operating in the most sustainable manner possible. This will occur through sustained collaborative efforts across farmers, processing and exporting companies, sectors and industry bodies and government. Ireland has also extended its networks and connections internationally to achieve this goal.

The industry good body that represents all food and beverage farming and processing sectors Bord Bia (Irish Food Board) is heavily market focused and invests significantly in understanding consumer insights and behaviour. Bord Bia is a semi-state body set up in the 1980's to promote Irish meat, horticulture, and consumer food exports. Bord Bia has five key strategic roles.

First, to provide market insights and predictions focused on the consumer to the export industry. Bord Bia's Statement of Strategy 2016 – 2018 has a focus on the forces shaping the future for Irish agriculture. Primarily macro-dynamics such as social, technological, environmental, economic and political forces that influence business; consumer trends such as shifts in attitude and values; and "food contours" or trends that influence the way the world sources, produces and consumes food (Bord Bia Irish Food Board, 2016).

Bord Bia invests heavily in independent consumer and trade research. Staff stay with families in Korea and China to better understand how they use dairy products. Market research can either been generic and shared with all companies, or funded 50/50 with individual companies for a specific market or product that won't be shared.

Secondly, Bord Bia manages the Origin Green quality assurance programme (ISO9000 standard at EU level) including independent on-farm audits. The objective is to have Ireland provide the most sustainably sourced and certified food and drink in the world. The third aspect of Bord Bia's work is improving market access, primarily through staff in 11 overseas offices.

The fourth component of Bord Bia is enhancing talent of people involved in the agribusiness sector in Ireland. Ireland has a young graduate programme that gives students experience in the Food and Beverage sector internationally. Interns are put in companies such as Mars, Nestle, Starbucks and Unilever as "Origin Green Ambassadors".

The fifth aspect is developing excellence in brand communication, and developing skills for Irish companies, through working with companies such as Google and Facebook. A progressive set of programmes support the development of new food businesses. Food Academy is the first step, where new food businesses have the chance to get exposure through a separate section in regionally located supermarkets. Food Vantage is the next step, and assists a food company to enter the national market. Food Works is targeted at new businesses that could be the next Baileys or Kerrygold. Entrepreneurs are put through intensive boot camps and feasibility studies to develop new ideas.

4.2.2 Origin Green

Origin Green is a certified Brand that can be applied across all Irish food and agriculture products. It was a difficult sell to bring all food and beverage companies in under the umbrella, and a lot of work had to be done to bring companies along on the journey. An important aspect of the conversation was determining how a form of "coopetition" could occur where firms were collaborating and competing simultaneously.

The common threads that pulled things together were quality assurance, as that is the duty of every company, and sustainability – as all companies were being asked to report what they were doing in this space either by their customers, or environmental and animal welfare lobbyists. Many companies and farmers were already doing what is now certified, it was just a matter of being able to articulate it using science and data.

The first step in Origin Green is a farm carbon footprint assessment, which includes identifying how emissions can be reduced. There is also an extra voluntary carbon /sustainability navigator assessment which shows how to reduce carbon footprint in a practical way. Around 95 percent of farmers agree to this, illustrating awareness among farmers of the need to adapt to market requirements (Fennell, 2016).

Bord Bia consider that Origin Green has galvanised the industry together around something that they can all be proud of. Ireland, through Bord Bia, is aiming to be the world leader in quality assurance and

commitments to sustainable through certified science. The next step will be towards biodiversity, water, and welfare (Fennell, 2016).

4.2.3 Results

Ireland has managed to lift its agriculture sector out from the doldrums to become a global leader in food marketing and certification systems. Origin Green is often touted as what New Zealand agriculture could or should have achieved in branding. Ireland has achieved over 50 percent growth in exports since 2009 to 2016 up 3.7 billion Euro to 10.8 billion in 2016. Bord Bia has managed to connect the hearts and minds of consumers and producers in all that is green about Ireland.

A key role of the industry body Bord Bia is market focused, and all activities domestically are orientated towards that market focus. The combination of heavy investment in understanding consumers, combined with the ability to encourage and certify on-farm behaviour puts Ireland in a world leading position with regards to development of market led agriculture production systems. Now that this platform is set, Ireland can continue to move forward in utilising scientific instruments for marketing. Bord Bia see their role as predicting future consumer trends, and feeding this back to the industry. New offices are being opened in Indonesia and Poland, which illustrates a trend of growth offshore, and validates the value of the intelligence of Bord Bia's presence in global markets.

4.3 The Netherlands

"The competitive advantage of Dutch agriculture can be seen as sectors that the Netherlands is strong in: Seeds, Livestock, Horticulture, Potatoes, Water management. But also across sectors: the innovation system approach – not a sector or technology, but an ability to make an analysis of the value chain, identify binding constraints, and then the ability to organise multi-stakeholders to address the constraint and improve the innovation system."

Jeroen Rijniers, Lead Policy Adviser, Ministry of Foreign Affairs, Trade and Development Cooperation

The Netherlands is known as a global leader in agriculture innovation, production and trade. The Netherlands accounts for 7.5 percent of world exports in agriculture and food, coming in number two globally behind the Unites States. A significant amount of this volume is re-exported product imported from around the world and processed into higher value products. The European Union is the main market, accounting for 80 percent of exports. Food processing companies make up an important component of the economy, with 8 out of the largest 25 Dutch companies in this industry (Netherlands Enterprise Agency, 2014). Main sectors include horticulture, floriculture, potatoes, dairy, and seed propagation.

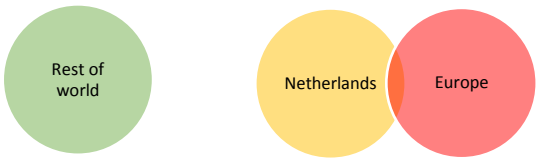

Figure 5: The Netherlands market production dislocation

The Netherlands has one-sixth the land of New Zealand, with almost four times the population. The Netherlands has had to resort to building dykes to reclaim land for agricultural production. This need for

innovation to solve a pressing domestic challenge brought together government, industry, knowledge institutes and civil society to develop solutions based on research and social cohesion to address collective issues. This "Dutch Diamond" model of public-private partnership has become synonymous with the way the Netherlands approach solving most problems, and is still used today with respects to the development of their agriculture sector.

To allow this collaborative model to flourish, there has been leadership from government to encourage co-innovation of ideas with through links between policy, science and industry. There is a much stronger role of civil society in the Netherlands compared to most western countries, with a vast and deep community of non-government organisations that represent various interests. This reflects a sense of leadership among the Dutch for social justice, and is showcased by The Hague being the global centre of justice and peace.

The Netherlands has also overcome a lack of land resource through a history as a trading empire reaching out to the corners of the world to source raw materials. Large scale infrastructure investment allows the re-direction of goods into the European market through port and air transport hubs. The Netherlands hosts the largest flower auction market and the largest cocoa port in the world. The emergence of the European Union common market retained this location advantage for The Netherlands as an entry point for many goods.

The ability to be a trading hub, and the development of significant sophisticated expertise and technology in agriculture, water, and agricultural inputs has enabled the Netherlands to expand vertically back down the value chain to the production stage. This expansion has spread across the world where Dutch companies have established and operate production focused businesses that draw on local resources. Businesses such as Heineken, Unilever, DSM, and Royal Friesland Campina have set up local sourcing, production and processing arms across Eastern Europe, Africa, Latin and Central America, and Asia.

The Netherlands has managed to identify an arbitrage opportunity to produce in other countries using application of Dutch technology adapted to the local climate and resources. The Dutch model identifies binding constraints in a value chain with an ability to organise multi-stakeholders to address the constraints and implement innovative systems. They have experience through doing this in challenging production environments in their own country, and so are adept at adapting offshore as well. In doing so, the Dutch have managed to remain cost-competitive where other countries lacking that collaborative innovation system would potentially fail.

4.3.1 Top Sectors

To develop expertise in agriculture technology and innovation systems and retain international competitiveness, the government introduced a "Top Sector" policy in 2011. The policy prioritises sectors for public-private investment to build research and development capability among private and public research organisations. The Top Sectors are Horticulture and propagation materials, Agri-food, Water, Life sciences and health, Chemicals, High tech, Energy, Logistics, and Creative industries.

Top Sectors are designed to encompass the whole of private industry for each sector, and will drive research and international trade and development priorities. Part of this is attempting to capitalise of the knowledge that the Netherlands owns by selling this offshore. The target countries of the Agri-Food Top Sector are China, South Korea, Bangladesh, Indonesia, Vietnam, Turkey, South Africa, Mexico, Brazil and Russia (Netherlands Enterprise Agency, 2014).

The Netherlands has implemented an aid to trade focus which means that an element of their overseas development programme is focused on identifying opportunities for Dutch companies to partner offshore in areas such as dairy, horticulture and aquaculture. A recent strategy report from the Dutch government on development presents the case for why aid alone will not solve developing countries issues. Country's should assist in ways where they can add value towards a win-win outcome (Ministry of Foreign Affairs of the Netherlands, 2013). While this policy shift has taken place, there are currently limited examples of where Dutch companies have leveraged aid funding to implement business activities.

To improve knowledge management among Top Sectors, the Netherland government funded the set-up of a Food and Business Knowledge Platform (F&BKP). The role of the F&BKP is three-fold: 1. Setting up networks for information sharing within the Netherlands and internationally on relevant issues related to working offshore such as inclusive business and finance, food waste, land governance and rights, and climate smart agriculture; 2. Managing a research fund that targets business linkages to other countries; and 3. Managing an online portal that maintains relevant sources of information related to capitalisation of knowledge.

The research fund is managed by a secondary organisation NWO-WOTRO. The goal of the fund is to encourage uptake of research in developing countries. Applicants must have a local partner in the other country, involvement of a Dutch company, and a Dutch knowledge institution. The fund targets solving higher level challenges at the systems level to improve the business environment.

4.3.2 Wageningen University and Research Centre

Wageningen is known internationally as an institute for academic education, research and innovation across agriculture, environment and food based on a solid foundation of funding from the Dutch government for the majority of the second half of the 20th Century (Spiertz & Kropff, 2011). In 1998, based on a report from a high-level advisory committee looking at how to refresh agriculture research systems, the Netherlands merged the agricultural university, the state institutes (equivalent to New Zealand crown research institutes) and the commodity-oriented research stations.

The objective was to create a critical mass, synergy and efficiency to ensure Wageningen maintained and strengthened its position as a strategic international knowledge centre (Spiertz & Kropff, 2011). The merge brought together research, higher education, and commercial exploitation of expertise and intellectual property. Internationalisation of research continues to be a feature for Wageningen. This merger has provided a strong position for research in the Netherlands to respond to changing scientific and societal challenges (Spiertz & Kropff, 2011).

4.3.3 Results

The Netherlands has strived towards excellence in agriculture food processing innovation. This allows the small country to make use of imported products and generate added value per hectare up to five times higher than the European average (Netherlands Enterprise Agency, 2014). The Netherlands has a tradition of being an international trading power, and this continues today with foreign investments around the globe. The Dutch difference is the ability to innovate and adapt production and trade systems to different contexts.

4.4 Singapore

"As a city state with no natural resources, Singapore is a distinctive country in many ways. And many of its policy design features are also distinctive... At a high level, Singapore's vulnerability is likely to be an

asset. Small countries need to be disciplined and thoughtful about their exposure to the emerging global environment, and to invest in anticipating possible futures."

David Skilling, Director Landfall Strategy Group

Singapore is a country with very little land or natural resources on which to build an economy with 716sq km of land, and 5.4 million people (International Enterprise Singapore Trade Promotion Group, 2016). Singapore has no significant production base, nor a strong domestic market. Following independence in 1965, Singapore embarked on identifying and investing in a number of economic development initiatives. This included establishing itself as the commodity trading hub of Asia-Pacific, and attracting foreign direct investment.

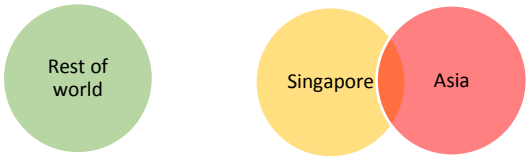

Figure 6: Singapore market production dislocation

International Enterprise Singapore is the NZTE equivalent and promotes exports from Singapore, as well as promoting Singapore as a commodity trading hub for agriculture, metals and minerals. Singapore has become a regional hub for wealth management and re-exports processed raw products such as oil, resulting in Singapore having the highest export to GDP ratio at over three times the value of GDP, whereas New Zealand is around 30 percent of GDP.

4.4.1 Commodity Trading Hub

To become the commodity trading hub of the Asia-Pacific region, an "eco-system" was purposefully put in place to support this value proposition for trading firms. A key factor in this system has been the openness to foreign investment and people. Almost 30 percent of Singapore's populations are foreign domestic workers. The eco-system includes the following attributes (International Enterprise Singapore Trade Promotion Group, 2016):

- Networks for trading participants
- Soft financial and trading infrastructure
- Hard infrastructure for import, export and re-processing
- Highly educated population
- Conducive legal, regulatory and tax framework
- Strong domestic business environment

Strategic investment has been needed to set Singapore up as a commodity trading hub. Singapore is now the leading commodity hub in Asia, with a market share of 15 percent of the world's oil, 20 percent of agriculture, and 20 percent of metal and minerals trading. The investment has paid off with returns back to Singapore including (International Enterprise Singapore Trade Promotion Group, 2016):

- Connected marketplace
    - Busy port and airport with world class transport and logistics infrastructure.

  - Vibrant commodity trading community – Agriculture, Energy and Metal/Mineral clusters. Many global grain companies including Cargill, Olam, Syngenta, Monsanto, ADM, Bunge etc. have set up the regional headquarters in Singapore.
  - In addition to trading, many companies have also located regional strategic functions in Singapore such as finance, risk management, and logistics.
- Premier financial services
  - Robust financial market to support trading and overseas expansion.
  - Easy access to finance and its related services with > 200 supporting banks.
  - Wealth management hub of Asia with over US$2.1 trillion of assets under management.
  - Diverse sources of funding.
  - Strong Singapore stock exchange; SGX is Asia's most international equity listing venue with 38% of listed companies from non-Singapore origin (compared to 22-23% for the London and New York Stock Exchanges).
- Efficient business environment
  - World's easiest place to do business according to The World Bank.
  - Efficient and reliable tax and competition legal system including tax and grant incentives to help companies grow their business
  - Focus on double tax agreements (74 in place), investment guarantee agreements (42 in place), and Free Trade Agreements (20 in place) to increase connectedness to other countries.
- Top trading talent
  - Open immigration policy; multi-cultural workforce.
  - English proficiency.
  - Grants to send staff internationally on one-year secondment – to learn more about place of origin of crops and resources.
  - Work with universities to develop relevant courses.
  - High quality of life.

4.4.2 Results

The outcome of being a commodity trading hub is that Singapore rates alongside Nordic countries and other highly developed Asian economies on the Economic Complexity Index (at ranking 12 in 2014, compared to New Zealand at 49). The Economic Complexity Index ranks how diversified and complex a country's export basket is, and the ubiquity of the types of products it produces in other countries. It has been proven that when a country produces complex goods in addition to a high number of products, it is typically more economically developed or can be expected to experience fast economic growth in the near future (Centre for International Development at Harvard University, 2016).

Singapore managed to reinvent itself based on a vision and a concerted effort to invest in areas of expertise and capability that would result in a value proposition to international businesses. This has resulted in a source of employment and wealth for the country that has led to the fourth highest OECD GDP per capita of over $80,000 USD in 2015, steadily increasing from a range around mid $60,000's in the mid 2000's.

4.5 Israel

"To move from producer to innovator – this is not the same; you have to build the infrastructure to do it. The basis for everything is education; you have to learn to think beyond accumulating knowledge. Learn to doubt what people tell you, and not being afraid to try something new."

Nissim Chen, CEO AquiNovo

Agriculture in Israel is defined by the challenging environment in which it operates. Israel is a small country, only 22,000 km squared, of which only 20 percent is arable. Israel has a population of 8 million, is largely self-sufficient, and does not have a significant surplus to export. Israel is disconnected from other producing and importing countries in many regions of the world. Regardless, Israel has managed to become a leader in agriculture technology and production systems internationally, and has created an eco-system that supports taking this expertise to the world. Through challenge and adversity, has emerged tenacity centred on learning and innovation.

Figure 7: Israel market production dislocation

Israel's agricultural sector is characterized by intensive production resulting from the need to overcome a scarcity of natural resources, particularly water. The high standard of development in the sector can be attributed to close cooperation and interaction between scientists, extension services, farmers, and agro-industries. These four elements have joined together to transform agriculture in Israel into an industry that is globally renowned for its efficiency and productivity, in a country where more than half of the land is classified as desert land (Israel Export and International Cooperation Institute, 2016).

4.5.1 A start-up nation

Israel is a country of start-ups, and it is engrained within their culture more so than anywhere else. Everyone in Israel is brought up to try something different, even if the chance of failure is high. Always challenge the status quo and doubt what people tell you; and never to see failure as a tragedy but as a lesson. This is something within the DNA of the Israeli people, with an intrinsic understanding that 'necessity is the mother of innovation'. Israel has learnt to be self-sufficient in many aspects, and to not rely on other countries for anything.

The culture of Kibbutzim (communal enterprises and communities) has been a big factor in the nature of its agriculture development, first as centres of food production and then as centres of technology development. Many leading Israeli companies were started in a Kibbutz, including Netafim, a global leader in irrigation. A network of connections exists in Israel; it is a relatively small country, and bonds are built between peers when they attend compulsory military conscription together. Furthermore, there is high level of international awareness in Israel, as most Israeli's will travel abroad for a period of time after military service is complete.

There is a consensus in Israel about what needs to be done to survive and prosper. This provides a guiding light for government and business investments. As a relatively new country, with large inward migration throughout the second half of the 20th century, the Israeli government needed to invest heavily in growing industries and businesses that could provide employment. Emphasis was put on developing industries across the various regions of Israel, with additional incentives to operate in less-central locations. The culture and systems of support to business start-ups continues today.

Israel has developed world leading expertise and technology in a number of specialist areas based on its own agriculture heritage. This includes greenhouses; post-harvest technology; water, irrigation and waste-water management; and fertilisers and fertigation. Natural restrictions on soil, water, and climate led to Israeli developed technologies to grow more with less. Israel has an annual water shortage of around 45 percent of consumption needs. The solution has been the treatment of sewage and use as irrigation. Around half of total agriculture water consumption is now treated water. Drip irrigation has greatly reduced water use, by optimising water application to the plant, rather than the soil (Israel Export and International Cooperation Institute, 2014).

4.5.2 Exporting Technology and Knowledge

Israel has extremely supportive government programmes for R&D, including with international partners. The Office of the Chief Scientist (OCS) within the Ministry of Economy oversees all government-sponsored support of R&D and has a budget of US$400-450 million per year. Support is provided to hundreds of projects annually, from ranging from emerging concepts within a pre-seed framework, to incubator and start-up companies, to large-scale, established R&D enterprises.

The OCS takes a philosophy of neutrality when making investments and does not favour where the economic impact comes from. The OCS doesn't attempt to pick winners in certain industries but encourages diversity through self-selection, and bases the decision on the business potential of the enterprise.

Israel has set up 22 technology business incubators across a wide range of sectors including agri-tech, clean-tech, life sciences, and ICT. The goal of incubators in to "transform innovative technological ideas in their early, high-risk stages into viable start-up companies capable of raising money and operating on their own" (Office of the Chief Scientist Ministry of Economy Israel, 2016). Criteria for investment in start-ups include 1. The level of technological innovation and level of risk associated with it (higher risk is considered the space for government to support) 2. Global market pull presented in the business model of the company and 3. Team capability to make it a success.

During a two-year project timeframe, the start-up can receive between US$500-800,000 towards costs. This will be paid back to the government plus interest in the form of royalties from revenue only if successful.

The Israel Export and International Cooperation Institute (IEICI) is a non-profit government institute. The main mission is to help exporters to find new business opportunities all over the world. Due to the small domestic market, Israeli companies need to look global early on in their development to grow. Israel has a culture of company start-ups, and if these businesses cannot find an international market, they will struggle to survive. Israeli companies are ambitious in their view to internationalisation. IEICI consider that substantial government funding is required to implement these solutions around the world to demonstrate Israeli technology in the local context.

The IEICI covers several technology industries including agri-technology as well as consumer goods. The agri-technology department provides foreign companies and organizations with information about Israeli agri-technologies, helps establish contacts with leading Israeli companies in the field and assists in planning business trips. Other activities include subsidising company visits to international trade shows, hosting visitors from overseas and organising offshore events to demonstrate what Israel has to offer. Government funding in Israel is often used to set up a reference point for demonstrating new technology of companies. Funding is split 50/50 between the Ministry of Economy and member's subscriptions based on export revenues. Israel has over 200 agri-technology export companies, earning US$4 billion in export revenues (Israel Export and International Cooperation Institute, 2014).

4.5.3 International Cooperation in R&D

One of the primary goals of the OCS is to promote R&D collaborations between Israel and the international community. Through the alliances developed, the OCS strives to promote Israeli R&D while concurrently advancing the objectives of each collaborator involved. Within the OCS framework, incentives are available from which foreign entities can also benefit.

Israel has signed industrial R&D cooperation agreements with Europe, China, India, Australia, the United States, Canada, Uruguay, Argentina, Brazil, Singapore, and South Korea. These agreements are seen to facilitate access to know-how and technology as well as open up new markets. Agreements generally fund joint R&D projects either carried out by private or public sector. Europe is Israel's main R&D partner and Israel is the only non-European country that is fully participating in the EU's Framework Programme R&D funding including Horizon 2020 grants. Israel managed to receive more in grant funding than it contributed to in the previous Framework Programme before Horizon 2020, and also benefits from access to global markets through European partners' connections (Israel Ministry of Economy Office for the Chief Scientist, 2015).

Israel also signs cooperation agreements with multi-national corporations to partner with Israeli start-up organisations. The OCS will share the risk of the R&D investment with the MNC and the Israeli partner. Investment is shared equally; however, the MNC can make cash or in-kind contributions. Intellectual Property developed as part of the project may be through sole ownership by the Israeli company; a provision of a non-exclusive license by the Israeli company to the MNC; or joint ownership by the Israeli company and the MNC.

International development assistance is also utilised to share expertise with developing countries. Programmes aim to support training and demonstrations, centres for excellence, joint research, know-how transfer and the exchange of experts. The international cooperation programme draws directly on Israel's own agriculture achievement including rural development, agri-technology and human-capacity building. Israel carries out several different areas of agriculture development assistance delivered through the Ministry of Foreign Affairs' Agency for International Development Cooperation (MASHAV), and the Ministry of Agriculture and Rural Development's Centre for International Agriculture Development Cooperation (CINADCO).

4.5.4 Results

Israel has developed a globally renowned brand as a provider of high quality agriculture technology and expertise. A set of institutions and processes exist to support the development of this agri-technology and expertise as well as supporting its application in other countries. Israel has identified an area of expertise that is valuable internationally such as water and agriculture, and has shared this expertise by

creating a value proposition around the high level of expertise and technology. This has built Israel's international relationships and reputation as a leader in its field.

Israel has deep cultural and systematic factors in place to respond to their market and production dislocation. In recognising their inherent challenges related to scale, climate, and isolation, they have developed an eco-system of government support to develop high technology companies that can export knowledge and technology around the world.

4.6 Chile

"We face competition from our neighbours, Peru, Ecuador and Colombia. They are stronger in resources of land, water, and labour, so we've got to use knowledge and innovation. We will search the world to find the best."

Patricia Fuentes Borquez, Senior Agriculture Adviser, CORFO

Chile is in a relatively similar situation to New Zealand with respects to the internationalisation of its agriculture sector. Chile is a small country in a challenging geographic location, spread along a thin coastal piece of land on the Western coast of South America. Desert to the north and mountains to the East constrain its ability to trade easily with near neighbours across land. Therefore, sea and air freight is an important component of Chile's agriculture export sector. Chile has a temperate climate with seasonal production similar to New Zealand.

Figure 8 Chile market production dislocation

Key agriculture products that Chile produce include horticulture such as fresh and processed fruit and vegetables, with a high focus on blueberries, cherries, nuts, citrus, avocadoes, viticulture including wine and table grapes, and to a lesser extent dairy and other livestock. Main export markets are the United States, United Kingdom and Europe. Chile competes with neighbouring countries such as Colombia, Peru and Ecuador that have more land and water, and cheaper labour. Chile has to compete on knowledge, innovation, and technological development. Chile is now looking to export fruit to China which requires a longer shelf life than current markets in Europe or United States (60-70 days compared to 30).

Chile has severe challenges with climate change. Agriculture has already begun to shift south, with new crops such as cherries being grown in regions that were previously too cold, and some areas in the north facing severe desertification. The agriculture industry including crops, fruit, wine, livestock, forestry and pastures are changing in both management and resources. There are new production valleys and agro-climatic conditions in the southern regions creating the need for application of new technologies.

Chile faces economic development constraints with copper making up around 20 percent of GDP and 60 percent of exports, exposing the economy to risk of international commodity price fluctuations. The Chilean government has identified a need to diversify its economy and has put in place a number of

measures to do so. It is noted as being extremely supportive of innovation and identifying ways to add value to primary products.

4.6.1 CORFO

Chile set up a new economic development agency CORFO which operates under several different Ministries. Its role is to take leadership of national innovation, entrepreneurship, and technologies, by searching for highest technology around the world. Chile understands that the quickest way to grow and develop is to draw on the best expertise and technology from others around the world.

Chile has decided on priority industries for economic development, and funding and support programmes target these sectors: Agriculture and Food; Mining; Energy (solar); Manufacturing; Health; Tourism; Biotech; and Astronomy. In Chile, public funding is focused across all the traditional sectors with limited resources spread across horticulture, livestock, floriculture and new industrial crops. The intention is to develop in the areas of mechanisation, such as precision agriculture, and application of high technology; post-harvest technology; genetic programmes for seeds and rootstock, and product innovation (Borquez, 2016).

There are two core elements to CORFOs work. First, to set up and manage International Centres of Excellence (ICE). The operations of each ICE were tendered internationally with the idea that the programmes would be jointly co-funded between Chile and the international partner. These were initially set up in four sectors: Agriculture and Food, ICT, Biotech, and Mining implemented by UC Davis (United States), INRIA (France), Fraunhofer (Germany), and CSIRO (Australia) respectively.

The goal of ICE is to bring world leading innovation to Chile, and also to generate business development in Chile, potentially through entry of foreign firms. ICE is a long-term government programme and each centre is initially set up for three years of installation, then three years of operation, before a final four years of consolidation. There is a key focus on building capacity within the Chilean institutions and companies.

Based on conversations with the implementers of some of the ICE's, the opportunity aligns with international interest for collaboration in science and technology. Chile is also seen as a natural laboratory for trying out new things given the length of the country and its openness, including modelling of natural occurrence; mining, new innovations, astronomy, natural source of big data.

Challenges relate to the cultural differences between Western and Chilean ways of operating in business and research. Collaboration is not the usual way for research and development in Chile, which is different to the European mechanisms that currently exist that encourage collaborative work for science funding. There is also a challenge around the applicability of the level of technology on offer from the EU and US and how this fits with the current state of Chilean industry. Business has to be ready to take up the new innovation.

Sustainability of the programme is a challenge, with the consolidation phase expected to have set up commercially sustainable relationships that can last beyond government funding. This will rely on the international partner identifying value enough to continue the programme, or a component of it, based on private sector need.

The second key component of CORFOs work is supporting development of entrepreneurs through collaboration, events, demonstrations, and co-working. CORFO has been involved in development of agriculture companies in aquaculture, fruit, mining, as well as new industries such as solar and smart

manufacturing. CORFO have 80 instruments or programmes to support entrepreneurial projects from scholarships for English language training, to financial support such as small credits, investments, pre-market-entry studies, to productive development for small growers, and technology capability building. A company is eligible to discount 35 percent off taxes put towards research within the company.

4.6.2 Results

One of the key successes for CORFO so far is that because it works across many Ministries, it has brought together different parties to work towards collaborative solutions. It has built social capital within Chile to respond to the many challenges faced as an isolated agriculture producing country. CORFO´s mission is to improve the competitiveness and the productive diversification by encouraging investment, innovation and entrepreneurship, strengthening in addition the human capital and technological capabilities to achieve a sustainable and territorially balanced development.

5 Conclusions

The collection of case studies presents each country's dislocation between production and the market. In each case, there is an eco-system put in place to overcome that challenge. Elements of this eco-system are presented in the table on the following page. Features of each element for each case study are compared in the next section.

There is a resounding purpose for why each country has set up the eco-system in the way they have. This purpose is complemented by a collective belief of those involved across government and industry. Stakeholders inherently know why their industry exists and can articulate their "why" to others with ease.

The "how" and the "what" are secondary concepts. The "how" relates to the value proposition of the agriculture sector; the way each country differentiates or positions itself to create and extract value. The "what" refers to the products and services of each country; the functionality and features on offer.

5.1 Dislocation

Chile and Ireland have similar production to market dislocations as New Zealand with a primary production based and a need to identify markets. Ireland is fortunate that a substantial high value market is at the doorstep with the UK and EU. Chile faces market searching challenges similar to New Zealand as well as the benefit of seasonality in production to Northern Hemisphere markets.

Singapore and the Netherlands face similar challenges of a small production base but close access to large markets. Both have overcome this dislocation by focusing on trading. Singapore utilises multi-national companies to do so, while the Netherlands sources globally through its own companies. Each country ends up with a large export to GDP ratio due to a high volume of re-exported processed products. Israel is unique in that it has a small market and production base, but due to climatic conditions has learnt to harness expertise and technology. Given its isolation, Israel can export technology and expertise which doesn't require scale or market access.

The ability of leaders to inspire and create action depends on others knowing and connecting with their why. In 2009, Simon Sinek presented this simple but powerful model in a Ted talk (Sinek, 2009). Gut decisions come from the limbic brain, the part of the brain that deals with decision-making, behaviour and feelings. This part of the brain does not compute language, and so attempts to change behaviour need to connect at a deeper level. Leaders and business alike need to be able to communicate from "the inside out" and start from the why.

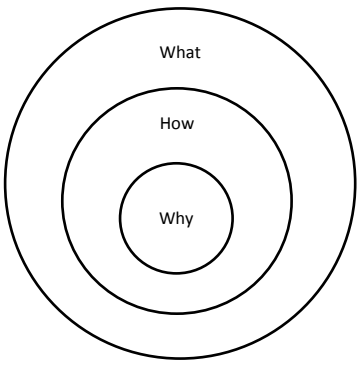

Figure 9: Golden Circle

TABLE 2: FRAMEWORK FOR MARKET PRODUCTION DISLOCATION AND ECO-SYSTEM

Eco-system component		Ireland	The Netherlands	Singapore	Israel	Chile
Dislocation	***Market***	UK/ EU and now Asia	EU	Asia	Domestic	UK/EU and now Asia
	Production	Domestic	Global	Global	Domestic	Domestic
Why?	***Burning Platform***	Economic crisis and need to diversify economy.	Lack of land for production.	Lack of natural resources for economic development.	Economic development for employment and regional growth; Natural resource challenge to produce more from less; and International connections.	Need to diversify economy away from copper.
	Culture	Storytelling.	Co-innovation; and Trading.	Multicultural trade gateway to Asia.	Business start-up.	Internationally connected.
How?	***Leadership***	Bord Bia Irish Food Board.	Dutch Diamond of government, industry and science; and Top Sector Policy.	Multinational companies.	Entrepreneurs; and Kibbutz.	CORFO bringing expertise and technology of the world to Chile.
	Systems	Industry collaboration; Market and product development funds; and Leadership development.	Infrastructure as EU trading hub; Business investment offshore; and Innovation to adapt to local situation.	Infrastructure for Asian commodity trading hub; Enabling business environment; Human capital; and Free Trade Agreements.	R&D programmes; Business incubators; and Domestic networks.	International centres of excellence; Foreign direct investment; and Free Trade Agreements.

What?	***Value creation***	Brand + Sustainability programme.	Arbitrage opportunity to produce offshore.	Logistics systems; and Re-processing and refining product.	Export technology and knowledge.	Seasonality of production.
	Value realisation	Target premium consumers $/tonne.	Value-add food processing.	Head office for major multinational companies.	Intellectual property and licencing.	Premium market in the United states; and Joint ventures.
	Domains	Dairy and livestock; Prepared food products; and Beverages.	Horticulture and high value crops, potatoes; Dairy; and Floriculture.	Commodity products.	Water and irrigation; High value crops; and High tech services.	Horticulture; Tree crops; and Wine.

5.2 The Why

The case studies present a why through the combination of the burning platform and culture. An inherent challenge and opportunity to overcome that challenge that aligns with the psyche of a nation creates the foundation of a why. A need for economic diversification, coupled with the potential for growth of agriculture is a driver in most of the case studies. This is particularly the case in Ireland and Chile, where a downturn in another sector of the economy resulted in a pivot back towards the importance of agriculture. Limited land resource has been a driver of change in Singapore, the Netherlands and Israel, with each country adopting a different solution.

Culture plays an important role in influencing the nature of the solution. The approach to overcome a market production dislocation utilises innate skills, behaviour, and tendencies of each country's people. In the case of the Irish, this includes sharing a good story to make others feel a part of something. The Dutch are known for their innovation, and the ability to be successful in business in all corners of the world. The Israeli people have managed to create an agriculture sector where many others could not. This drive for success in Israel inspires a continual search for creativity and improvement in all aspects of life.

5.3 The How

While a burning platform necessitates the identification of a why, this alone is not sufficient. Significant government and industry investment and commitment over many years to support and develop the sector is required to turn expertise into a value proposition. A conscious decision is needed from government and industry participants to nurture a particular system in order to make it world class.

Once the why is understood, leadership and systems can be put in place to develop the how. Leadership will enable necessary trade-offs to be made, and lines in the sand to be drawn. In particular, this relates to what won't be done, just as much as what will be done. The case studies demonstrate that leadership can come from different sources. Government, industry bodies, research institutions, or the private sector can take on the leadership role. If and when this occurs in a collaborative manner, such as in the Netherlands, results can occur faster and with greater magnitude.

Systems are needed to overcome a dislocation between production and the market. Hard systems include infrastructure such as airports and ports to facilitate improved market to production connections. Soft systems are also required including institutions, collaborative networks, and funding programmes. Government support and incentives to develop appropriate resources such as human capital, R&D, and improved market information and presence is vital to overcome the dislocation.

Each country has invested significantly over long periods of time to develop the necessary systems. Each system is unique to the market dislocation paradigm in each country. This can be illustrated through the difference between Israel and the Netherlands who have both developed expertise in agriculture technology and systems. Because the Netherlands is connected to the European market, their system solution is to own and control production offshore, and add value by importing and re-exporting to a nearby market.

Israel faces the double challenge of no production base and no large market. The system is focused on extracting value from exporting expertise and technology and introducing that for use by countries with a production to market connection. Israel has created international relationships through its ability to provide high tech solutions to critical agriculture problems faced by many countries around the world.

Israel and the Netherlands can also be compared in their approach to funding business development and start-ups. The Netherlands has a Top Sector policy which prioritises investment related to particular sectors to build international competitiveness in a range of areas. Israel's funds do not differentiate on sector, but looks to support any business idea or technology based on its ability to contribute towards economic growth. This again references the difference in approach taken to overcoming the market production dislocation. The Netherlands is focused on certain types of production offshore, while Israel can develop high-technology expertise that can be applied across any number of sectors.

Ireland has invested in market information through offshore offices and developing people capability. Collaborative systems were put in place to develop a world-class quality assurance system. To do so has required pan-industry collaboration and agreement to set standards. It is extremely difficult to get such a broad range of individuals and companies to change from a competitive focus, to one of coopetition for the greater good.

Singapore and Chile have developed systems to open their economies up as much as possible to the rest of the world. The intention is to draw on the best of the world's technology, expertise and ideas, and investment capital to advance their own economies. Singapore is renowned globally as an efficient place to do business and trade. It has developed a hub of businesses that attract additional companies as well as world leading talent, and this promotes continual improvement and growth in the area of commodity trading. Singapore and Chile recognise their own limitations in these areas. Rather than attempting to solve challenges domestically, they utilise international resources as a catalyst for exponential improvements in the market to production connection.

5.4 The What

The final element of the eco-system is the what. While often it is easy to start from here and work in to the why, the what really is the least important element in making change successful. The what refers to the functionality and features of the goods and services on offer. In each of the case studies, the countries have created value by doing something that other countries can't or won't do. This means putting a stake in the ground to develop specialist expertise or technology is some element of agriculture production and trade. Value is created not by a particular area of competitive advantage for production, but through the business model created to realise this value.

The Netherlands and Israel have invested in developing expertise in value add processing and agri-technology respectively, and realise value through utilising this in different ways offshore. Ireland creates value through branded premium products and a world-leading sustainability programme that differentiates it from other global meat and dairy producers.

Chile and Singapore have set themselves up to attract and benefit from foreign investment. This means giving away a share of the potential prize to foreign investors, but acknowledging that the size of the overall prize will be larger because of it.

These are all features of the agriculture sector that are difficult for others to replicate without making trade-offs. Trade-offs can be easily made when there is clarity of purpose, the belief, the cause, the why. Without a clear why, it is difficult to make hard decisions around what to invest limited resources in, and where strategic direction and efforts should be put.

This section has presented a framework for analysis when attempting to understand how countries have overcome challenges associated with a dislocation between the market and production. The framework

introduces the importance of clarity of purpose, the why; the leadership and systems needed to make change, the how; and the means by which to create and capture value; the what. The final section applies this concept to the New Zealand agriculture sector. Based on the assessment, some recommendations are made for how New Zealand could better overcome the market production dislocation.

6 Discussion

The market production dislocation challenges are as relevant for New Zealand as it is for the countries presented as case studies. New Zealand can learn from the experiences of other small, isolated countries involved in global agriculture production and trade. This final section provides an analysis to answer the second research question as to how New Zealand can overcome the market production dislocation.

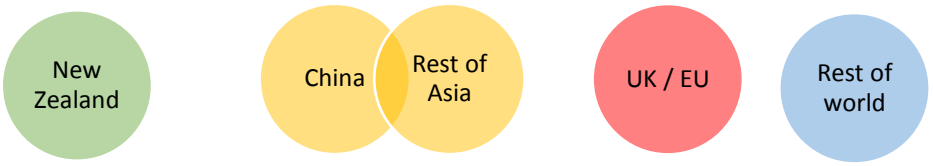

Figure 10: New Zealand Market Production Dislocation

First, the current New Zealand eco-system is applied to the framework. This enables insight into why things operate the way they do in the present scenario. From this, recommendations can be made for which areas of the eco-system require strengthening or adjustment in order to respond in a different way to the market production dislocation.

TABLE 3: NEW ZEALAND MARKET PRODUCTION ECO-SYSTEM

Eco- system component		New Zealand
Dislocation	Market	**Traditionally UK and EU** Long distances by sea freight; Counter-seasonal, meeting northern hemisphere deficit; Commodity markets, bulk product; and Supermarkets limit bargaining power or ability to differentiate. **More recently into emerging markets, especially Asia, China**. Changing consumer preferences and demand from product characteristics; and Diversification across many markets to manage risk and returns
	Production	**Domestic** Seasonality, pastoral based farming systems; Strength of cooperative processing model; and Family owned farms, moving to corporatisation.
Why?	Burning Platform	**Historically** Loss or gain of preferential market access; UK joining EU in 1970s; and FTA with China and others in 2000s.

	Culture	**Productivity focus** Price cost margin focus; Commodity trading; Competitive nature; No. 8 wire; and Tall poppy.
How?	Leadership	**Free market ideology** Low level of government involvement or incentives / funding; Risk aversion and compliance; and Industry good organisations.
	Systems	**Science focused on continual improvement** R&D targeted at on-farm and processing productivity improvement; Privatised elements of research, education and extension; and Lack of incentives for R&D collaboration or open source knowledge. **Investments** On-farm land development; and Limited investment in the market, time and cost intensive. **Free Trade Agreements**
What?	Value creation	Preferential trade access and first mover advantage; Food safety and traceability systems; Biosecurity status and ability to meet market access requirements for large number of countries; and Productivity improvements to reduce cost.
	Value realisation	Land prices.
	Domains	Dairy; Livestock; Horticulture; Seafood; and Forestry.

The market production dislocation and eco-system framework can be used to explain in-part the current state of New Zealand agriculture. In particular, investigating the why, how and what can illuminate how New Zealand has responded to the market production dislocation relative to other case studies countries.

6.1 Dislocation

New Zealand is unique compared to other case study examples in that we have a large production base, and are distant from all markets. We don't have any one close large market that can be used for the majority of product, and then seek out others for the residual. There is a need to be continually searching all markets at all times to identify where product can return the highest value. There is no longer one main market region as was the case when New Zealand shipped the majority of product to the United Kingdom and the European Union.

New Zealand's production is based off climatic, soil and typographical conditions that are conducive for seasonal pasture based farming systems. Traditionally production has been based around family farms and largely through cooperative owned processing and exporting companies.

6.2 The Why

Historically, New Zealand had a clear purpose for the development of its agriculture sector. The majority of produce was shipped to the United Kingdom and European markets to meet seasonal deficits in meat and dairy produce. This paradigm was shaken in the 1970's went the United Kingdom joined the European Union, and New Zealand's preferential trade access was adjusted. New Zealand underwent a period of market diversification to manage this risk.

In the latter part of the 20th century, New Zealand began to negotiate several bilateral and regional free trade agreements in an effort to get access to other potential markets. Meat, dairy and horticulture produce tend to be heavily protected as countries look to protect their domestic industries for staple products. Tariff barriers are high and often prohibitive to trade access. New Zealand has embarked on an ambitious external policy of attempting to get improved access to as many countries as possible.

This has created wins for New Zealand, most notably in 2008 being the first country to sign a Free Trade Agreement with China. The benefits to New Zealand from this agreement have been extensive and likely beyond what could have been comprehended at the time. China's growing demand, matched with New Zealand production growth has resulted in it becoming the main market for many of our agriculture exports. In the absence of this market pull from China, it would likely have been a different story for New Zealand agriculture growth over the last ten years.

Culture in the New Zealand agriculture sector has been centred on a push for productivity improvement. Historically, the discussion at farm and processing level has been focused on continual improvement in efficiencies and margins. Given New Zealand grew up with a guaranteed market outlet in the United Kingdom, this push for more production at less cost was the best strategy to take. Shipping standardised commodity product long distances lends itself to a focus on operational excellence. The only way to increase returns was to try and reduce costs of operating at all points of the supply chain.

New Zealand likes to be good at things, the best even in some cases such as rugby, sailing and climbing mountains. This is deemed appropriate socially and culturally, as long as it's done in a humble way. New Zealand society has a tendency to get nervous about companies or individuals who get a bit "too big for their boots" or forget where they came from. The number 8 wire mentality is a great for practical solutions, but it also lends itself to accepting things as they are. This can result in making do, rather than attempting to excel in a new area of innovation.

6.3 The How

Leadership in New Zealand to respond to the burning platform has largely been led by government. Policy has focused on a free market ideology that will allocate resources in the most efficient manner. The government has taken a hands-off approach, only stepping in where there is sound need for government involvement such as negotiating free trade agreements and ensuring market access, biosecurity programmes, and research funding.

Industry good bodies have played a role in representing farmers' interests and investing in areas where it makes sense to be funded collectively. This includes advocacy, research, education and training, information and data, and to a lesser extent market insights.

Systems in New Zealand are heavily focused on responding to the burning platform of a need for trade access, and continual productivity improvements. Government investment in research, education and training has historically been focused on farm. A shift towards more of a value chain approach is starting such as through the Primary Growth Partnership fund. However, there is still a large on-farm productivity and profitability focus to this work.

Agriculture education and research in New Zealand is heavily focused on-farm. It is extremely costly to attempt to carry out investigations into market dynamics. Furthermore on-farm research and education can be targeted, and has one focus: improving productivity and profitability. The outcomes can be measured and monitored. Market investigation is complex and uncertain. It is difficult to know where to start and finish; the environment for analysis has a large number of uncontrollable variables. It is hard to know what to measure and monitor when the scope is so broad.

Because of this inability to monitor and measure results and the limited ability to influence outcomes offshore, New Zealand agriculture sector has prioritised investment at the farm and processing level. As a farmer, it makes sense to invest income in farm development or growth where the returns are much more attributable than in offshore market development.

6.4 The What

New Zealand's ability to trade product into hundreds of countries around the world by meeting market needs in terms of product attributes and food safety and traceability currently creates value. New Zealand maximises the return from our total meat, dairy and horticulture exports in this way. While isolation limits the availability of large markets nearby, it is a blessing from a biosecurity perspective. A relative absence of animal and plant diseases is an important factor in the large number of markets we can sell into, that many of our competitors cannot.

Unfortunately, any increases in returns to New Zealand farmers are offset by a commensurate increase in land price. This means the return on capital stays largely constant, with farmers taken a dividend payment when eventually selling the farm. Low levels of profitability relative to capital land values means that often farmers have perverse incentives in land development rather than investing in market-focused programmes.

7 Recommendations

7.1 Paradox and conflict

It is important for New Zealand to recognise the significance of the market production dislocation, and the need for a why. Otherwise it is easy to lament over the perceived failure of New Zealand agriculture to be market focused, and capitalise on the premium nature of our production systems and products through value added brands. In reality the sector has responded in a rational manner to the challenge of a dislocation between our production and markets. The burning platform has been a continuous need to diversify, find new markets, and manage the risk of trade barriers. Distance, scale and the type of products we sell has meant a push to be the best with regards to cost competitiveness.

Limited recognition of the challenges New Zealand agriculture has overcome leads to a continuous conflict within the sector, often expanding to the broader economy. These challenges need to be appreciated and discussed whenever New Zealand has a government policy debate, a referendum, determining cooperative business strategy, or setting the direction of industry good activities.

An example of this is the current conflict about environmental regulation. Farmers are advocating for limited restrictions on their ability to use resources, because productivity and volume is the raison d'être. Until there is change in direction, it will be difficult to get buy-in for behaviour change. People can listen to the rules and read the regulation, but until there is a connection with the limbic part of the brain about the purpose then there will be no incentive for change.

Clarity of purpose and a resounding answer to the why is what will enable New Zealand to overcome this paradox and conflict. Without this, it is impossible to make trade-offs for the hard decisions, impossible to invest wisely in research, education, innovation or market and product development.

7.2 Our Kaupapa

A changing global environment for agriculture and trade will present New Zealand with an opportunity to identify and crystallise our why. Becoming complacent is one of the biggest risks the New Zealand agriculture sector faces. The importance of access to export markets requires the sector to be dynamic, and able to respond with agility to changing market conditions. A clear purpose will assist in swift decision-making, and gaining buy-in from a broad range of stakeholders when difficult decisions are made.

The burning platform for New Zealand agriculture will likely come from the market. Changes to globalisation and market access, food consumption, and increased competition from others are among the number of factors that could completely disrupt New Zealand's current agriculture eco-system. Recent international events highlight that market liberalisation is not a one-way street. Countries will always put their own people first, and both farmers and consumers have a very strong voice. What would New Zealand do if China suddenly stopped importing product? This may not be an unforeseen occurrence, given it has happened to varying degrees in the past with wool or dairy, albeit for short periods of time.

New Zealand as a country has a strong culture and heritage as discoverers. Everyone that lives here is either descendants of adventurers or have adventured here themselves from all parts of the world. As a people, we are a young nation, and still have the ability to shape our traditions, values, and culture. In fact, this will continually evolve as the demographics change overtime.

With respect to agriculture, New Zealand is typified by our pioneering nature. We are innovative problem solvers, and don't come armed with a blueprint solution. An inherent knowledge and ability of farmers that can simplify and manage complex nature-dependent systems efficiently is a key asset. Our free market principles and lack of subsidies bring an efficiency and profitability focus that others don't have.

Our small size makes us nimble. We are one of the most connected agriculture sectors domestically in the world. Everyone knows, whether they like it or not, what everyone else is doing in the sector. This is an advantage for knowledge diffusion and uptake of innovation. Our open and collaborative culture makes us trusted business partners internationally. This is essential when looking to create collaborative business models.

The combination of our culture and the burning platform will assist in determining the why for New Zealand agriculture. Once the why is determined, leadership and the creation of systems can fall into place around that purpose. The how should address constraints to fulfilling our kaupapa.

Lifting our game in knowledge, innovation and relationships is particularly important in relation to overcoming the challenge of market production dislocation. Recognising the inherent challenges of distance, scale and the nature of the products we export provides context for thinking differently about the solutions needed. Drawing on experiences and learnings from other small disconnected countries provides an opportunity to analyse what could work in the New Zealand context to develop our system.

The what of value creation and realisation will be different as the enabling environment, resources, and capabilities adjust to a new way of working. Business models that are rare or non-existent today will become the norm.

7.3 Next steps

It is beyond the scope of this report to start to identify and define the kaupapa of New Zealand's agriculture sector. It is not something that can be taken lightly, or done easily. What is needed or possible in the short term to move towards this?

In each of the case studies strong leadership was required to bring about change. This came from different sources including government, industry, or business. In all cases, bedding in a system took concerted effort and investment over a long period of time.

Given the New Zealand government tendency to take a hands-off approach to intervention, it would seem that the drive for change will need to come from industry. The New Zealand primary industry is represented by numerous different industry bodies, mandated under the Commodity Levies Act 1990. The organisations act on behalf or farmers and growers to invest in industry wide activities such as research and development, market access improvement and promotion, quality assurance programmes, and education and training. Given the heft of the task at hand in developing a kaupapa and driving the change needed which is relevant for all sectors, a united front is required.

Merging the relevant industry bodies into one unified body that speaks on behalf of the agriculture industry would be a powerful step in the process. This would create the necessary critical mass required to drive change that cannot be mustered from several smaller organisations. Examples of where this has occurred include Ireland through the establishment of Bord Bia, and Denmark which created the Danish Food and Agriculture Council from various separate bodies. The power of one voice can be backed up by

a collective base of data and science within one organisation. Inclusion of processing and exporting company representation within this organisation is warranted, especially given the majority of the New Zealand processing sector is farmer or grower owned.

There is already a large extent of cross-over between the work of the industry bodies in research, data and information, education and training, and collection of market information. Having this centralised in one organisation creates efficiencies and greater effectiveness through critical mass. The New Zealand agriculture sector is too small to warrant separate bodies, especially when the big issues facing the broader industry are so similar. One source of decision making also enables difficult trade-offs to be made more easily. It is a case of game theory at the moment, where one sector won't want to make difficult decisions at the risk that other sectors will benefit. This includes investing heavily in R&D or education, or introducing restrictions on production to attempt to create a branded product.

Once a unified body is set up to establish the kaupapa and provide leadership for New Zealand agriculture, government support programmes will need to respond. Government investment beyond business as usual will be required to develop the necessary systems. Based on the findings in this report, regardless of the why, there is a need to address constraints in New Zealand related to knowledge, innovation, and international relationships. These are fundamental to the development of an economy and will set New Zealand in good stead regardless of the direction set within our kaupapa.

8 Appendices

8.1 Appendix One: New Zealand Agriculture Sector Strategies

Sector	Vision / Goal
Dairy (Dairy NZ, 2012)	Dairy farming working for everyone by being competitive and responsible.
Strategic objectives	Increase on-farm profit and resilience through greater efficiency; Research and develop innovative technologies and solutions to meet the future needs of dairy farmers; Attract, develop and retain highly skilled and motivated people throughout the industry; Enhance the assurance levels of New Zealand's biosecurity and product integrity; Create and maintain industry-wide systems and structures to serve the needs of dairy farmers; Proactive environmental stewardship and wise use of natural resources; Farm to high standards of animal health, welfare and well-being; Provide a world-class work environment on-farm; Enhance the communities we live in; and Grow dairying's contribution to the prosperity and well-being of New Zealand.
Meat (Deloitte, 2011)	Informed aligned behaviour change: Coordinated in-market behaviour; Efficient and aligned procurement; Sector best practice.
Focus areas	Grow share of market value; Get better access to markets; Make better use of scale; Select what to sell; Increase certainty of supply; Improve on-farm productivity; Improve business skills; and Develop farming systems.
Horticulture (Horticulture New Zealand, 2010)	New Zealand's $10 billion horticulture industry by 2020.
Focus areas	Develop future leaders; Increase productivity; Focus export market activities; Develop intellectual property; Differentiate New Zealand's product basket; and Exceed sustainability thresholds.

References

Agndal, H., & Chetty, S. (2007). Relationships and strategic change in the internationalisation of SME's. *European Journal of Marketing*, pp.1449 - 1474.

Blakeley, N., Lewis, G., & Mills, D. (2005). *The Economics of Knowledge: What makes ideas special for economic growth.* Welllington: New Zealand Treasury Policy Perspectives Paper 05/05.

Bord Bia Irish Food Board. (2016). *Making a world of difference: Statement of strategy 2016-2018.*

Borquez, P. F. (2016, August 29). Senior Agriculture Adviser. (J. Bensemann, Interviewer)

Centre for International Development at Harvard University. (2016, February 11). Retrieved from The Atlas of Economic Complexity: http://www.atlas.cid.harvard.edu

Coriolis. (2013). *iFAB 2013 Dairy Review.*

Coriolis. (2014). *iFAB 2013 Meat Review.*

Coriolis. (2014). *iFAB 2013 Produce Review.*

Dairy NZ. (2012). *Strategy for sustainable dairy farming 2013-2020.*

De Serres, A., Yashiro, N., & Boulhol, H. (2014). *An international perspective on the New Zealand productivity paradox.* Wellington: New Zealand Productivity Commission Working Paper 2014/01.

Deakins, D., Battisti, M., Perry, M., & Crick, D. (2013). *Understanding Internationalisation Behaviour.* Wellington: New Zealand Centre for SME Research.

Deloitte. (2011). *New Zealand Red Meat Sector Strategy.* Beef & Lamb New Zealand; Meat Industry Association of New Zealand.

Fennell, D. (2016, March 15). Sheepmeat Sector Manager . (J. Bensemann, Interviewer)

Fraser, P., Ridler, B., & Anderson, W. (2014). The intensification of the New Zealand dairy industry: Ferrari cows being run on two-stroke fuel on a road to nowhere . *NZARES Conference 2014.* Nelson: New Zealand Agriculture and Resource Economics Society .

Greene, F. (2012). *Should the focus of publically provided small business assistance be on start-ups or growth business?* Wellington: Ministry of Economic Development Occassional Paper 12/02.

Hall, J., & Scobie, G. (2006). *The role of R&D in productivity growth: The case of agriculture in New Zealand: 1927 to 2001.* Wellington: The New Zealand Treasury.

Harvard Business Review. (2011). *HBR's 10 Must Reads on Strategy.* Boston.

Hendy, S., & Callaghan, P. (2013). *Get off the grass: Kickstarting New Zealand's innovation economy.* Auckland University Press.

Herbst, P. (2009, October). Kiwis abroad: Bridging cultural gaps. pp. 42-46.

Horticulture New Zealand. (2010). *An Overview: Horticulture Industry Strategy 'Growing a New future'* .

International Enterprise Singapore Trade Promotion Group. (2016, June). Singapore - The premier trading and distribution hub. *Presentation to Nuffield Scholars*.

Israel Export and International Cooperation Institute. (2014). Israel's Agrotechnology Sector.

Israel Export and International Cooperation Institute. (2016). *Israel's agriculture.* Retrieved from http://www.a-id.org/pdf/israel-s-agriculture.pdf

Israel Ministry of Economy Office for the Chief Scientist. (2015). *R&D Incentive Programmes.*

KPMG . (2015). *KPMG Agribusiness Agenda 2015 Volume 1 Growing Value.* KMPG Agribusiness New Zealand.

Letestu, A., & Holmgren, D. (2012). *The influence of the cultural differences on the internationalisation process of Swedish firms.* Umea School of Business and Economics.

Martin, A. (2015). Masters of Business Studies Thesis: The role of psychic distance in market entry sequence and channel partner initiation. Palmerston North: Massey University. Retrieved from www.massey.ac.nz/about-massey/news/article

Ministry of Foreign Affairs of the Netherlands. (2013). *A world to gain: A new agenda for aid, trade and investment .*

Netherlands Enterprise Agency. (2014). *Made in Holland.*

New Zealand Institute of Economic Research. (2015). *Global value networks: How to success in business without worrying about scale, distance or thin networks.* Wellington: NZIER.

New Zealand Ministry for Primary Industries. (2016). *Situation and Outlook for Primary Industries 2016.* Wellington: Ministry for Primary Industries Economic Intelligence Unit.

New Zealand Ministry of Business Innovation and Employment. (2015). *The Business Growth Agenda Towards 2025.*

Office of the Chief Scientist Ministry of Economy Israel. (2016). *R&D Incentive Programs: Entrepreneurship Innovation R&D Cooperation Technology.*

Pedersen, T., & Petersen, B. (2004). Learning about foreign markets: Are entrant firms exposed to a "shock effect"? *American Marketing Association*, 103 - 123'.

Scott-Kennel, J. (2012). *Models of Internationalisation: The New Zealand Experience.*

Shangqin, H., McCann, P., & Oxely, L. (2009). *Innovation in New Zealand: Issues of firm size, local market size and economic geography.* Christchurch: Department of Economics , College of Business and Economics, University of Canterbury.

Sinek, S. (2009). How great leaders inspire action. *TEDx Puget Sound*.

Skilling, D. (2015). *What can Singapore learn from other small advanced economies.* Landfall Strategy Group.

Spiertz, J., & Kropff, M. (2011). Adaptation of knowledge systems to changes in agriculture and society: The case of the Netherlands. *NJAS Wageningen Journal of Life Science*, 1-10.

Tan, A., Brewer, P., Liesch, P., & Coote, L. (2014). Commitment to internationalisation: An extension of the internationalisation process model. *Institutions, Organisations and Markets: New International Business Research Opportunities*.

United Nations Food and Agriculture Organisation. (2015). *Food Outlook Biannual Report on Global Food Markets.*