



Agribusiness and Economics Research Unit

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How Value Chains Can Share Value and Incentivise Land Use Practices: A White Paper

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Client Report

Prepared for

Our Land and Water National Science Challenge

OUR LAND
AND WATER

Toitū te Whenua,
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Executive Summary

Introduction

1. This white paper was commissioned by the Our Land and Water National Science Challenge to test the hypothesis that the more collaborative a value chain is, the greater is the value that New Zealand producers, processors and manufacturers in the land and water sector can capture from profiling the desirable ‘credence attributes’ of its production systems (‘the New Zealand story’), targeted at consumer segments.
2. The analysis in this paper draws on the published results of the MBIE-funded research programme, *Maximising Export Returns*, and a structured literature review based on the keywords “market orientation of value chains” and “food”.

Value in Global Value Chains

3. Value chain thinking is grounded in the concept that the final customer is the final arbiter of value and so everything firms do along a value chain from producer to retailer should aim to add value to the consumer’s experience. A market oriented value chain can be conceptualised as the pursuit of a common vision, based on trust and collaboration, aligning strategies, structures and processes on what the consumer values, throughout the entire value chain system, with a focus on creating value.
4. Dagevos and Ophem (2013) offer a helpful four-way classification that recognises four sources of value: product value; process value; location value; and emotional value. These definitions can be linked to land use decisions. Product and process value offer opportunities for physical and social science projects within the value chain. Location value provides opportunities for agribusiness, marketing and supply chain researchers, while emotive value offers a range of socio-psychological approaches for understanding consumer behaviour, sensory perceptions and brand value.
5. The Value Chain Management Centre of the George Morris Centre in Canada distinguish four types of value chains (see Figure 1 on page 10 of the white paper): fragmented; cooperative; coordinated; and collaborative. This white paper argues that consumer value is best created and captured in a collaborative value chain. Collaborative value chains can produce greater rewards, but also generates increased risks. This is one of the reasons why quality science is required to create new knowledge for understanding how value chains can share value and incentivise land use practices.
6. Country-of-origin (COO) branding can provide a competitive advantage that is not easily copied and allows product differentiation. The New Zealand country brand has a strong reputation, but this is not reflected in as high a ranking for New Zealand’s reputation as a COO for food and beverages. This is important because COO has been found to be used by consumers as a cue for desired attributes such as quality and food safety. An example of a high profile COO initiative is the Origin Green Ireland programme.

Market Oriented Value Chains

7. Since the 1960s, there has been a shift in commercial focus from increasing technical efficiency in commodity supply chains to increasing added value in differentiated value chains. Roep and Wiskerke (2012) suggest that globally the agri-food industry has been among the last to adopt this shift, and the New Zealand agri-food industry is often represented as producing commodities for export. The vision of the Te Hono Movement in New Zealand promotes a shift for agri-food exporters “from price taking to market making” to deliver greater value to consumers in overseas markets.
8. A market oriented value chain requires producers and processors to consider aspects of their products that consumers will value beyond physical properties. These include *credence attributes* that cannot be seen or experienced at the point of purchase, such as food safety, environmental stewardship, animal welfare, social responsibility, cultural authenticity and the like.
9. Market orientation requires communicating with consumers in order to understand their values. This information must then be disseminated along the value chain in order to support customer-focused decisions about production, value-adding processes and marketing. The way in which these decisions meet expectations must then be communicated to the end consumers.
10. The need for effective two-way communication along a value chain is one reason why attention must be given to governance of a value chain. There is a wide range of models for governance in agri-food value chains. Peterson et al. (2001) suggest a continuum of five types from spot/cash market to vertical integration (see Figure 2 on page 21 of the white paper). Recent research on four New Zealand food value chains by van Velzen (2016) emphasises the importance of leadership for governance, recognising that “shared governance can contribute to intelligence communication and responsiveness”.
11. Collaboration in a value chain involves a range of critical success factors, with many studies emphasising the importance of commitment and trust. A typology constructed by Wilson et al. (2011) defines four key collaborative constructs typically found in value chain research (see Table 3 on page 24 of the white paper): active disclosure; common objectives; joint risk taking; and relational commitment.
12. Although market orientation has positive effects on outcomes such as learning, innovation and company performance, an article by Grunert et al. (2008) warns that market orientation can lead to the ‘incremental innovation trap’, in which an exclusive focus on the end-consumer can lead a business to miss opportunities for innovation in technology development or genetics.

Value Chains and Land Use Choices

13. Agri-food value chains are increasingly market oriented, whether consumer values are expressed in country regulations or retailer requirements governing food and beverage products (market access threats), or whether they are expressed by identifiable sets of potential consumers being willing to pay a higher price for products with certain attributes (market segmentation opportunities). Market access threats and market

segmentation opportunities have implications for land use choices in New Zealand, including decisions around *what* will be produced and *how* it will be produced.

14. Food safety and quality are clearly important to consumers. These consumer values sometimes require effective systems of traceability, which can be an entry point for country-of-origin to be a powerful marketing tool. These consumer values are also frequently reflected in policy, regulation and legislation initiatives implemented at different hierarchical levels. In addition, environmental concerns (such as greenhouse gas emissions and food miles) and sustainability labels (such as organic and fair trade) have become increasingly important to consumers. Dalziel et al. (2016), for example, reported from their survey of consumers in China, India, Indonesia, Japan and the United Kingdom that environmental factors in production contributed to judgements around food safety, particularly in the developing countries, and so should not be ignored by agri-food exporters.
15. A credence attribute that has been identified as offering value to final consumers is “cultural authenticity”, which can add *external value* to food and fibre products through enhanced marketability, and can add *internal value* through improved production efficiencies. Cultural authenticity gives food meaning by telling an interesting story that connects it with a people and a place. Many foods are associated with specific areas and cultures and hence the authenticity of the product is expressed through the stories that describe these interlinked features. Although New Zealand may not have a strong internationally-recognized cuisine culture, its conservation culture does generate associations between food products and environmental cleanliness. New Zealand also has a strong authentic indigenous culture with relationships between people, the land, the water, and the flora and fauna contained therein, which mean the food and fibre hunted, harvested, gathered and produced by Māori are fundamental manifestations of who Māori are as a people. Provenance marketing is the best way of communicating cultural authenticity to consumers, it provides a “spatial dimension (its place of origin), a social dimension (its methods of production and distribution), and a cultural dimension (its perceived qualities and reputation)” (Morgan et al., 2008, p. 4).
16. Cultural authenticity can add production and process value internally as well. This is apparent from research on collectively-owned Māori businesses and enterprises, which demonstrates that they respond to demands from Beneficial Owners to operate in cultural authentic ways. The application of Māori cultural principles to value chains help deliver more efficient integration and greater operational streamlining, tying them together through the creation and maintenance of interlocking networks of reciprocal relationships that are focused on mutual benefit and shared risk. The entwined Māori and settler cultures can be used to add value through adept and sensitive provenance marketing of authenticity.
17. ZESPRI International Limited is a grower-owned marketing co-operative with 2,500 member growers exporting worldwide, with the majority of exports sold to the European and Asian markets. The white paper explores the success of ZESPRI through the framework of Dagevos and Ophem (2013) that focuses on product value, process value, location value and emotional value within a market orientation value chain.

18. The ZESPRI example illustrates that market oriented value chains are already influencing land use choices and practices in New Zealand. Other examples are given to indicate the range of transformation that is taking place as the primary sector moves “from price takers to market makers” (in the language of the Te Hono Movement’s vision).

Conclusion

19. The conclusion returns to the central hypothesis being tested in this white paper is the following: *The more collaborative a value chain is, the greater is the value that New Zealand producers, processors and manufacturers in the land and water sector can capture from profiling the desirable ‘credence attributes’ of its production systems (‘the New Zealand story’), targeted at consumer segments.*
20. It summarises the main themes that have been discussed in the preceding chapters in the context of that hypothesis, concluding that there is strong evidence in the international literature for its validity. It then describes some specific science challenges that could be addressed with high quality research under five headings:
 - Value to Consumers and Credence Attributes
 - Market Oriented Value Chains and Communication
 - Collaborative Value Chains and Governance
 - Country-of-Origin
 - Land Use Choices
21. The white paper concludes that a mission-led scientific research programme would deliver the strongest outcomes if it integrated some or all of the above elements. This would ensure that all contributions to value could be addressed.

1. Introduction

1.1 Background to this White Paper

In August 2012, the New Zealand Cabinet agreed on an initiative to inject momentum into the goal of applying science for the benefit of New Zealand by establishing a number of National Science Challenges (National Science Challenges Panel, 2013, p. 1). In due course, eleven Challenges have been established, including *Our Land and Water: Toitū te Whenua Toiora te Wai* (referred throughout this white paper as OLW), launched on 26 January 2016 (see www.ourlandandwater.nz). The vision of this Challenge is: “New Zealand is world-renowned for integrated and successful land-based primary production systems, supported by healthy land and water and capable people”. Its mission is “to enhance primary sector production and productivity while maintaining and improving our land and water quality for future generations”.

The research strategy is organised around three themes (OLW Directorate, 2016, pp 5-6):

- Theme 1 (Greater Value from Global Markets): Value chain research that enables New Zealand communities, individuals and iwi to enhance and share economic value from products, services and market segments that are aligned with and validated against stakeholder environmental, social and cultural values;
- Theme 2 (Innovative and Resilient Land and Water Use): New technologies, concepts (e.g. land use suitability) and enterprises that enable individual and collective land and water users and regulators best adapt to market signals and achieve primary production targets within community and regulatory limits; and
- Theme 3 (Collaborative Capacity): Individuals, communities, and iwi have the social processes, data, tools and capacity to agree and implement co-developed solutions that achieve sustainable outcomes within community and regulatory limits.

At the centre of these three themes, a work programme known as The Nexus operates to maintain integration within the Challenge and to ensure the Challenge mission is achieved. The Nexus has three specific aims (*idem*, p. 6): (1) To improve focus and co-ordination of research activities and resources; (2) To enhance integration, co-development and trans-disciplinary capacity building; and (3) To result in greater delivery and impact.

In June 2016, The Nexus called for proposals to create working groups to address four research questions that had been identified as priority areas for the Challenge. In each case, a proposal was required to bring together the best team of researchers for the question who would then be commissioned to prepare either a review article or a policy white paper. The Agribusiness and Economics Research Unit (AERU) at Lincoln University submitted a proposal to prepare this white paper that addresses the following question (*idem*, p. 1):

How can value chains better share value (economic, environmental, social and cultural) from consumer to producer and incentivise land use practices that relieve tensions between national and international drivers?

The research team brought together for this project is described in Table 1, along with their institutional affiliations. The first four people listed in the table held primary responsibility for drafting of the text, but all members of the team were involved in providing comments and feedback before the final version of the white paper was prepared.

Table 1: Members and Affiliations of the Research Team

Team Member	Affiliation
Professor Caroline Saunders	AERU, Lincoln University
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Professor Tava Olsen	Faculty of Business and Economics, University of Auckland
Dr John Reid	Industry Advisor and Researcher

The purpose of this white paper is to provide a solid foundation upon which more intensive research can be designed to advance the Challenge mission. The white paper will be placed on the Challenge website and its contents will help inform further development by the Challenge Science Leadership team of a key research question related to Theme 1: Greater Value from Global Markets. A Challenge-facilitated workshop will then be convened to construct a collaborative proposal to answer that research question (OLW Directorate, 2016, p. 2).

1.2 Research Methods

The proposal for this white paper was required to present a central hypothesis that would be tested in the research. That hypothesis is:

The more collaborative a value chain is, the greater is the value that New Zealand producers, processors and manufacturers in the land and water sector can capture from profiling the desirable ‘credence attributes’ of its production systems (‘the New Zealand story’), targeted at consumer segments.

To test that hypothesis, the Lincoln University research team was able to draw on two main sources. The first was the results of a three-year research programme ending in September 2016, *Maximising Export Returns*, funded by the Ministry of Business, Innovation and Employment and led by the AERU at Lincoln University (see www.lincoln.ac.nz/aeru/mer). All of the results from that programme were made available for this white paper. This included the six research reports listed in Table 2 as well as other quantitative conclusions presented, for example, in Dalziel et al. (2016) and Tait et al. (2016a and 2016b).

Table 2: Research Reports from the Maximising Export Returns Programme

Authors and Date	Title
Miller, S., Driver, T., Velasquez, N. and Saunders C. (July 2014)	Consumer behaviour and trends for credence attributes in key markets and a review of how these may be communicated.
Lees, N. and Saunders, C. (January 2015)	Communicating New Zealand's credence attributes to international consumers.
Saunders, C., Guenther, M., Driver, T., Tait, P., Dalziel, P. and Rutherford, P. (May 2015)	Consumer attitudes to New Zealand food product attributes and technology use in key international markets.
Guenther, M., Saunders, C., Dalziel, P., Rutherford, P. and Driver, T. (November 2015)	Consumer attitudes towards attributes of food and beverages in export markets relevant to New Zealand.
Driver, T., Saunders, C., Guenther, M., Dalziel, P. and Rutherford, P. (December 2015)	The use of digital media and smart technology in shopping and information gathering for food and beverages in markets relevant to New Zealand.
Saunders, J. (September 2016)	Trade implications for New Zealand agriculture with price premiums for credence attributes in food and beverages

The second source was the ABI/Inform database accessed through the central library of Lincoln University. The AERU conducted a literature search of this database using the following keywords: “market orientation of value chains” and “food”. To be included, the publication needed to have appeared in a peer reviewed scholarly journal after 2010 and been written in the English language. This produced 2,658 results. The publications were sorted by relevance and the first 300 abstracts were read to determine their applicability to the topic of this white paper. This exercise revealed that the *British Food Journal* is the most important journal for research on market oriented food chains. There were 22 articles downloaded for reading in full from this part of the research.

One article stood out for relevance: “Market orientation of value chains: A conceptual framework based on four case studies from the food industry” published in 2005 by Klaus Grunert and six co-authors. The Scopus abstract and citation database of peer-reviewed literature was used to identify 60 articles citing that publication. The abstracts of all these articles were read, resulting in a further 15 articles being downloaded for reading in full. Thus, 37 journal articles were highlighted for further study.

As the research proceeded, some references in these journal articles were also accessed and this material was supplemented with other literature known to the research team. A notable example was a thesis prepared by Mariska van Velzen (2016) supervised at Wageningen University by Jacques Trienekens and Stefano Pascucci with assistance by Nic Lees and Caroline Saunders at Lincoln University. That thesis focused on the topic of Supply Chain Governance to Facilitate Market Orientation, with special reference to four case studies of global value chains for New Zealand food exports (ENZA apples; ZESPRI kiwifruit; Firstlight Foods Cervena venison; and ANZCO Kumanu lamb). Her research drew on important articles by her Wageningen supervisors, including Grunert et al. (2010), Wever et al. (2010) and Trienekens and Wognum (2013).

From the above sources, the Lincoln University research team identified important themes relevant to this white paper. These themes were developed into the material presented in the following chapters. A first draft was prepared and circulated to all the members of the writing team. Written feedback was provided, which was incorporated into the final version presented here.

1.3 Structure of the White Paper

The remainder of this white paper is structured as follows.

The title of Theme 1 of the Our Land and Water National Science Challenge is *Greater Value from Global Markets*. Chapter 2 therefore begins with the central concept of ‘value’ and how value is created and transmitted through ‘value chains’. It also draws on a Canadian study to distinguish four types of value chains: fragmented value chains; co-operative value chains; co-ordinated value chains; and collaborative value chains.

A feature of the last of these four types – the collaborative value chain – is its market orientation. This was also the key insight in Mariska van Velzen’s (2016) research of New Zealand agri-food value chains. Chapter 3 therefore explores market orientation in some detail. This includes sections on the connections between market orientation and credence attributes, communication with consumers, governance and performance.

Chapter 4 returns to the mission of the Our Land and Water National Science Challenge, “to enhance primary sector production and productivity while maintaining and improving our land and water quality for future generations”. The chapter therefore discusses how value chains can influence land use choices. It begins with the primary credence attribute of food safety and then goes on to discuss how other credence attributes valued in international markets might influence domestic production decisions.

Chapter 5 addresses the hypothesis presented at the beginning of Section 1.2. It summarises the main themes in the white paper to test that hypothesis and finishes with a discussion of possible topics for further research.

2. Value in Global Value Chains

The Te Hono Movement is a business-led, government enabled initiative that began in 2012 founded by the CEO of the New Zealand Merino Company, John Brakenridge. It is built on the commitment of more than 170 agribusiness leaders who have participated in one of several New Zealand Primary Sector Bootcamps hosted at Stanford University in the United States. These leaders represent more than eighty per cent of the largest and most innovative companies in New Zealand's primary sector. The vision of the Te Hono Movement is the following (www.tehono.co.nz/our-story).

From price taking to market shaping. *Transforming the primary sector to realise the opportunity for Aotearoa, New Zealand to be recognised for our natural environment and products, as world leaders in innovation – a place to prototype and amplify, and the quality of our relations with the rest of the world.*

The founder amplifies that vision with the following explanation (Brakenridge, 2016, p. 27):

New Zealand *must* challenge the status quo, blow apart the traditional price-taker mentality and move to a market-shaping model, one where we forgo a volume mentality for a value mind-set. Forget the idea of feeding the world. We're too small to be a big producer. We don't have an environment that can sustain that strategy and also live up to the clean, green brand on which so much of our economy relies.

If we're to double the value of our primary-sector exports by 2025 we need to transform not *what* we're selling, but the *way* we're selling it. We're leaving value on the table. Sometimes it takes a good crisis to catalyse action.

This transformation from a volume mentality to a value mind-set is consistent with the focus in Theme 1 of the Our Land and Water National Science Challenge on "Greater Value from Global Markets". It is also supported by previous research in the AERU at Lincoln University, funded by AGMARDT, ANZCO Foods, Beef and Lamb New Zealand, Fonterra and ZESPRI. Published under the title of *The Land and the Brand*, this concluded that "the agri-food sector will continue to play a dominant role in the New Zealand economy over the next decade if it succeeds in *maximising value creation* through integrating domestic industry developments, science and technology innovation and trusted commercial brand creation in the new international trading environment" (Saunders et al., 2016a, p. 89, emphasis added).

Against that background, this chapter focuses on value in global agri-food supply chains. Section 2.1 defines value as the willingness-to-pay for a product by the final consumers at the end of a value chain. Section 2.2 then analyses different sources of value that can contribute to the final consumer's willingness-to-pay. Section 2.3 draws on a 2012 report prepared for the Canadian Agri-food Policy Institute to analyse four types of value chains labelled as fragmented, co-operative, co-ordinated and collaborative. Section 2.4 describes country-of-origin value chains, supported by a country profile such as 'The New Zealand Story'.

2.1 Defining 'Value' and a 'Value Chain'

The concept of value within a supply chain is viewed from two main perspectives: willingness-to-pay and customer value. In both perspectives, the final customer is the arbiter of value and so value is always defined with reference to the end customer (Macharia et al., 2013; Sausman et al., 2015).

An illustration of the first perspective is Porter's (1985, p. 3) definition of value as what "buyers are willing to pay". He argued that increased value is born out of offering equivalent benefits for a lower comparative price, or alternatively, a differentiated product with benefits justifying a higher price point. While this definition is widely used, it is from a firm's strategic perspective and fails to take into account other factors of customer purchasing decision, instead reducing a decision purely to price (Bowman and Ambrosini, 2000).

A more encompassing perspective is customer value; the premise being that value is subjectively perceived by the customer. The value of the transaction is captured in the trade-off between what the customer gives up and the benefits that the customer receives (Christopher, 1982; Zeithaml, 1988). These values are more than economic costs; a customer may have a range of social, cultural or environmental values influencing purchasing decisions (see, for example, Holbrook, 1999).

There is a strong trend to focus more and more on the consumer's role in supply chains. This trend is the genesis of the *value chain* concept and reflects more a way of analysing a supply chain than offering a completely new definition in itself. Hence, a value chain analysis will examine a supply chain for those value-adding and value-destroying activities that align with customer value and preferences. As a result, a demand-pull strategy is often emphasised as opposed to a supply-push strategy (Sausman et al., 2015). This is not to say that value chains do not have elements of supply-push (forecasting demand) as agricultural systems have notoriously long lead times and variability due to biological and natural hazards. Indeed, all supply and value chains possess elements of push and pull and can hence be described as hybrid systems.

Because the final customer is the arbiter of value, everything done by firms along a value chain should add value to the consumer's experience (Sausman et al., 2015). Hence, the aim of agri-food value chains should be to transform raw resources such as meat or fruit into value-added products within the boundary of the value chain's institutional environment (Trienekens, 2011). Thus, value is created not only by producers and processors, but also by "knowledge-intensive business services" (Muller and Doloreux, 2009) or "knowledge-intensive service activities" (OECD, 2006), such as sophisticated market analysis of consumer values.

A value chain describes all the activities, functions, roles and organisations involved in the production, delivery and consumption of products from raw materials to final consumption and back again through reverse flows (Hastings et al., 2016). Colloquially, this system is often described as 'farm gate to plate', or 'beef to burger', simple descriptors for what are dynamic and complex systems (Hearnshaw and Wilson, 2013). This definition is almost identical to the definition of supply chain management (Hyland et al., 2014). Following Fearne et al. (2012), a market oriented value chain along these lines can be conceptualised as:

- the pursuit of a common vision,
- based on trust and collaboration,
- aligning strategies, structures and processes...
- ... on what the consumer values,
- throughout the entire value chain system,
- with a focus on creating value.

The concept of value chains was popularised by Porter (1985) to describe a firm's internal value-adding activities. He argued that the secondary activities of the firm (i.e. firm infrastructure, human resource management, technology and procurement) exist to support its primary activities, which are directly related to the production, marketing and delivery of goods or services. Porter's chain presents a very narrow definition as the original conception refers only to a firm's internal value-adding processes.

Consequently, the concept has since been extended to take a wider systems view which Kaplinsky (2000, p. 121) defines as:

... the full range of activities which are required to bring a product or service from conception, through the intermediary phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and the final disposal after use.

A systems view promotes the idea that firms do not act as functional silos, but rather as a linked chain. Indeed, the way competition is viewed has shifted from the concept of individual firms competing against each other to chains competing against chains (Fearne et al., 2012; Spekman et al., 1998). Hence, the entire chain becomes a "vehicle for adding value and eliminating waste" (Sausman et al., 2015, p. 199). This paradigm shift facilitates coordination and collaboration among actors in the chain to deliver products that meet the needs of the consumer in an efficient and effective manner (Brinkmann et al., 2011; Spekman et al., 1998).

Collaborative behaviour in value chains is based on a series of strategic relationships between firms that foster information sharing. Information gathering and analysis can be expensive, so that the enterprise paying for this intelligence is less likely to share that information if their business model is based on arbitrage between different markets or suppliers. Indeed, this can be an incentive for resisting a collaborative value chain.

More coordinated chains, led by a major chain member (such as a retailer, packer, shipper, wholesaler or broker), may choose to share a proportion of that intelligence to drive loyalty. To be sustained, this sharing may require the transactional costs of producing the intelligence to be spread among participants, or to be matched by reciprocal sharing of other data or information resources. This tends to require high degrees of trust and commitment, as well as a collaborative governance process that ensures each chain member is contributing to the costs and being rewarded with a share of the benefits.

When incentives and goals are aligned throughout a value chain, not only is productivity increased, but the threat of opportunism may be reduced (Gulati et al., 2012; Sausman et al., 2015). That is, firms no longer only act in their own self-interest, narrowly defined, but for the

good of the chain as a whole. Additionally, the increase of globalisation has seen reduced trade barriers, advances in communication technology and declining transport costs, all of which facilitate coordination within value chains (Trienekens, 2011).

2.2 What Gets Valued?

If the key issue is to how better share value across economic, environmental, social and cultural dimensions for New Zealand value chains, then a central question is: What gets valued by the final consumer? Various approaches to the question have attempted to define value by focusing on the product itself (Shewfelt, 1999), freshness, texture and taste (Luyten, 2003), nutrition and health benefits (Ruben et al., 2007), food safety (Kennedy et al., 2008) and preferences for convenience, conspicuous consumption and prestige (Collins, 2009). As this list indicates, what is valued by consumers has a much wider definition than simply a product's physical attributes (although these remain important). Dagevos and Ophem (2013) offer a helpful four-way classification of value (which they term Food Consumption Value – FCV) that incorporates a view of consumer sentiment aligned with the consumer centric view of value chains outlined in the previous section. These four views are:

- Product value
- Process value
- Location value
- Emotional value

The first value is the traditional product value. Product value is generally well understood and comprises the product attributes themselves and the price/quality relationship for foods and commodities. This includes sensory properties of freshness, taste, texture, flavour as well as price. For commodities this could also include utility value of the product for use by processors within a wider value chain. Most primary producers understand how important it is to supply products that meet the highest level of these attributes, but may not know specifically what these attributes are due to not being connected to heterogeneous consumers of their products (Grunert et al., 2005).

The second value, process value, focuses on the processes and practices used within the value chain to produce the product or food. This view of value includes not only the technology, knowledge and physical assets of the farm or production system itself, but also includes consumer ethical concerns on how these products are produced (Lusk and Briggeman, 2009). Consumer sentiment concerning the health risks, ecosystem degradation and animal welfare must not be ignored (Weather et al., 2003), and it is here that land use practices can have the biggest impact on perceptions of the value chain. This suite of consumer concerns also includes the ecological footprint of food production vis-a-vis world population growth as well as debates about “free-range livestock product, environmental pollution, genetic modification, chemicals, food miles and fair trade issues” (Dagevos and Ophem, 2013, p. 1477).

The third value area is location value, defined as the setting and atmosphere of where a product is purchased or consumed. This includes the scene, physical landscape, environment

and ambiance of place of consumption, which could include the home, restaurants, fast food and off licence premises, the so called 'infrastructure of consumption'. It also includes the characteristics of the experience itself such as entertainment, knowledge and service levels of staff and more generally reflects what the marketing literature terms the quality of the 'service-scape' (Rosenbaum, 2005). This value is important as much of the competition in value chains manifests directly at the retail end (location value).

An interesting extension is the possibility that consumers value how a good is transported from its place of processing to its place of consumption. This underlay the 'food miles debate', for example, that posed a threat to New Zealand food exports to Europe (Saunders and Barber, 2007 and 2008). It might be regarded as part of process value, or as part of location value, but in either case would incorporate *logistics* in the supply chain that can add or destroy value such as double handling, the cool chain, wastage, shrinkage, damage, spoilage, energy, innovative packaging, labelling and recycling during the route to market. This is an operational view of value, but importantly allows value chains to incrementally add value through operations management, process management and continuous improvement regimes such as Lean and SixSigma (Goldsby et al., 2006).

The final of the four values is emotional value, or what may also be called 'emotive value'. The original definition was originally limited to the consumer's emotive response to the immediate service-scape and experience of consumption (King and Meiselman, 2010). Importantly for our discussion, however, emotive value can extend beyond the emotive response of consumption (pleasure, satisfaction, utility, etc.), to the emotive response to the 'story' associated with the product. This encapsulates the esoteric features of the brand and product image such the symbolic and moral meaning of the products and their associated value chains.

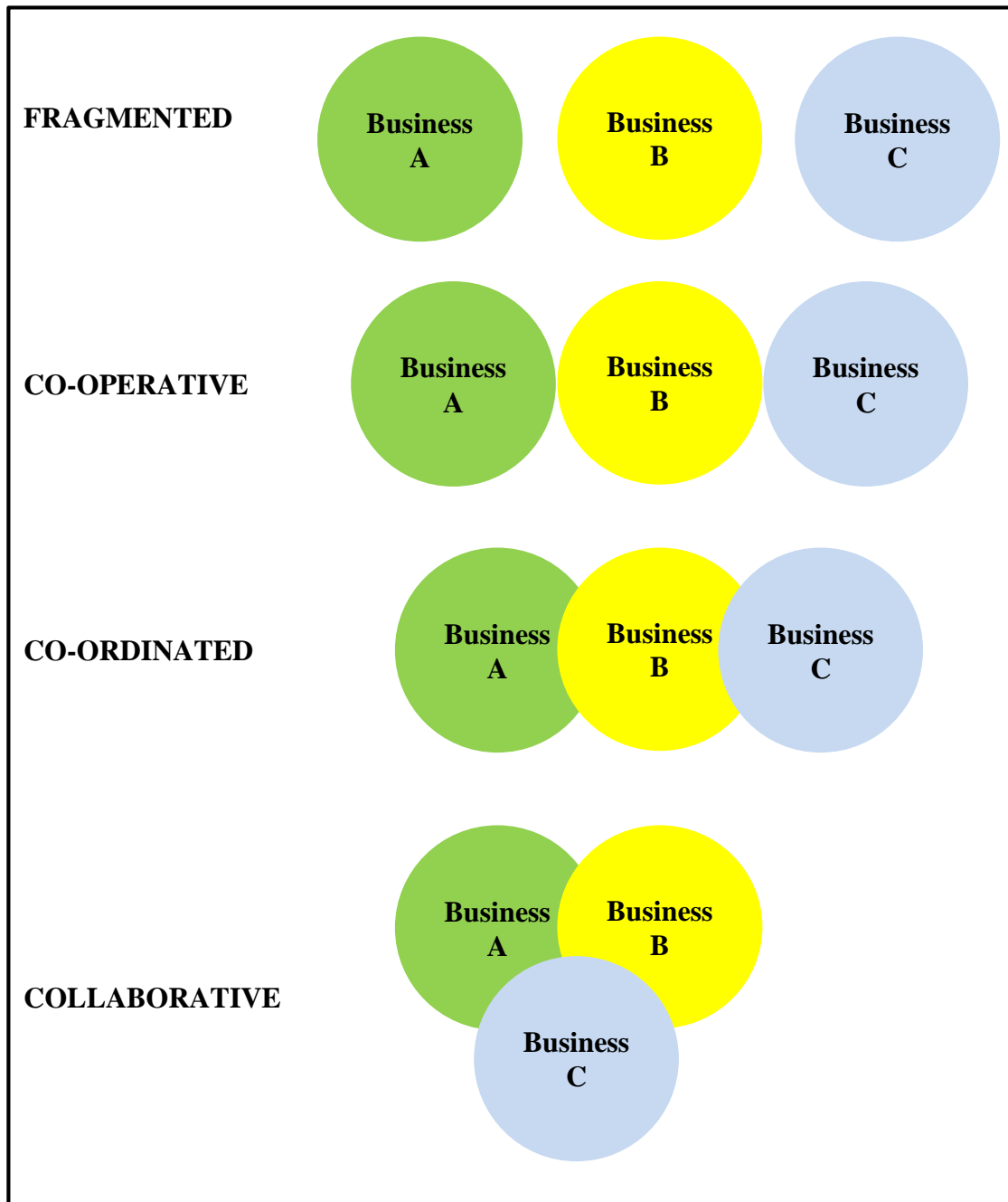
Given New Zealand's investment in its national branding strategy and promoting its key competitive features such as 100% pure and grass-fed production systems, linking good land use decisions with branding and building 'the story' of our products that appeals to consumers will be critical in the future (Saunders et al., 2016a).

Building on Dagevos and Ophem's (2013) original contribution, and summarising the above discussion, this white paper focuses on the following four extended definitions of what gets valued in agri-food value chains.

- **Product value** – This adopts the traditional view of product attributes and characteristics important to the consumer.
- **Process value** – This focuses on the processes and practices used within the value chain to produce the product.
- **Location value** – This includes the point of purchase or consumption value but may include value placed on how products get to the point of sale including the operational activities of the supply chain.
- **Emotive value** – This includes the consumer's emotive response to consumption as well as the brand/product story and any associated post-consumption moral/ethical reinforcement or dissonance.

These definitions can be linked to land use decisions. Specifically, product and process value offer opportunities for physical and social science projects within the value chain. Location value provides opportunities for agribusiness, marketing and supply chain researchers, while emotive value offers a range of socio-psychological approaches for understanding consumer behaviour, sensory perceptions and brand value. We next examine types of value chains to illustrate the structural concepts and interactions, based on the stylised diagram in Figure 1.

Figure 1: Four Types of Value Chains Illustrated with Three Businesses



Source: Adapted from Value Chain Management Centre (2012, p. 9).

2.3 Types of Value Chains

The Value Chain Management Centre of the George Morris Centre prepared a report in 2012 for the Canadian Agri-Food Policy Institute entitled *Characterizing the Determinants of Successful Value Chains*. This analysed and illustrated with case studies the features of four types of value chains: fragmented value chains, co-operative value chains, co-ordinated value chains and collaborative value chains. For each value chain type, the report characterises its strategic factors, governance arrangements, financial features, communication practices and operations (Value Chain Management Centre, 2012, Appendix 1).

The report makes the point that specific value chains are unlikely to fall neatly into one of the four types it presents, but argues that the four typologies “provide a useful method of assessing and comparing the relative nature, benefits and challenges associated with each approach” and “represent the structure and nature of value chains operating in the Canadian and international agri-food industry” (idem, p. 8). The types are illustrated using an example of a value chain with three businesses or enterprises, which is reproduced in Figure 1 on the previous page. The report summarises the four value chain types as follows (idem, p. 9):

Fragmented: Companies primarily compete on a traditional trade footing. The majority of business is conducted as a series of short-term, one-off transactions. Price, volume, and quality are commonly paramount to business dealings. The primary onus of strategic decisions is on self-preservation and sharing the bare minimum of transactional information, for fear a company’s insights are used against it. Typically, the result is a fragmented chain comprised of businesses that share adversarial and distrusting relationships. These types of businesses often look to past experiences for solutions to current challenges, and have little opportunity to utilize the resources of other members of the value chain. As a result, they are limited in their ability to effectively and efficiently adapt to changing market demands.

Cooperative: Companies possess a mutual understanding of how and why they can benefit from cooperating with one another over the medium term at an operational level, rather than undertaking specific short-term or one-off business deals. The attitudes and culture of the businesses involved will determine whether a chain’s structure can develop into a more strategically aligned approach, where the partners can utilize one another’s capabilities for commercial advantage. Whether such an approach is feasible may also be determined by the environment in which the chain operates and in which it competes against other chains and businesses.

Coordinated: Companies with complementary attitudes, cultures, and leadership styles choose to coordinate their business arrangements over a short to medium timeframe. A more strategically aligned structure than the one exemplified above causes at least part of the chain to think and act from a strategic – and not only operational or tactical – perspective. A strategic perspective arises from operating in an external environment that allows this type of approach to occur. Over time, the participants come to steadily acknowledge the benefits of conducting medium-term business deals with chosen suppliers and buyers, leading to increased levels of commitment and the development of more sophisticated value chain management capabilities.

Collaborative: Companies engage in longer-term strategic arrangements that involve collaboratively sharing resources and/or investing in the capabilities required to achieve mutually beneficial outcomes. Successfully adopting this type of model requires the involved businesses to possess compatible cultures, vision, and leadership. It also requires an external environment that is conducive to supporting and enabling such an approach. While the model can undoubtedly produce greater rewards than the three alternative models, it also generates increased risks, particularly for businesses that are still developing (as opposed to refining) their value chain management skills.

This white paper adopts the hypothesis that market oriented value chains are best supported by the fourth type in the above list, based on collaboration. There are many ways in which increased collaboration can add value to a chain; it can lead, for example, to more flexible contracting agreements that better align the incentives in the chain. There has been significant research into methods for aligning supply chain incentives (Nahmias and Olsen, 2015, Chapter 6). To illustrate, many book publishers offer buy-back agreements to bookstores that allow bookstores to return unsold copies for a full refund. In this way, the stocking risk to retailers is reduced and they are encouraged to stock more. However, buy-back contracts can be problematic in environments where suppliers do not want to take goods back, which is usually the case for primary products. An alternative method for aligning incentives and reducing a retailer's stocking risk is a revenue sharing contract, where the supplier receives some of the revenue in return for accepting a lower upfront wholesale price. This may be attractive in situations where the market opportunity for the product is not yet proven.

There are also examples where collaboration along a value chain is required to meet consumer expectations on issues such as animal welfare and environmental stewardship. This can be illustrated by the case study of the campaign by People for the Ethical Treatment of Animals (PETA) in August 2015 using footage of animal cruelty within the Ovis 21 farm network supplying merino wool for Patagonia. Within days of the launch of that campaign, Patagonia had stopped its purchases from the Ovis 21 network, going on to say: "Patagonia will not buy wool again until we can assure our customers of a verifiable process that ensures the humane treatment of animals" (www.patagonia.com/blog/2015/08/patagonia-to-cess-purchasing-wool-from-ovis-21/).

As that case study shows, stronger collaboration provides better information along a value chain; distributors, marketers, retailers and consumers know about the production practices being used (transmitting process value from its origin to final purchasers). Further, information flows the other way, so that producers know what is valued by final consumers so that they can tailor their land-use choices to meet those expectations. This makes producers less vulnerable to accusations of unacceptable or poor practices, as well as supporting quality assurance programmes for making improvements where necessary to sustain or create additional value.

As discussed earlier in this chapter, logistics of transporting products along a supply chain can also create value. This is another aspect where collaboration can be important. Fragmented supply chains in the red meat industry, for example, can create high transportation costs as

lambs are trucked long distances. This suggests the possibility that increased collaboration could reduce some of those costs if more lambs were assigned to their closest processor.

Thus, there is no simple recipe for constructing a collaborative value chain, and indeed the summary quoted on the previous page accepts that the attempt to do so may generate additional risks. This is one of the reasons why quality science is required to create new knowledge for understanding how value chains can share value and incentivise land use practices (the title of this current white paper commissioned by the Our Land and Water National Science Challenge). The following chapter therefore surveys some of the issues involved in market oriented value chains, after the following section discusses one of the key questions for New Zealand; can a strong country-of-origin profile contribute to capturing higher returns in global value chains.

2.4 Country-of-Origin Value Chains

The High Value Nutrition National Science Challenge recently commissioned a review of the scientific literature on the role country-of-origin (COO) can play in consumer purchases of food products (Miller et al., 2016a). That report observed that country-of-origin labelling (COOL) is mandatory for at least some food products in the major countries importing from New Zealand (notably, the United States of America, China, the European Union and Australia). Leaving aside these regulatory requirements, the literature recognises that COO can provide a competitive advantage that is not easily copied (Baker and Ballington, 2002; FutureBrand, 2014 and 2015) and allows product differentiation (Carter et al., 2006).

FutureBrand is a London-based consultancy that specialised in country branding and country-of-origin branding. It explains the difference between these two concepts, and the importance of COO, in the following terms (FutureBrand, 2014, p. 30):

A country brand in the classical sense is a marriage of national identity and reputation. It drives national pride, political influence, leisure and business visitation and inward investment, and its strength is determined by perceptions across five association dimensions from 'good for business' to 'value system' (in FutureBrand's CBI model). ...

Country of Origin, on the other hand, is a key driver of every day consumer choice and can directly impact GDP by generating revenues through sales of products and services (both at home and abroad). The true distinction between a 'country brand' and a Country of Origin brand is that you can enjoy the latter without needing to visit the place. In other words, you can buy a little bit of Germany and what it stands for when you purchase a BMW, but you do not need to be in Germany to do it.

The New Zealand country brand has a strong reputation. The FutureBrand (2015) report, for example, gave calculated a Country Brand Index (CBI) for 118 countries based on the following elements (idem, p. 9):

- **Awareness:** How well do people know the country and its offerings?
- **Familiarity:** What qualities come to mind when people think of the country?
- **Associations:** How highly do audiences esteem the country? Does it resonate?

- **Preference:** Is the country considered for a visit? What about for investment, to acquire or consume its products?
- **Consideration:** To what extent do people follow through and visit the country or establish a commercial relationship?
- **Decision/Visitation:** Do visitors recommend the country to family, friends and colleagues?

New Zealand ranked eleventh in that list, below Australia, Denmark and Austria but above the United Kingdom, Finland and Singapore. New Zealand's ranking as a country-of-origin, however, is lower: FutureBrand (2014, p. 16) placed New Zealand 17th in its 2012/13 study. New Zealand was not in the top ten as a country-of-origin for 'food and beverage' (idem, p. 17), despite such a high share of the country's exports coming from that industry. The FutureBrand report (idem, p. 30) explains why this might be important.

This matters because brand-driven consumption is increasing exponentially worldwide with the explosion of new middle class consumers in the BRIC markets (Brazil, Russia, India, China) and other developing nations. There are now estimated to be more middle class consumers in China than the entire population of Europe, and they are exercising their new consumer power through discretionary, brand-driven consumption in every category. In this context, brands will reach more new consumers, in more places, more frequently than any other drivers of country reputation and associations over the next decade. Couple this with a need for greater transparency and a clearer 'Made In' story across design and manufacture, and it is arguable that Country of Origin brands will start to contribute significantly to national reputation and overall country brand strength.

That conclusion is echoed in the review of the scientific literature by Miller et al. (2016a). Country-of-origin has been found in several studies to be used by consumers as a cue for desired attributes such as quality (Claret et al., 2012; Berry et al., 2015; Insch et al., 2015) and food safety (Cicia et al., 2011; Lim et al., 2014; Ortega et al., 2014; Lewis and Grebitus, 2016). A strong country-of-origin brand can also be important in countering food safety scares involving a particular location or a commercial brand associated with a country. Examples of recent food safety scares include BSE infection of beef cattle (Aizaki et al., 2012) the melamine in infant formula scandal in China (Wu et al., 2014), the Fonterra whey protein concentrate contamination false alarm in 2013 (Stojkov et al., 2016), and the 'horsemeat scandal' in Europe that same year (Barnett et al. 2016).

An example of how a country-of-origin brand can be developed to create value in global value chains is Origin Green Ireland (www.origingreen.ie/). The Origin Green Promise is a "verified commitment to sustainability all along the supply chain" (www.origingreen.ie/about/origin-green-promise/):

The Origin Green promise is an unprecedented one. It is the only sustainability programme in the world that operates on a national scale, uniting government, the private sector and food producers through Bord Bia, the Irish Food Board.

Independently verified, it enables Ireland's farmers and producers to set and achieve measurable sustainability targets – reducing environmental impact, serving local communities more effectively and protecting the extraordinarily rich natural resources that our country enjoys.

At the heart of the Origin Green programme is the Origin Green charter, a guideline document to the workings of the Origin Green programme.

From coast to coast, from seabed to soil, our ever-growing numbers of Origin Green members are fully committed to developing more stringent ways of working which will see 100% of Ireland's food and drink exports on the road to sustainability by 2016.

The website lists 520 companies that have signed up for the Origin Green Programme, and Bord Bia (the Irish Food Board, at www.bordbia.ie/Pages/Default.aspx, accessed 19 September 2016) states that around 70 per cent of Ireland's food and beverage exports "are on an independently verified journey of sustainability". Origin Green includes initiatives at the farm level, in the dairy sector and in retail and food service. The result is that the programme is able to (in the words of the Origin Green Sustainability Charter, accessed 19 September 2016 at www.origingreen.ie/wp-content/uploads/2014/06/Origin-Green-Sustainability-Charter-June-2014.pdf):

1. Demonstrate the sustainability credentials of individual Irish food and drink manufacturers.
2. Enhance the reputation of Ireland as a source of sustainably produced food and drink products.

The second of those impacts strengthens Ireland's country-of-origin brand, in line with modern approaches to creating and protecting value in global value chains. The Irish food and drink sector recorded the sixth consecutive year of export growth in 2015, with the value of these exports now 51 per cent higher than in 2009 (Bord Bia, 2016, p. 2).

3. Market Oriented Value Chains

The previous chapter has highlighted that the final customer is the arbiter of value and so value is always defined with reference to the end customer. This is typically taken for granted for an individual firm selling to consumers (expressed, for example, in the adage that “the customer is always right”), but there is greater uncertainty about its role in business-to-business transactions along a supply chain. If the willingness-to-pay of final customers is the ultimate arbiter, why do firms along the supply chain not merge into a single enterprise to capture that value (a strategy known as vertical integration; see, for example, Williamson, 1971)? In many cases, this is indeed an efficient response, but in other cases there may be good reasons for maintaining specialised firms that negotiate external transactions with each other along a supply chain (Lafontaine and Slade, 2007). In these latter cases, is it possible to operate the supply chain as a ‘value chain’ in which participating firms organise themselves and their mutual transactions to discover and distribute knowledge about what is valued by the final customers? Value chains that take this approach are described as ‘market oriented’, which is the subject of this chapter.

3.1 Market Oriented Value Chains versus Commodity Supply Chains

Since the 1960s, as globalisation and market competition have continued to increase, industries have recognised a shift in consumer trends towards value-added and differentiated products. Consequently, focus has shifted from improving efficiency in production and distribution systems to providing greater value as defined by the end consumer. This shift expects value chains to adopt a market orientation, which can be defined within a systems framework as (Grunert et al., 2005, p. 430):

... chain members’ generation of intelligence pertaining to current and future end-user needs, dissemination of this intelligence across chain members, and chain wide responsiveness to it.

Roep and Wiskerke (2012) suggest that globally the agri-food industry has been among the last to adopt this shift, and the New Zealand agri-food industry is often represented as producing commodities for export. The resulting supply chains tend to focus on increasing the quantity produced and then pushing product to market as efficiently as possible to satisfy demand schedules, while simultaneously achieving consistent quality and economies of scale through high volume production (Grunert et al., 2005; Macharia et al., 2013).

Although there have been shifts towards market oriented value chains, agri-food chains continue to be criticised as disaggregated supply chains of commodities, in which each firm along the chain acts as a silo and competes out of self-interest in an attempt to maximise its own profits (Hobbs and Young, 2000). These chains have been criticised for being supply-driven and for overlooking the values of consumers, which leads to wrongly specified products, extra costs and lost opportunities (Grunert et al., 2005). Emerging chains can also be

particularly vulnerable to a lack of information linking their product quality with consumer behaviour, though, they can improve the performance of the whole chain by understanding the quality-related factors that drive consumer satisfaction and repeat buying (Mowat and Collins, 2000).

In disaggregated supply chains there may be a small number of influential actors that hold considerable power with regards to information and material flow. These gatekeepers may be intermediate processors, manufacturers, importers and distributors, or retailers (Lees and Saunders, 2015). These gatekeepers are able to make decisions as to what products are passed through the 'gate' to reach the end consumer, as well as decoding and disseminating consumer demands back upstream to producers, which gives them significant market power for capturing the value provided to 'their customers'.

This gatekeeping activity has the power for good, in terms of greater coordination across the value chain, or ill in terms of behaving opportunistically and extracting economic rents from others. Moreover, as firms act as silos with the aim to exploiting power imbalances for self-interested gain, the transaction costs across the entire chain are increased. Hold up problems are introduced when firms fail to invest in tailoring offerings to a consumer segments for fear of opportunistic behaviour from other chain members (Grunert et al., 2005). The result are unbalanced dyadic relationships that often favour the powerful party and impede value creating activities (Hingley, 2005) in that, while maximising local returns, they degrade the returns to the entire value chain. These value destroying behaviours add costs that ultimately pass to consumers.

Accurate market signals are often times poorly communicated to upstream producers of the chain. The upstream suppliers are provided information according to the desired attributes of the gatekeeper, and hence, effective land use incentives are not fully exploited. As chains have become more global, they have also become more complex and technically driven in order to meet consumer needs. Due to this information asymmetry, retailers are often the most powerful players in the food chains as they directly interact with the consumer and gather vast amounts of data on segment preferences (Vlachos, 2014).

It is argued that, because the retailer is the main gatekeeper and acts in its self-interest, it will pass on information according to its needs, often in the form of experiential attributes such as taste, size and colour, as well as desired credence attributes such as food safety (Lees and Saunders, 2015). This limited information set is passed along the chain to processors and producers. Because the processors and producers do not have a sophisticated knowledge of final consumers, this can stifle innovation and the development of differentiated products that could create added-value for identified market segments.

The New Zealand mutton chain for example, could arguably be called a disaggregated chain. While there have been attempts (and some success) to reengineer the chain through mechanisms such as innovation and product differentiation (Deloitte, 2011), the actual process of value chain upgrading appears to be an enormously difficult task. To date, there has been relatively little research conducted in this area (Trienekens, 2011). This chain is characterised by powerful retailers acting as gatekeepers, transactional arms-length exchanges and lack of innovation due to information asymmetry. Although New Zealand

supplies 55 per cent of the international trade of mutton, market power in the supply chain belongs to the retail sector. In the United Kingdom market, for example, McDermott et al. (2008) report that the retailers purchase 24 per cent of the volume but capture about 26 per cent of the value. Hingley (2005) suggest that these powerful retailers demand large volumes of often undifferentiated products in an effort to maximise turnover and profit.

Further, in order to meet consumer demands of quality, safety and traceability, United Kingdom retailers have introduced a private quality assurance system - the British Retail Consortium (BRC). Processors are required to absorb the associated costs to meet the Hazard Analysis of Critical Control Points (HACCP) standards which identify food safety risks in the production process, as well as additional requirements such as a documented quality management system (Trienekens and Zuurbier, 2008).

The Te Hono Movement's vision cited at the beginning of Chapter 2 – to move New Zealand agri-food exporters from price taking to market making – can be interpreted as addressing the criticisms just discussed. It aims to deliver greater value to consumers of New Zealand agri-food products in the country's overseas markets. The following section discusses in more detail the association between market orientation and generating additional value.

3.2 Market Orientation and Credence Attributes

A market oriented value chain requires producers to consider aspects of their products that consumers will value beyond physical properties. This includes attributes that are related not only to basic properties (i.e. search attributes, such as the taste and freshness of a product), but also to qualities that cannot be seen or experienced at the point of purchase. These attributes are known as *credence attributes*; they are usually displayed to the consumer through the use of labelling and require a degree of trust that the claims are authentic. Examples of credence attributes include food safety, environmental stewardship, animal welfare, social responsibility, cultural authenticity, fair trade, functional foods, organic production, GM-free, water footprinting, biodiversity and local foods.

There is a considerable literature on the value of credence attributes. This includes several context-specific case studies, but also reviews identifying relevant attributes and meta-analyses exploring common trends. Miller et al. (2014) review the literature on consumer preferences for credence attributes in food and beverage products. This identified several important credence attributes with food safety considered as a key driver with large premiums available in some cases, perhaps as a result of past food safety scares. Studies that have examined premiums for food safety include Florax et al. (2005), Ortega et al. (2011, 2014 and 2015) Chalak and Abiad (2012), Probst et al. (2012), Lim et al. (2014), Viegas et al. (2014), Wu et al. (2014), Erdem (2015), Saunders et al. (2016a) and Tait et al. (2016a).

Some studies have focused on different functional food and health claims, such as omega-3 fortification, indicating additional health benefits beyond normal nutrition or means of preventing diseases (Bechtold and Abdulai, 2014; Van Wezemael et al., 2014; Ding et al., 2015; Yue et al., 2015; Baba et al., 2016). In particular, health aspects in fruit and vegetable products have been identified as important (Moser et al. 2011). Some studies assess the different

willingness-to-pay of specific consumer groups to learn which market segment offers the highest premium for the health claims (Bechtold and Abdulai, 2014; Ding et al., 2015).

There is an increasing amount of literature including an eco-label (Lagerkvist et al., 2014; Ubilava et al., 2011; Van Loo et al., 2015; Tait et al., 2016a), or improved environmental standards in food production (Moser et al., 2012; Viegas et al., 2014; Tait et al., 2015; Yue et al., 2015). Many of these studies found a positive willingness-to-pay for environmental attributes although in some cases this premium was available only or mostly for products produced domestically (Ortega et al., 2014; Uchida et al., 2014).

Animal welfare is another attribute included in many studies (Ubilava et al., 2011; Zanolli et al., 2013; Miller et al., 2014; Van Loo et al., 2014; Viegas et al., 2014; Erdem, 2015). A meta-analysis by Lagerkvist and Hess (2011) concluded that most evidence shows a positive willingness-to-pay by consumers for improved animal welfare.

Another common attribute is a local produce where consumers may favour food that has been produced domestically or locally rather than imported food (Miller et al., 2014 and 2016a). Local products have been identified as particularly important in fruit and vegetable markets (Moser et al., 2011). This relationship, however, may be moderated by trusted traceability systems (Cicia and Colantuoni, 2010; Lilavanichakul and Boecker, 2013; Wu et al., 2015). Similarly there have been studies on whether a fair-trade attribute can attract a consumer premium (de Pelsmacker et al., 2005; McCluskey et al. 2009; Akaichi et al., 2015; Van Loo et al., 2015; Poelmans and Rousseau, 2016; Vlaeminck et al., 2016).

With respect to production practices, studies have shown some consumers are willing to pay premiums for organic or non-genetically modified products as well as for reduced use of hormones and antibiotics when compared to some conventional practice (Steiner et al., 2010; Zanolli et al., 2013; Lim et al., 2014; Miller et al., 2014; Ortega et al., 2014; Ding et al., 2015; Probst et al., 2012; Wu et al., 2014; Van Loo et al., 2015). Organic production and socially responsible practices have been linked to consumer ethical values beyond the more hedonic considerations of food safety or personal well-being (Moser et al., 2011; Probst et al., 2012; Mueller Loose and Remaud, 2013; Siriex et al., 2013; Denver and Jensen, 2014; De Magistris et al., 2015; Annunziata and Vecchio, 2016). There have also been recent studies showing consumer resistance to nanotechnology (Erdem, 2015; Yue et al., 2015).

Efforts have been made to distinguish consumers with these characteristics based on factors such as their purchase habits, socio-demographic factors or the product type (Arnoult et al., 2010; Van Loo et al., 2011; Chung et al., 2012), although Dannenberg (2009) has expressed concern that the results may depend more on the way questions are asked than on the respondents' characteristics. To by-pass consumer survey bias, retailers use passive analytics based on point of sale digital loyalty card data to segment consumers and infer from their past purchase patterns what they may value in future purchase decisions (Donnelly et al., 2012). There are also studies showing that there can be gaps between reported attitudes towards values such as sustainability and actual behaviour (Vermeir and Verbeke, 2006). These studies highlight the role of consumer perceptions on the effectiveness of a given purchase decision meeting a consumer's specific values with regard to credence attributes.

Transparency-based technologies are emerging as a means of providing consumers with the supporting information they may need in their credence-based purchase decisions (Wognum et al., 2011). Depending on the degree of transparency, these online and mobile-device compatible systems provide rapid and undistorted access to product-related information for consumers and other value chain stakeholders.

3.3 Market Orientation and Communication with Consumers

A market orientation (abbreviated as MO) requires communicating with consumers in order to understand their values (Iliopoulos, Theodorakopoulou and Lazaridis, 2012). This information must then be disseminated across the value chain in order to support customer-focused decisions about production, value-adding processes and marketing (Grunert et al., 2005). It is argued that when a chain adopts this view it can develop a competitive advantage and superior long-term chain performance (Grunert et al., 2005; Liao et al., 2011; Tukamuhabwa et al., 2011), by producing consumer value that is rare and difficult to imitate. Hence, the chain is able to outperform less market oriented chains (Crittenden et al., 2011; Slater and Narver, 1994).

If the end-user market defines the degree of MO in a value chain, then the more diverse and dynamic is the end-market, the higher is likely to be the degree of MO, particularly in upstream activities (Trienekens, 2011). One of the challenges of the agri-food industry in general is that market demands are not adequately communicated throughout the chain. There is evidence, however, to suggest that access to retailer loyalty card intelligence can stimulate greater MO innovation by upstream chain members, such as small entrepreneurial orientated businesses who may not have the internal resources to gather such data (Donnelly et al., 2012).

Additionally, the diversity of production is often not exploited as effectively and efficiently as it could be for serving the end-market (Trienekens et al., 2012). We see the dynamism and diversity of consumer needs in current trends such as food safety, environmental considerations and animal welfare (Grunert et al., 2005). Further, the premium that a consumer is willing to pay for a product that makes claims about its credence attributes (such as animal welfare, environmental stewardship and social responsibility) can be influenced by the degree of confidence that the consumer has in the veracity of such claims or in the ability of consumers to influence production practices (Berger and Corbin, 1992). In such cases, sustainable products would benefit from promotional activities that emphasis the personal relevance and importance of the credence attribute being promoted as well as providing supporting information on the effectiveness of their purchase decision on sustainable consumption (Vermeir and Verbeke, 2006).

Through the dissemination of market information, all the way upstream to producers, the information is translated into market intelligence. The implication of such is that the agri-food chain has the potential to better exploit these needs in its upstream value-adding activities and communicate this through marketing to the end-consumer. Nevertheless that major challenge is communicating these market signals upstream to producers. It is the flow of information between members of the value chain that is most problematic (Balabanis and Diamantopoulos, 2011).

3.4 Market Orientation and Governance

The variety of institutional and market governance arrangements that exist in international value chains is legion (Roep and Wiskerke, 2012). This diversity essentially means that each value chain is unique in its own right and hence the context of the specific value chain becomes even more important.

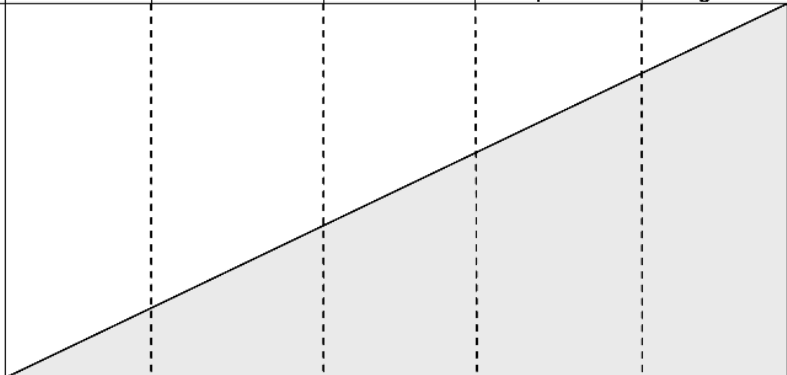
Governance in this context refers specifically to the way that exchanges between firms in a value chain are organised and managed (Denolf et al., 2015). The key effort is to prevent self-interested opportunistic behaviours destroying value in the channel (Stump and Heide, 1996), and instead promote the most efficient and effective flows of products, information and financial returns to increase value derived for all parties in the chain. These flows can also be thought of as either ‘tangible flows’ usually focused on the physical product and financial inputs and outputs managed under formal contracts, and ‘intangible flows’ such as information and relational exchanges not formally contracted (Vilpoux, 2013). Given the commodity status of many of New Zealand’s agribusiness value chains, it is suggested that linking the consumer credence attributes to the producer through seamless intangible information flows and collaboration is the first and perhaps the most critical value creating activity (Macharia et al., 2013).

Notwithstanding this complexity, there are a number of theoretical lenses with which to view and make some sense of value chain governance. These approaches can be distilled into a spectrum or unidimensional continuum of inter-firm exchange arrangements that are characterised on a range from purely self-interested motives and actions (win-lose agreements) to relationally driven exchanges based on collaboration (win-win agreements). It is acknowledged that both types of arrangements have economic incentives (what’s in it for me?) as well as social and environmental incentives mixed together (what’s good for the environment is also good for me). This continuum proposes a range of possible inter-firm governance arrangements from pure spot market to highly collaborative partnership such as joint ventures (Fearne et al., 2012).

One of the most illustrative ways of demonstrating this continuum comes from Peterson et al. (2001) as shown in Figure 2.

At the spot market/transactional exchange end of the continuum, the nature of information flows is limited to price/demand market signals and little information is shared between firms and across the whole value chain. The intensity of control is low and focused on the immediate transaction for value extraction with little regard for upstream and downstream effects. This is local optimisation at the expense of chain wide competitiveness and works against the value chain concept.

Figure 2: Continuum of Governance Arrangements in Agribusiness Value Chains

		Strategic Options for Vertical Coordination						
		Spot/Cash Market	Specification Contract	Strategic Alliance	Formal Cooperation	Vertical Integration		
Characteristics of "Invisible Hand" co-ordination	Self Interest						Characteristics of "Managed" co-ordination	Mutual Interest
	Short-term Relationships							Long-term Relationships
	Opportunism							Shared Benefits
	Limited Information Sharing							Open Information Sharing
	Flexibility							Stability
	Independence							Interdependence

Source: Peterson et al. (2001, p. 114).

These types of inter-firm exchanges are ‘transactional’ in nature with little information sharing nor possessing elements of trust and commitment that tend to characterise higher level exchanges. Transactional exchanges are not bad in of themselves, indeed they are flexible (switching suppliers) and most appropriate for non-critical and non-differentiated exchanges such as for primary commodities (Stock and Lambert, 2001). In these cases a long-term durable association is not always necessarily or desirable. They also reflect the competitive and individualistic nature of the value chain actors and are common as the ‘invisible hand’ of market forces operate (Tuominen, 2004). Further, market signals become isolated and captured only within certain parts of the value chain.

In agribusiness value chains this is usually at the retailer end of the chain (Hingley, 2005). This is because retailers and Fast Moving Consumer Goods (FMCG) companies such as supermarkets are in direct contact with the final consumer and hence possess the ability to evaluate the correct consumer preferences (Hingley, 2005). As such retailers then select suppliers that more meet the retailer’s needs (including profit margins) and this becomes a major barrier in the transmission of the suppliers/producer’s ‘branded story’ to consumers (i.e. process, location and emotive value).

Conversely, as the type of exchange moves up the continuum in Figure 2, there are fewer transactional independent behaviours and more collaborative inter-dependent behaviours. The view shifts from short-term self-interested seeking to a longer-term focus that drives mutual benefits through collaboration. As the level of vertical coordination increases the level of assets specificity in the exchange also increases (Williamson, 1979). This may raise risks to partnerships within the value chain. If, for example, producers have invested specifically in the production of trait enhanced crops requiring the farmer to acquire new expertise, then the relationship faces higher risks (Hobbs and Young, 2000). Further, products or processes that have been specifically adapted to suit credence attributes also make price discovery harder as typically market agencies publicise bulk commodity prices and have much less information on differentiated products.

The research on four New Zealand food value chains by van Velzen (2016) emphasises the importance of leadership for governance. She summarised this as follows (idem, p. 6).

Leadership was found to be an important characteristic of governance as it can contribute to all three constructs of market orientation [the three constructs are bilateral agreements, network governance and informal relationships]. The lead organisation can also take a facilitating role, and thereby contribute to intelligence generation and responsiveness. Leadership can be the result of coercive and non-coercive sources of power. Non-coercive sources of power were found to have a positive effect on the informal relationships in the supply chain. In contrast, the coercive sources of power had a negative impact on these informal relationships, as the lead organisation could force other actors to do things that otherwise these actors would not have done (Grunert et al., 2005; Kähkönen and Tenkanen, 2010; Leonidou et al., 2008). This can create tensions in the informal relationships.

However, trust and commitment, as constructs of informal relationships, were also found to contribute to all three constructs of market orientation. Therefore, it is important to focus on the informal relationships as well. The negative influence of the usage of coercive sources of power on leadership can be diminished by suitable shared governance and shareholding structures. Additionally, shared governance can contribute to intelligence communication and responsiveness.

Hence, it is clear that structure and governance of a value chain can have a large effect on the flows of products and information both up and down the chain (Tuominen, 2004). On the one hand, end-to-end value chain visibility and coordinated flows of information and products will do much to connect the consumer to the producer (and vice versa). This approach has the potential to add value and increase producer returns. Conversely, transactional exchanges capture information and value only at the point of the exchange and typically is not shared chain wide. It seems then that value creation is somewhat dependent on collaboration.

3.5 Market Orientation and Collaboration

If collaboration is a necessary antecedent for value creation in a market orientation context, it is then necessary to examine the anatomy of collaboration. Collaboration can be broadly defined into two types: collaboration that is internal to an organisation and exists between departments and functions; and collaboration that is external between business units or independent firms operating in a supply chain (Mollenkopf et al., 2000).

Ellram (1991) developed a normative model of partnership development that suggests external partnerships develop over time rather than being constructed at a point in time, and that key personnel, interaction and partner contributions are critical success factors. She reemphasised that mutual commitment is often more meaningful than formal agreements. Henceforth, trust and mutual commitment to the relationship emerged as significant control variables in empirical studies. These were formulated into the Commitment-Trust theory as espoused by Morgan and Hunt in (1994). This theory suggests that relationship commitment and trust are central to success rather than the exercise of power and its ability to condition and control the actions of others.

Heide and John (1990) proposed three scales for measuring the performance of partnerships; the level of joint activity, the expectation of continuing the relationship and the level of monitoring by the buyer over the activities of the supplier. They concluded by showing that supplier cooperation was positively correlated with three conditions: expectations of a long-term relationship, increased verification efforts by the supplier and relationship specific investments. Dyer and Singh (1998) suggest that when firms collaborate, they generate relational rents when they share knowledge and resources.

Likewise, Iliopoulos et al. (2012) argue that innovation through learning is important, based on trust and commitment, but they found that collaboration poses its own set of difficulties. Fearne et al. (2012) demonstrate that effective collaborative communication promotes inter-firm relationship success, and collaboration could possibly serve as a flexible, cheap and viable governance mode in its own right.

Table 3: Typology of Collaborative Behaviours

Construct	Definition	Sub-Dimensions
Active Disclosure	A free exchange of information and data between exchange partners through various form of communication and protocols (both formal and informal) with the purpose of improving the value creation activities if a value chain.	Communication Information Sharing
Common Objectives	The establishment and progress toward mutually established common objectives, goals and conflict resolution process that align the efforts of both parties in order to achieve synchronicity, harmony and value creation.	Conflict Resolution Goal Congruence
Joint Risk Taking	The willingness to share the burdens, costs and benefits between the parties and the allocation of resources and materials to exchange relationships specific investments so that both parties share in the risks and rewards of the collaboration.	Relationship Specific Investments and Activities Shared Risks and Rewards
Relational Commitment	The commitment of both parties to a long-term exchange relationship through the establishment of trust and commitment, relational and interpersonal social norms that establish over time between the exchange parties.	Trust and Commitment Social and Relational Normative Behaviour.

Source: Wilson et al. (2011).

Heribert and Silke (2002) discuss the role of information exchange in supplier networks for reducing the opportunistic behaviours of dominant buyers in markets. It can be noted that exchange of information and its associated technologies has enabled consumers to connect directly with producers can cut out a number of traditional intermediaries in a process known as disintermediation (Wu et al, 2014). This has been one of the principle drivers for the recent surge in value chain collaboration (Swaminathan and Tayur, 2003). Achrol et al. (1983)

discusses how the types of coordination and control mechanisms driving network organisations are distinct from the traditional dyadic exchange perspective. Finally, van der Vorst and Beulens (2002) demonstrate the power of collaboration to reduce supply chain uncertainty through the redesign of the control strategies.

Table 3 on the previous page offers a snapshot of four key collaborative constructs typically found in value chain research. Clearly collaboration is a key value creating behaviour and central to the MO approach. The evidence suggests that it has a positive impact on firm and supply chain performance.

3.6 Market Orientation and Performance

MO has positive effects on company performance, with learning and innovation being crucial factors (Grunert et al., 2008; Liao et al., 2011; Roep and Wiskerke, 2012). Market conditions and competition are never static and so the ability to learn and adapt is paramount to success (Slater and Narver, 1994). Innovation refers to a change in technology (Christensen, 1997) and science plays a crucial role in this. Developments in areas such as process efficiency, reduced product variation through improved genetics, new product development and improved pest control are all ways in which consumer research and scientific advancements can work in partnership to improve value for end-consumers, and returns for the agri-food value chain.

It is important to keep in mind, however, that market orientation can lead to what has been described as the 'incremental innovation trap' (Grunert et al., 2008). Christensen (1997) refers to this as the 'innovators dilemma', where a firm does the right things at the wrong time. In other words, the resources of a firm are focused entirely on serving the end-consumer and as a result, opportunities to innovate in areas such as technology development or genetics can be missed or disregarded in favour of continuing business activities as they are. In order to avoid this trap, MO must be complemented with a learning orientation and investment in radical innovation in order to gain a sustainable competitive advantage (Grunert et al., 2008).

4. Value Chains and Land Use Choices

Traditionally market access has been a problem for New Zealand exporters due its geographic isolation, exchange rates and overseas government led incentives such as subsidies and international policies. Even as recent changes to overseas policies have resulted in the relaxation of trade barriers (Trienekens et al., 2012), the introduction of international laws and industry standards such as the EU food laws, continue to act as trade barriers in their own right (Saunders et al., 2011). This international trading environment has encouraged enterprises to focus on product and process value, so that initiatives to develop location value and emotive value, including ‘consumer empathy research’, are relatively new.

The previous chapter has argued, however, that agri-food value chains are increasingly market oriented. This means that domestic producers and processors are able to create greater value by responding to specific consumer values in international markets. This is true whether those consumer values are expressed in country regulations or retailer requirements governing food and beverage products (market access threats) or whether they are expressed by identifiable sets of potential consumers being willing to pay a higher price for products with certain attributes (market segmentation opportunities).

Market access threats and market segmentation opportunities have implications for land use choices in New Zealand, including decisions around *what* will be produced and *how* it will be produced. The ability to target a high value market segment, for example, may justify converting land from a commodity crop to an alternative premium crop. Avoiding market access threats may require documented and audited restrictions on the use of certain pesticides or specific animal handling practices. This chapter considers some of the key international trends affecting value chains and land use choices.

4.1 Food Safety

Consumer confidence in food products has declined in recent years with the globalisation of chains and a number of food safety issues such as Foot and Mouth Disease (FMD), Bovine Spongiform Encephalopathy (BSE) outbreaks and melamine contamination. As a natural consequence, food safety and quality are clearly important to consumers (Beulens et al., 2005).

These consumer values sometimes require effective systems of traceability that allow a product’s history to be seen in regards to procedures such as origin, preparation, storage and transport, often as part of quality assurance to reinforce food safety (Resende-Filho and Hurley, 2012). Additionally, it should be noted that traceability is important not just for food chains but for all agribusiness chains.

In the context of traceability and branding, country-of-origin (COO) can become a powerful marketing tool as this is often a cue for product evaluation (see Section 2.4 earlier in this white paper); a positive COO perception can have a positive effect on brand perception and vice versa (Balabanis and Diamantopoulos, 2011; Ozretic-Dosen et al., 2007). Due to the importance of traceability, safety and quality many regulations, policies and assurance programs exist at both the international and national levels in an effort to reduce contamination threats.

Policy, regulation and legislation are implemented at different hierarchical levels. For example, the Food and Agricultural Organisation (FAO) and World Health Organisation (WHO) established the Codex Alimentarius to deal with food policy on a global level (Trienekens et al., 2012). At a regional level the EU has introduced legislation such as the General Food Law (Beulens et al., 2005) and at a national level in New Zealand legislation such as the Food Act 1981, or the Wine Act 2003, govern food safety. In terms of assurance programs and standards, Trienekens and Zuurbier (2008, p. 113) offer a useful explanation by distinguishing five different types of standards:

1. Certification systems for sustainable agriculture - quality systems that focus on environmentally friendly production practice, e.g. certified organic programs.
2. Sector based quality assurance systems - often implemented at the national level and are aimed at safe and healthy agricultural products.
3. Quality assurance systems initiated by food industries – managed at national and international levels that aim for specific processes.
4. Retailer systems – private standards controlled by retailers that mostly aim at sustainable and safe food production e.g. BRC.
5. Regional or traditional quality assurance systems – refer to initiatives aimed at local or regional level.

4.2 Valued Credence Attributes

In addition to traceability, environmental concerns, greenhouse gas (GHG) emissions, food miles and sustainability concerns such organic and fair trade have become increasingly important to consumers. While these concerns are not exhaustive (e.g. animal welfare and genetic modification also feature), they do highlight timely issues that have the potential to impact on enterprise performance and land use decisions (Grekova et al., 2016).

GHG emissions have gained increasing attention with the rise of climate change. Food chains in particular have gained notoriety as it is estimated that agricultural production accounts for up to 30 percent of global emissions when fuel use, fertiliser production land use changes are taken into account (Garnett, 2011). Additionally, particularly harmful gases are released at the upstream end of the chain through on farm production. In livestock chains for example, nitrous oxide and methane are released through the nitrification process and ruminant

digestion. Further downstream towards the consumer, product transportation creates carbon dioxide emissions (ibid). Science innovation may play a pivotal role in helping to develop better on-farm practices and input innovations to help minimise gases.

The food miles debate was an example of a consumer movement based on the perception that the further the product travels, the greater must be its carbon output. This was especially pertinent for New Zealand due to our geographical isolation and distance to main markets in Europe and Asia. However, while the food miles debate was a popular feature of mainstream media, the concept lost credibility when it was realised that it did not account for a product's full carbon emissions (Saunders et al., 2009).

Consequently, the concept of the carbon footprint has gained traction. Hillier et al. (2009) define the carbon foot print as the "GHG emissions in carbon equivalents (CE) of many human activities" (p. 107). Again, science plays a critical role not only in on-farm practices but in the research and development of products or programs that offset carbon costs in an effort to reduce the negative impact on the environment.

In terms of environmental sustainability, organic and fair trade production have become important to some consumers. Consumption of products under these labels is motivated by ethical, environmental concerns and a sense of social responsibility. It is estimated that about 65 percent of food marketed under the umbrella of fair trade is also labelled organic (von Meyer-Höfer et al., 2015). Fair trade is defined by the World Fair Trade Organisation (2009) as a "trading partnership, based on a dialogue, transparency and respect, that seeks greater equity in international trade [and] contributes to sustainable development by offering better trade conditions to, securing the rights of, marginalized producers and workers". In contrast, organic production systems are defined as "systems that avoid or exclude the use of most synthetic or human-made fertilisers and pesticide" (Ministry for Primary Industries, 2016).

These credence attributes are often inter-connected with each other and with physical attributes in the judgement made by a consumer about what is a quality product (van den Heuvel et al, 2007). Dalziel et al. (2016), for example, reported from their survey of consumers in China, India, Indonesia, Japan and the United Kingdom that environmental factors in production contributed to judgements around food safety, particularly in the developing countries, and so should not be ignored by agri-food exporters.

4.3 Cultural Authenticity

A credence attribute that has been identified as offering value to final consumers is "cultural authenticity" (Saunders and Dalziel, 2016). Depending on context, cultural authenticity can be defined as the use, application, representation, or communication of an accurate worldview (Bishop, 2003). A worldview is the lens through which a culture understands reality and is the core of cultural identity (Mikaere, 2011). This section outlines how cultural authenticity can add *external value* to food and fibre products through enhanced marketability, and can add *internal value* through improved production efficiencies.

External Value

In the agri-food sector, the dominant trend has been towards homogenisation across supply chains both horizontally and vertically. While this trend continues, it has created a contrary reaction (Campbell, 2009; Friedmann and McMichael, 1989; Le Heron, 2002). As the food people eat has increasingly become an abstracted, ambiguous, generic and ubiquitous commodity, many consumers are now willing to pay a premium for food that has a point of origin and a point of difference (Freidberg, 2004; Hughes, 2009; Kuznesof et al., 1997).

Groves (2001, p. 247) argues that consumer “demand for authenticity is stimulated by their desire for products that can bring an element of differentness to their lives.” This demand is further fuelled by people feeling “increasingly alienated from the way their food is grown and processed” (Duffy et al., 2005, pp. 17-18). They want to know where their food has come from and who has produced it; they want it to be different; and they want it to have its own story. In a world of obscured banality, food with a unique and explicit story has product, process, and emotional value. Cultural authenticity is one of the most effective means of delivering both a point of origin and point of difference because it taps into existing ‘reservoirs of uniqueness’ and, in the process of communicating this uniqueness, can also express the source.

Cultural authenticity, in short, gives food meaning by telling an interesting story that connects it with a people and a place.

The use of cultural authenticity as a means of marketing food has a natural resonance as food has an intrinsic cultural component – as an expression of a people and a place (Montanari, 2006). Many foods are associated with specific areas and cultures and hence the authenticity of the product is expressed through the stories that describe these interlinked features. This is very clear when thinking of various cuisines, from Chinese to Italian. The cuisine is imbued with features such as taste, smell, and texture (physical and visual) that create associations with the areas and cultures (local geographies and human ecologies) from which they are derived (Morgan et al., 2008).

Although New Zealand may not have a strong internationally-recognized cuisine culture, its conservation culture does generate associations between food products and environmental cleanliness. Its family-led pastoral culture emphasizes the raising of animals in green semi-wild open spaces to produce grass-fed, free-range beef, lamb, and dairy products. Such products are the expression of an underlying authentic pastoral farming culture, which is in direct contrast to the global feedlot farming culture, where animal protein is raised within heavily mechanized and industrialized environments.

In summary, it is through associations between food and place-based-culture that authenticity emerges; however New Zealand’s authentic food raising and gathering cultures are rarely communicated with the world at large to differentiate New Zealand products from the globally homogenous industrially produced commodities (Lees and Saunders, 2015). This is New Zealand’s first ‘value gap’.

New Zealand also has a strong authentic indigenous culture. While Māori have incorporated settler food raising and gathering cultures within their cultural frame, adapting and improving

them, their traditional culture infuses their food and fibre products with a unique authenticity. Their animist worldview, common to many indigenous peoples, means they understand that people and ecologies are embedded within mutually-dependent and synergistic relationships (Reid and Rout, 2016a). The consequence of these relationships is that the food and fibre hunted, harvested, gathered and produced by Māori are fundamental manifestations of who Māori are as a people (Harvey, 2005; Willerslev, 2007).

The food and fibre Māori produce emerge from a nexus of relationships between people, the land, the water, and the flora and fauna contained therein, and, as such, are imbued with the mauri (life giving capacity) that comes from this specific whakapapa (relational network) (Reid and Rout, 2016a). The animist worldview suffuses these products with meaning, embedding and embodying the close relational bonds between the people and their ecologies (Harvey, 2005). This represents a powerful marketing proposition to a world of physically and psychologically distanced consumers, one that can connect them to peoples and places that are significant and attractive (Reid and Rout, 2016a). Again, this potential is not being tapped to its fullest; this is New Zealand's second 'value gap'.

While generally Māori cultural authenticity is best expressed through the emphasis of traditional culture, these two 'gaps' are not mutually exclusive. Casey et al. (2014) suggest that cultural authenticity has three aspects: authentic location, authentic producer and authentic technique. They explain that cultural authenticity is in the eye of the consumer and so can be communicated through the effective emphasis of just one of these aspects. Thus, Māori producers can leverage off both their traditional animist culture and the new hybrid Māori-settler culture to deliver authenticity that captures the best of both worlds. They may present their use of modern scientific agricultural techniques on their ancestral land as a powerful fusion of new and old.

The point here is that Māori are not restricted to using their traditional culture but rather these two cultures can be used synergistically in a variety of ways to maximise the value added, as long as the narrative underpinning Māori animist culture is not contradicted or overwritten (Rout and Reid, forthcoming). It is critical that cultural authenticity is not historically restricted to a pre-contact form of Māori culture as while this has high emotional value it could compromise external perceptions of production and process value and also limits the capacity for Māori to add value internally.

Provenance marketing is the best way of communicating cultural authenticity to consumers, it provides a "spatial dimension (its place of origin), a social dimension (its methods of production and distribution), and a cultural dimension (its perceived qualities and reputation)" (Morgan et al., 2008, p. 4), with a clear crossover between these dimensions and the three aspects of cultural authenticity outlined above. Effective provenance marketing of the cultural authenticity of food and fibre products means ensuring the consumer is not aware just of the spatial, social, and cultural dimensions but also of their importance, not just to the consumer but also to the producer of the food.

As animists, Māori want the consumer to know the true provenance of the food or fibre they sell because it is important to them (Reid and Rout, 2016a). By contrast, most modern agri-

food businesses see provenance as another marketing tool that can be used to satisfy consumer, rather than as a genuine and authentic attempt to connect food and fibre producing cultures with consumers (Brand, 2010; Cook and Crang, 1996; Goodman et al., 2014; Johnston and Szabo, 2011). Thus, cultural authenticity provenance marketing is empowered by its internal drive to fidelity as Māori want the consumer to know the genuine credence attributes of their products (Asplet and Cooper, 2000).

Recognition of the value of cultural authenticity for Māori products is increasing. A report from Te Puni Kōkiri (2007, p. 6) simply refers to “the inherent ‘cool’ of things Māori” internationally, while its CEO at the time, Leith Comer, expanded on this by explaining: “Points of difference are potentially very valuable and traditional Māori values, activities and protocols are providing Māori with natural advantages they can exploit” (Dominion Post, 2008). Likewise, Harmsworth (2006, p. 3) explains that there is “a growing body of anecdotal evidence that overseas markets are responsive to cultural distinctiveness such as Māori branding” and his research results “indicate that Māori values are instrumental in defining a Māori organisation, maintaining cultural and ethical standards, giving direction, and provide a point of difference in the global market place”.

This echoes another report that found evidence of substantial market demand for Māori branding elements (Jones et al., 2005). Similarly, Lai (2010, p. 10) records that “when products from New Zealand are associated with Māori symbols, they tend to gain a higher value overseas from seeming more ‘authentic’ and ‘in touch with nature’”. Combined with New Zealand’s ‘clean and green pastoral’ image, this global demand gives Māori producers a substantive means of adding production, process and emotional value in a number of ways (Lees and Saunders, 2015).

Ngāi Tahu provides several powerful examples of how cultural authenticity can be used to great effect in gaining a premium for Māori products. Although not a food or fibre initiative, Ngāi Tahu Pounamu uses provenance to communicate the cultural authenticity of pounamu products. This initiative has seen premiums of between 30% and 50% for culturally authentic product over inauthentic product (Barr and Reid, 2014). The scheme has since been cloned and applied to the marketing of culturally authentic traditional foods (tītī and tuna) using the online platform Ahikā Kai. To date, this has been successful, particular for the marketing of smoked eel/tuna, where family fishers have gone from supplying large processors to supplying premium hospitality markets (Barr et al., forthcoming).

Further, Ngāi Tahu Farming blends traditional animist values and modern scientific techniques to its dairy operations as a means of communicating its sustainable production methods (Keene, 2015). As explain on its website, the key difference is “the level of input from cultural and technical experts, as well as the use of leading technology”. The head of Ngāi Tahu Farming, Andrew Priest, suggested one strategy for the new venture could be to “vertically integrate and manufacture our own food and partner with someone in an export market to access an overseas supermarket with Ngāi Tahu branded food products” (Steeman, 2015).

Internal Value

Cultural authenticity can add production and process value internally as well. This is apparent from research on collectively-owned Māori businesses and enterprises, which demonstrates that they respond to demands from Beneficial Owners to operate in cultural authentic ways.

Generally speaking, Māori food and fibre businesses ensure that they meet key values such as *manaakitanga* (support and care for others), *mana* (prestige through cooperation), *rangatiratanga* (responsible leadership), *aroha* (love, care and respect) and *whanaungatanga* (respect in relationships) (Firth, 1972; Spiller et al., 2011; Thompson and Ruwhiu, 2014). These are fundamental to the Māori worldview and are non-negotiable for any Māori business that wants to be culturally authentic (Spiller et al., 2011).

A number of studies have examined the ability for these values to help improve the way Māori businesses function, finding that they improve operational efficiency by encouraging functional, motivational, and social integration within the value chain (Foley and O'Connor, 2013; Spiller et al., 2011; Zygadlo, 2003). Just as they did historically, the values outlined above encourage all the various actors within a value chain to work as closely as possible to synchronize their efforts in a cooperative manner that is mutually-beneficial (Haar and Delaney, 2009; Petrie, 2006). These values also help facilitate efficient integration as they provide a set of operational rules that have been developed and refined over a millennia (Reid and Rout, 2016b; Tapsell and Woods, 2008).

These customary economic structures provide an excellent mechanism for both vertical and horizontal collaboration within and between Māori businesses (Reid and Rout, 2016). The application of Māori cultural principles to value chains help deliver more efficient integration and greater operational streamlining, tying them together through the creation and maintenance of interlocking networks of reciprocal relationships that are focused on mutual benefit and shared risk (Barr and Reid, 2014; and Barr et al., forthcoming).

This is examined by Reid's and Rout's (2016b) outline of developing Ngāi Tahu business models, explaining that they are based on symbiotic relations between the differing links in the value chain – both vertical, from whānau to hapū to iwi, and horizontal - delivering a balance between the centralization and decentralization of power and control typical in traditional Māori society. The businesses have both cost-recovery and profiting sharing mechanisms built in that help spread risk and share benefits in a way commensurate with traditional Māori values and help optimize the operational efficiency of the business as a whole.

In another example Haar and Delaney (2009, p. 30) “note that many of the aspects related to the value of ‘whanaungatanga’ fit well within Porter’s... ‘Values Chain Model’” and “suggest that ‘whanaungatanga’ might be viewed as a resource able to be called upon by Māori entrepreneurs who have family and tribal connections enabling the entrepreneur to leverage off the collective”. Likewise, in their study, Foley and O'Connor (2013) found that Māori social skills and focus on personal interactions underpinned by their worldview were highly advantageous to entrepreneurship, enabling them to build and maintain highly advantageous relationships in their work. They concluded that Māori “displayed a solid cultural and social

capital base with both bonding and bridging forms of networking apparent in their entrepreneurial activity” (idem, p. 291). Several other studies also note the way Māori values fostered strong social networks that were advantageous in business (Spiller et al., 2011; Zygodlo, 2003). Operating in a manner that is culturally congruent has been found to be the most optimal way of running an indigenous business (Cornell and Kalt, 1992, 1998).

In summary, cultural authenticity can add both external and internal value for Māori businesses, but it also has the potential to deliver far more broad reaching benefits to the wider New Zealand economy. It may add value to the wider New Zealand story as it provides a unique, foundational narrative that can be threaded through all other aspects of Brand NZ, from tourism to the wider food and fibre sectors. Indigenous cultural practices may be used on some occasions to break down cultural barriers. As Harmsworth (2006, p. 105) writes, “Indigenous branding appears well positioned to play a major role as part of Māori business and Brand NZ in global markets but needs to be strongly aligned to what the business stands for, its purpose and values, and be strategically planned to gain competitive advantage” (see also Harmsworth, 2010).

The entwined Māori and settler cultures can be used to add value through adept and sensitive provenance marketing of authenticity, backed up with robust scientific evidence. Pākehā businesses, working in conjunction with Māori, can also add value to their own products through Māori branding. Jones et al. (2005) recommend the creation of an organisation that can provide advice, consultation and permission to non-Māori businesses who wish to use Māori culture as a means of branding to ensure it is used accurately and respectfully. The aim would be the “long term protection and use of Māori images that would benefit Māori and promote Māori in a commercially and culturally appropriate manner” (Jones et al., 2005, p. 10) whilst enabling Pākehā businesses to use aspects of Māoritanga as a way of adding value. Working in collaboration, the whole country can benefit from promoting Māoritanga to the world, whilst also celebrating a drawing upon New Zealand cultural attributes more broadly.

4.4 ZESPRI – A Market Oriented Value Chain

ZESPRI International Limited is a grower-owned marketing co-operative with 2,500 member growers exporting worldwide, with the majority of exports sold to the European and Asian markets (Milne, 2014; van Velzen, 2016, p. 55). The co-operative operates as a legislated single desk seller and maintains an export monopoly, except to Australia. Through value-adding activities, it has been able to command up to twice the world’s price for its kiwifruit (Saunders et al., 2011). This section explores the success of ZESPRI through the value framework of Dagevos and Ophem (2013) that was presented in Section 2.2 of this white paper, as well as the value chain’s market orientation.

Product Value

ZESPRI directly connects to heterogeneous consumer segments through research on topics such as sensory tasting, which samples consumers to test the appeal of a product offering using variables such as taste, texture, acidity, freshness and flavour (Stec et al., 1989; MacRae

et al., 1990; Marsh et al., 2004; Harker et al., 2009). This information can be translated into a consumer's willingness-to-pay values that can be used to incentivise producers and prioritise innovation investment in activities such as new cultivar development (Jaeger et al., 2003; Jaeger and Harker, 2005). In the Netherlands, for example, ZESPRI conducted sensory testing to gauge consumers liking of the new gold cultivar of kiwifruit as opposed to the existing green variety. Additionally, ZESPRI also monitor competitors' prices as well as product offerings whereby firmness and dry matter are tested (van Velzen, 2016). This consumer centric focus fosters an environment for constant learning and innovation to take place in an effort to develop kiwifruit cultivars in line with consumer demands (Jaeger et al., 2011).

Process Value

When dealing with process value, ethical and ecological concerns of the consumer are of importance. ZESPRI's main market message has consistently revolved around health and vitality, with secondary messages of food safety (Beverland, 2001; Lees and Saunders, 2015). As consumers are more informed than ever before, it is paramount that what is communicated to the end consumer is the truth in order to maintain credibility and avoid breaching consumer protection regulations (Watanabe et al., 2009). For health and nutrition, ZESPRI does this through peer reviewed research publications and supporting health claims (Beck et al., 2010; Lister, 2014). Consumer concerns relating to the food safety risks associated with chemical residues have seen ZESPRI introduce integrated pest management practices on farm for its conventionally grown kiwifruit and the development of an organic-branded product line (Lockie et al., 2000). Demonstrating an active commitment to safe, healthy kiwifruit, residue levels on farm (both organic and non-organic) are well within tolerance levels (Lees and Saunders, 2015). Growers have implemented global good agricultural practice (GAP) through GlobalGAP[®], a globally recognised certification scheme (Campbell and Rosin, 2008). However, GlobalGAP[®] has also been perceived by growers to increase transactional costs that may not always be offset by specific market premiums (Cradock-Henry, forthcoming). Although GlobalGAP[®] provides transparency through the kiwifruit value chain to retailers, it is not directly visible to consumers (Ferrucci, et al., 2010).

Beyond food safety, the environmental impact of food production is emerging as an area of importance for consumers and retailers. Although the environmental impact of kiwifruit production appears to be of lower consumer importance relative to health and food safety, ZESPRI has undertaken a strategic environmental impact assessment of New Zealand kiwifruit production (Mowat, 2014). In short, environmental impacts were prioritised and then measured using internationally relevant metrics. Tools were then developed and transferred to mitigate any risks or exploit any opportunities identified from the assessment of the whole value chain, including those that related to inputs, production, postharvest, logistics, distribution, consumption and end-of-life.

Collaboration of ZESPRI's value chain stakeholders across the whole chain was critical to undertaking the assessment as well as implementing the tools needed to manage environmental impacts. By way of example, input suppliers, researchers, growers and ZESPRI collaborated to develop and incorporate environmental footprint modelling into fertilizer management tools to improve water use efficiency and nitrogen application, resulting in

reduced costs alongside a smaller carbon and water footprint (Deurer et al., 2011; Wheeler et al., 2012; Muller et al., 2015). The kiwifruit assessment also highlighted the importance of collaboration in reducing fruit wastage across the whole chain in order to lower the environmental impact burden per fruit consumed. This has also required development of new tools to share information about postharvest performance of the product between collaborators across the value chain (Bollen et al., 2013). The bulk of these initiatives have been communicated to retailers rather than end-consumers. This is due in part to the complexity and costs of communicating information on credence attributes directly to consumers as well as to a need to focus resources on marketing the product's health and vitality properties.

Much of the expansion of the kiwifruit industry has been on land that is close to urban and port facilities due to the high labour and specialised postharvest and logistics requirements for the crop. As a result of this proximity to urban centres, land management practices have continued to adapt to ensure the industry maintains a domestic "social licence to operate" alongside its export demand driven growth. Impacts on water quantity and quality, for example, are being managed through the adoption of metered and consented water usage alongside improved nutrient management practices that mitigate leaching and runoff (Bay of Plenty Regional Council, 2009). On and off-target impacts from agrichemicals have also been addressed through spray management systems that include notifying neighbours prior to spray application, record applications and limit spraying when climatic conditions are unsuitable (Chapman et al., 2009). In both examples, the good management practices required to meet domestic community values are compatible with those needed to meet global market requirements.

Location Value

In terms of sales location, kiwifruit is sold to wholesalers and retailers. ZESPRI marketing teams operate point of sales promotions and the shelf design of fruit stands in retail markets adds to the health and vitality message of ZESPRI (Ward and Courtney, 2013). In China, the team employs non-traditional advertising as well. For example, advertising plays on TV screens in buses, taxis and mobile phones. Online consumer engagement is also being used to build brand awareness and emotional engagement in new markets such as China (Wu and Chen, 2016).

Additionally, ZESPRI also allow consumers to purchase kiwifruit via a television sales programme by using their remotes. Hence, changing the purchasing location from a potentially high stress retail location to a relaxed home atmosphere (Lees and Saunders, 2015). Moreover, from an operational view, ZESPRI adds value to the kiwifruit through logistics activities. Incentives are used for growers and post-harvest operators to make sure that fruit quality is maintained from production, through the cool chain to the end-consumer. Alongside quality and promotional activities, the ability to collaboratively manage fruit losses is critical to the overall premium that can be returned back down the value chain. Through customer feedback about ripeness, ZESPRI are able to plan for optimal ripening in storage and transportation to ensure the fruit is ready to eat when it gets to market (van Velzen, 2016). Additionally, ZESPRI have introduced innovative packaging by using compostable food

labelling and are currently investigating plastic polymers as a means to replace petrochemical-based plastic bags and their spoon/knife (Spife) which is expected to reduce GHG emissions by around six percent (Robertson et al., 2014; ZESPRI Group Limited, 2016).

Emotional Value

Through marketing product innovation, ZESPRI aims to illicit positive responses to experiential attributes. As stated above, sensory testing provides valuable information as to consumers' satisfaction of product offerings. However, emotive value encompasses much more than these experiential attributes and through careful branding strategy ZESPRI has communicated a story of health, vitality, safety and environmental sustainability. The main message of health and vitality are targeted to consumers through various channels to promote consumption health benefits such as vitamin C, fibre content and digestive benefits, and the richness of nutrients (ZESPRI Group Limited, 2016). The secondary environmental story encapsulates not only sustainability but also the brand of New Zealand. Although the New Zealand origin is not as heavily promoted as in the past, it is still tied in with other attributes to promote an overall image of the ZESPRI brand (Lees and Saunders, 2015).

Market Orientation

In addition to the framework used above, ZESPRI also has a strong market orientation. The extensive volume of research the single-desk exporter facilitates leads to information gathering and dissemination, continuous learning to facilitate innovation and finally, responsiveness. Market research, customer complaints, performance feedback and monitoring of competitors lead to intelligence generation which is subsequently disseminated through the chain to the breeder, growers and post-harvest operators, as well as to the public through forums such as the ZESPRI website (van Velzen, 2016). Gathered information is used to breed new varieties of kiwifruit in an effort to align consumer demands with chain production. Responsiveness is achieved through incentivising growers and post-harvest operators to meet consumer demands, as well as through supply chain optimisation strategies such as transportation and achieving year round supply with strategic grower locations (i.e. Northern and Southern hemisphere). Transformative change, such as the supply of high taste fruit or fruit with low chemical residues, depended on growers and postharvest operators having access to robust market analysis that was support by appropriate incentive payments and tools to affect change on-orchard and in the postharvest chain. ZESPRI communicates to the end-customer in a variety of different mediums. With the rise of the internet, social media is a way to easily reach the masses. ZESPRI use Facebook as a means of communication and rely on local marketing teams to effectively communicate their health and vitality marketing message. As a consequence, the co-operative has over 18 pages in more than 10 different languages (Lees and Saunders, 2015). Hence, ZESPRI are able to gather market signals, disseminate information through the chain, respond accordingly and communicate back up the chain to the customer, creating a consumer oriented cyclic effect.

4.5 Land Use Choices and Practices in New Zealand

The ZESPRI example illustrates that market oriented value chains are already influencing land use choices and practices in New Zealand. The following bullet points indicate the range of transformation that is taking place as the primary sector moves “from price takers to market makers” (in the language discussed earlier in this white paper of the vision of the Te Hono Movement). These include examples where land allocation decisions have been affected by the creation of global value chains, as well as examples where production practices have been changed by the setting of standards to access premium markets.

- The development of the kiwifruit industry has been driven by its creation of global value chains. This has changed land use choices by increasing the amount of land devoted to kiwifruit orchards. FAO statistics record that the number of hectares in New Zealand devoted to kiwifruit orchards grew from 400 in 1970 to 11,603 in 2016.
- Similarly the development of global value chains for wine led to a rapid increase in the extent of land planted in vines from 1,468 hectares in 1970 to 37,155 hectares in 2014 (again using FAO statistics).
- Sustainable Winegrowing New Zealand was established by the industry in 1994, partly motivated to “address consumer concerns regarding products which are made taking care to respect the environment” (www.nzwine.com/sustainability/sustainable-winegrowing-new-zealand/). It includes “an audit structure that has integrity and rigour to comply with market expectations” (idem) and has achieved a very high level of voluntary compliance by grape growers and winemakers. The scheme sets standards for vineyards and wineries; for example, participants must enact a soil management plan accompanied by soil testing every three years.
- International supermarket chains require enhanced animal welfare from suppliers of food products into its value chains. Waitrose, for example, requires New Zealand suppliers to meet its high standards and funds New Zealand research into animal welfare issues such as raising lamb survival rates through genetic improvements.
- Synlait has introduced its “Lead with Pride” quality assurance scheme for its suppliers of liquid milk (www.synlait.com/uncategorized/lead-with-pride/). This scheme covers environmental, animal welfare and social conditions associated with the production of milk, as well as offering incentives for quality. This is linked to its differentiated marketing of Synlait products in domestic and international markets.
- ANZCO has a farm quality assurance scheme with four pillars covering food safety, animal welfare, environmental sustainability and traceability (www.anzcofoods.com/our-planet/anzco-farm-qa-programme). These are enhanced standards that enable ANZCO to meet the demands of overseas customers such as Waitrose.
- GLOBALG.A.P (www.globalgap.org) is an international private sector body that sets voluntary international standards for the certification of agricultural products. These include required or recommended standards in areas such as environment and

hygiene, environmental management (including wildlife policy), groundwater, staff facilities, training, and health and safety for farmers. Since January 2005 European retailers have made certification under GLOBALG.A.P standards mandatory for its suppliers. This is influencing domestic suppliers. New Zealand has developed local variants based on GLOBALG.A.P. (ZespriG.A.P. and NZG.A.P.), focusing on integrated pest management and environmental and social sustainability.

- Leaf Marque (www.leafuk.org/) is a scheme affecting land use practice by minimising the use of pesticides, encouraging natural predators, retaining 'green corridors' to protect wildlife, conserving water and energy, and maintaining soil vitality through crop rotation. Leaf Marque was established in 1991 to promote integrated farm management as part of a European wide movement. It certifies products with notable supermarkets using this such as Waitrose and Sainsbury's in the United Kingdom.
- The Sustainable Agricultural Initiative Platform (www.saiplatform.org/) is a global value chain initiative for sustainable agriculture. This was created by Nestlé, Unilever and Danone in 2002 and more recently has added members such as MacDonald's, Coca-Cola and, in 2016, Tesco. The Platform has 80 members across the value chain and aims to produce safe, high-quality food that protects the natural environment, and the social conditions of farmers and their communities. The principles for dairy include animal welfare, social conditions and environmental sustainability including water use and nutrient management. New Zealand producers that want to supply these 80 companies must meet these standards.
- Large land-owners with diversified land use opportunities are developing unified brands for promoting their outputs as quality products. This includes Māori owners such as Te Rūnanganui o Ngāti Porou (www.ngatiporou.com/), Te Rūnanga o Ngāi Tahu (<http://ngaitahu.iwi.nz/>), Wakatū Incorporation (www.wakatu.org) and the Porpori Farm Trust (<http://poriporifarmtrust.cyberstore.co.nz>). Another prominent example using multiple land use options under one organisation with a clear kaitiakitanga vision is Landcorp Farming (www.landcorp.co.nz/).

5. Conclusion

As explained in Section 1.2 of the Introduction chapter, the central hypothesis tested in this white paper has been the following:

The more collaborative a value chain is, the greater is the value that New Zealand producers, processors and manufacturers in the land and water sector can capture from profiling the desirable ‘credence attributes’ of its production systems (‘the New Zealand story’), targeted at consumer segments.

This conclusion summarises the main themes discussed in the preceding chapters, concluding that there is strong evidence in the international literature for the validity of the above hypothesis. This is done in Section 5.1. This review has also reported there is no simple recipe for constructing collaborative value chains. This is one of the reasons why science is required to create new knowledge for understanding how value chains can share value and incentivise land use practices (see especially pages 12-13 of this white paper). Consequently, Section 5.2 describes some specific science challenges that could be addressed with high quality research. Section 5.3 concludes with a recommendation for a research programme that addresses these challenges in an integrated manner.

5.1 Summary of Main Themes

The central hypothesis has been concerned with the *value* captured by New Zealand firms; consequently this white paper began with the observation that the final consumer at the end of the supply chain is the final arbiter of the value that can be shared among participating firms along the supply chain. The analysis has focused on a four-way classification introduced by Dagevos and Ophem (2013) distinguishing four sources of **value to consumers**:

- **Product value** – This adopts the traditional view of product attributes and characteristics important to the consumer.
- **Process value** – This focuses on the processes and practices used within the value chain to produce the product.
- **Location value** – This includes the point of purchase or consumption value but may include value placed on how products get to the point of sale including the operational activities of the supply chain.
- **Emotive value** – This includes the consumer’s emotive response to consumption as well as the brand/product story and any associated post-consumption moral/ethical reinforcement or dissonance.

These four sources of value invite producers and processors to consider all aspects of their products that are valued by consumers, not limited to the product’s physical properties. These

include **credence attributes** that cannot be seen or experienced at the point of purchase, such as food safety, environmental stewardship, animal welfare, social responsibility, cultural authenticity and the like.

Supply chains that focus on understanding, creating, and communicating value (including the value of credence attributes) to differentiated consumers are **market oriented value chains**. A market oriented value chain involves the pursuit of a common vision, based on trust and collaboration, aligning strategies, structures and processes on what the consumer values, throughout the entire value chain system, with a focus on creating value. There is a modern movement in agri-food trade away from commodity supply chains towards market oriented value chains, reflected in the Te Hono Movement's vision to shift New Zealand's agri-food exporters "from price taking to market making".

Creating and capturing value in a market oriented value chain requires **communication** in both directions along the value chain. Market intelligence about what is valued by final consumers must be gathered and disseminated along the value chain to support customer-focused decisions about production, value-adding processes and marketing. The relevant qualities created by the production, processing and distribution systems in the value chain must be communicated to, and trusted by, final consumers in order for that added value to be captured.

The white paper has drawn on a Canadian study to distinguish four types of value chains: fragmented; cooperative; coordinated; and collaborative. Consumer value is best created and captured in **collaborative value chains**, in which participating companies engage in longer-term strategic arrangements to achieve mutually beneficial outcomes. These arrangements require attention to be given to **governance** of a value chain, which can range from spot/cash market arrangements to full vertical integration. Studies of value chain governance often emphasise collaboration, with a strong emphasis on commitment and trust. The white paper details four key collaborative constructs: active disclosure; common objectives; joint risk taking; and relational commitment.

The central hypothesis emphasises New Zealand returns, which suggests **country-of-origin** should play an important role in global agri-food value chains using New Zealand products. Numerous studies have found that country-of-origin can be used by consumers as a cue for desired attributes such as quality and food safety. The Origin Green Ireland programme is an example of how a country can strengthen its country-of-origin brand. The New Zealand country brand has a strong reputation, but this is not reflected in as high a ranking for New Zealand's reputation as a country-of-origin for food and beverages.

A successful collaborative and market oriented value chain can convey market intelligence to producers, which can affect **land use choices** responding to market access threats or market segmentation opportunities. This includes decisions about *what* will be produced and *how* it will be produced. This white paper has paid particular attention to food safety and quality, to traceability, to environmental concerns and to cultural authenticity, all of which are relevant to New Zealand. It recognised that ZESPRI has a strong record of capturing value in a global market oriented value chain, and it gave other examples where New Zealand producers are making land use choices in response to final consumer expectations.

The conclusion from this review, therefore, is that there is strong evidence in the international literature and in New Zealand's experience to support the white paper's central hypothesis presented at the beginning of this chapter. This evidence does not mean that the task of identifying, delivering and capturing value in a collaborative and market oriented value chain is easy. To the contrary, experience around the world is that this is an area where commercial practice, policy frameworks and science-based innovation must collaborate to take advantage of opportunities and mitigate risks. The next section of this white paper therefore identifies some possible directions for future research.

5.2 Future Research Directions

The headings in the previous section are used to frame this section's discussion of possible future research directions, paying particular attention to the New Zealand context.

Value to Consumers and Credence Attributes

The source of all value in a value chain is the final consumers' willingness-to-pay for a provided good or service. Hence the first priority of scientific research is to discover and disseminate new knowledge about what customers find valuable in New Zealand agri-food exports. This science can take place at different levels of specificity. A particular firm may want to know how consumers in a particular city value a specific attribute such as taste or environmental stewardship. An industry may want to know how consumers in a particular country value a range of attributes for its products. New Zealand may want to know how consumers in a range of countries generally value the full range of attributes for agri-food products that have a New Zealand country-of-origin label. In line with the *National Statement of Science Investment 2015-2025* (New Zealand Government, 2015, p. 26) funding for the science should be more mission-led where there is a high impact for the New Zealand national economy, and become more industry-led as the research is targeted towards specific industries or firms.

There are two topics where mission-led scientific research would produce high-impact knowledge concerning the willingness-to-pay of New Zealand's international consumers. In both cases, there are modern research methods based on discrete choice experiments for ensuring robust knowledge (Bennet and R. Blamey, 2001; Hanley et al., 2001; Tonsor, 2011; Ortega et al., 2012; Tait et al., 2012; Grunert et al., 2014; Miller et al., 2015).

The first is that Plant and Food Research has a strong science programme on the physical attributes of key agri-food exports led by Dr Roger Harker (Harker et al., 2005, 2008, 2009, 2011) while the Agribusiness and Economics Research Unit has a strong science programme on the credence attributes of key agri-food exports led by Professor Caroline Saunders (Saunders et al., 2015; Tait et al., 2015, 2016a, 2016b; Dalziel et al., 2016). There is an opportunity to bring these two programmes together to design a research project that would create new knowledge on how physical attributes and credence attributes interact to convince consumers that they are buying a quality product for which a price premium represents good value for money.

The second is that there is strong evidence that different market segments of consumers in any particular country have different levels of willingness-to-pay for particular attributes of their purchased food and beverages (Macharia et al, 2013). The Maximising Export Returns research programme at the AERU, for example, found that the top 25 per cent of consumers of meat in India were willing to pay a 30 per cent premium for animal welfare compared to only 10 per cent by the bottom 25 per cent (Saunders et al., 2016b). This spread offers the prospect of New Zealand exporters being able to increase their average returns by becoming more skilled at targeting their sales to high value market segments. This requires scientific knowledge on how these high value market segments can be identified, based on attributes associated with New Zealand exports.

Market Oriented Value Chains and Communication

The key to a successful market oriented value chain is the effective communication both ways along the chain. Producers and processors need to understand what final consumers value, and the consumers need to understand and trust how producers and processors are providing them with value for which they are willing to pay a premium. This is particularly relevant in the context of the Our Land and Water National Science Challenge, which is funding science to protect environmental limits of agricultural production; effective ways need to be found of communicating the enhanced environmental stewardship to consumers who value this attribute in the food and beverages they purchase.

There are three topics where mission-led scientific research would produce high-impact knowledge concerning the communication in market oriented value chains.

The first is that it is clear, compared to consumers in New Zealand and the United Kingdom, that middle to high income consumers in Asia make far greater use of smart-phone technologies in Asia for obtaining information about food and beverages (and indeed for purchasing food and beverages; see Driver et al., 2015; Miller et al., 2016b). This creates new opportunities for New Zealand producers and processors to communicate directly with customers in these markets, but this requires greater knowledge on how these technologies are being used and how they are developing.

The second is that traceability is an important issue for some consumer segments, with an expectation that all ingredients into a final food or beverage product can be traced back to source (Opara, 2003; van Rijswijk et al., 2008; Bosona and Gebresenbet, 2013). New technologies are emerging that allow more effective traceability systems to be created, with further scientific work required to develop these technologies for New Zealand products.

The third concerns systems for providing trusted assurance to consumers that credence attribute claims are evidence-based. This white paper has noted that the Origin Green Ireland programme emphasises that its participants are audited. The New Zealand Sustainability Dashboard is a research programme that has created an internationally compatible framework for monitoring and reporting sustainability (www.nzdashboard.org.nz/), which has been adapted for use in particular industry case studies such as the Sustainable Winegrowing New Zealand initiative (Barber, 2015; Whitehead, 2016).

Collaborative Value Chains and Governance

As quoted on page 12 of this white paper, collaborative value chains can undoubtedly produce greater rewards than alternative models, but “it also generates increased risks, particularly for businesses that are still developing (as opposed to refining) their value chain management skills” (Value Chain Management Centre, 2012, p. 9). The thesis research of Mariska van Velzen (2016), which conducted four in-depth case studies on global food supply chains from New Zealand to the Netherlands (ENZA apples, ZESPRI kiwifruit, Firstlight Foods Cervena venison and Kumanu lamb), illustrates the insights that can be produced from comparative studies of different value chains. Other examples include Grunert et al. (2005), Parsons (2009), Skallerud and Olsen (2011) and Akhtar and Khan (2015).

Van Velzen (2016, p. 6) acknowledged that the literature on this subject is “very scarce”. Consequently, mission-led scientific research on New Zealand collaborative value chains and their governance could produce high-impact knowledge. As well as extending her research to other value chains, three specific suggestions were made by van Velzen (idem, pp. 132-133):

- Measures could be developed for indicating the performance of a value chain.
- Different governance structures could be compared on their contribution to market orientation as well as on their associated costs.
- Changes in a value chain could be studied over time in order to understand how different aspects of governance (for example, asset specificity, the difficulties involved in measuring performance, and the level of uncertainty) contribute to overall performance.

Country-of-Origin

The New Zealand Story aims to help New Zealanders’ better communicate our value to the world (www.nzstory.govt.nz/what-is-nz-story). It is based on three core values:

Kaitiaki: Care of people and place.

Integrity: Trust, honesty, humility and reciprocal respect.

Resourcefulness: Our fresh, outward-looking way of thinking.

These three values are expressed as “open spaces, open hearts and open minds”. These themes were developed through a series of private and public sector workshops, and then tested for relevance and authenticity in a range of international markets. The New Zealand Story therefore provides a valuable basis for constructing a strong country-of-origin profile for New Zealand agri-food exports.

It should be possible to strengthen the New Zealand Story with mission-led scientific research. In the absence of a strong scientific base, the New Zealand Story is vulnerable to a criticism that it is cherry-picking positive facts and figures to create an unrealistically rosy account of what New Zealand genuinely offers. This vulnerability would be intensified if a high profile event occurred that called into question some aspect of the claims made in The New Zealand

Story; for example, about how the country exercises kaitiaki of people and place. The lack of scientific measurements within a comprehensive framework also means New Zealand is unable to communicate progress in implementing its values. These weaknesses can be contrasted with the Origin Green Ireland country-of-origin profile cited earlier in this white paper (page 15) that that around 70 per cent of Ireland’s food and beverage exports are on an independently verified journey of sustainability.

The aim of a mission-led science programme should be to deliver new knowledge to support the ongoing development of an authentic, recognised global profile for New Zealand as a quality country-of-origin for high value agri-food products embodying key physical, credence and cultural qualities. This will require scientific research on the values and expectations of consumers of New Zealand agri-food exports and the matching of those values to scientific evidence concerning New Zealand’s production and processing systems.

The Our Land and Water National Science Challenge has begun work on this topic by commissioning an overview of international and domestic drivers that are relevant to New Zealand’s primary sector. The domestic drivers are important because the regulatory and social demands on producers to meet the expectations of New Zealand citizens are a key part of the Aotearoa New Zealand agri-food story. The major work in the Challenge on “Creating the New Zealand Story” will occur from July 2019 (OLW Directorate, 2015, p. 67); in preparation for that work, further research could build on the overview of international and domestic drivers to unlock prosperity from a stronger country-of-origin profile.

As discussed in section 4.2 of this white paper, another key aspect of the Aotearoa New Zealand agri-food story is the cultural authenticity of producers in the primary sector. This includes an underlying authentic pastoral farming culture (in direct contrast to the global feedlot farming culture) and the country’s indigenous culture that has provided words like kaitiaki in the New Zealand story. As that section concluded, the entwined Māori and settler cultures of New Zealand can be used to add value through adept and sensitive provenance marketing of authenticity, backed up with robust scientific evidence.

Land Use Choices

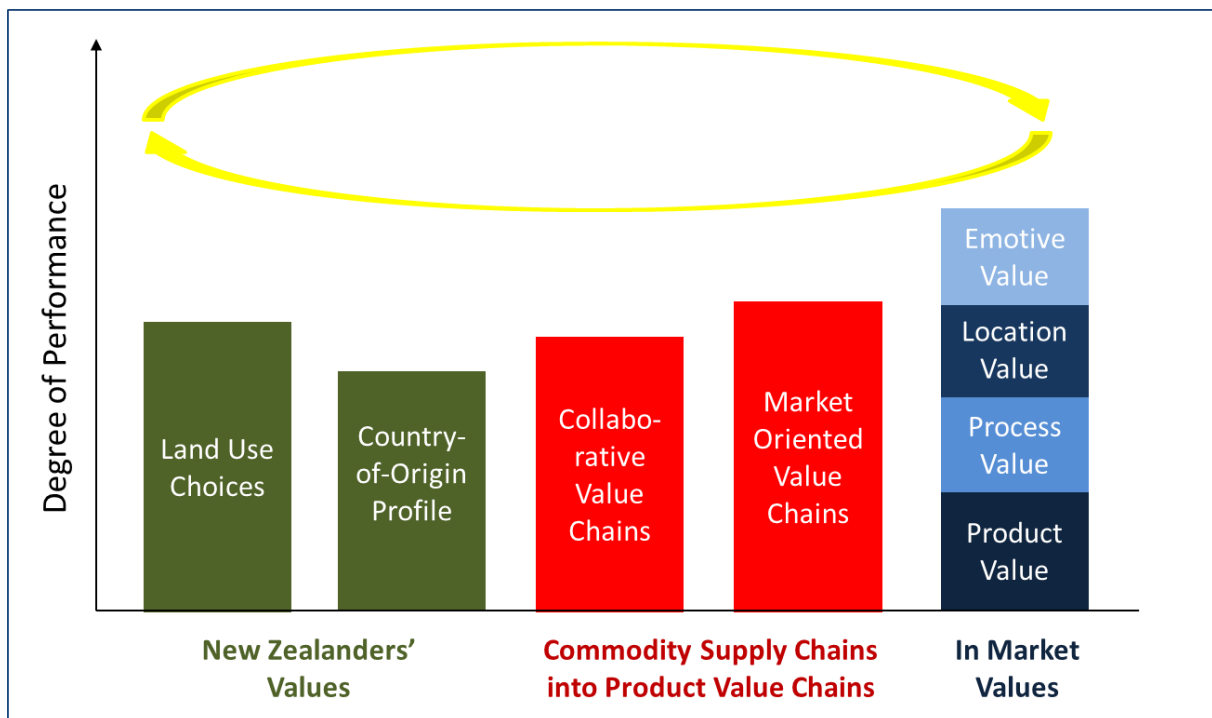
Finally, this white paper has described how a successful collaborative and market oriented value chain can convey market intelligence to producers, who are then able to make informed land use choices that respond to market access threats or market segmentation opportunities. There are already important examples of New Zealand processors providing incentives for farmers and growers to incorporate sustainability and other credence attributes into their production systems in order to maintain access to high value international markets.

A mission-led scientific research programme could contribute to this process in two dimensions. First, it could help evaluate where new technologies or improved performance could have the highest returns to producers because of the added-value this would create in a collaborative value chain. Second, researchers could produce new knowledge on how value chains communicate with their producers and reward them for providing credence attributes valued by final consumers.

5.3 An Integrated Research Programme

Although Section 5.2 has described the research challenges under separate headings that were suggested by the summary of main themes in Section 5.1, it is likely that a mission-led scientific research programme would deliver the strongest outcomes if it integrated some or all of the elements just discussed. This is because the ultimate objective is to increase the value of New Zealand agri-food products, which is the outcome of improvements in all of the themes discussed in this white paper.

Figure 3: Stylised Performance of Agribusiness Value Chains



This is represented in Figure 3 above. It is a stylised diagram showing performance in the five pillars of land use choices, country-of-origin profiling, collaborative performance in value chains, the degree of market orientation in value chains, and the value delivered to final consumers, using the four categories of product value, process value, location value and emotive value. The labels on the horizontal axis show:

- (i) how New Zealanders' values determine land use choices and the country-of-origin profile;
- (ii) how product value, process value, location value and emotive value are obtained in market; and
- (iii) how turning commodity supply chains into product value chains is the means for connecting New Zealanders' values with in market values.

The circular arrows at the top of the diagram are included to signify that the connections between these elements are not linear or unidirectional.

The hypothesis addressed in this white paper argues that improvements in value (particularly as a result of increased process value and increased emotive value) can be achieved by improved performance in the other four dimensions. An integrated research programme would ensure that all contributions to value could be addressed.

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