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New Zealand Agricultural and Resource Economics Society (Inc.)

Scenario Analysis of New Zealand's Sheep Meat and Beef Sector over the Next 10 to 15 Years

Hamish Forsyth

Ministry of Agriculture and Forestry, Pastoral House, PO Box 2526, Wellington 6140

Russell Knutson

Ministry of Agriculture and Forestry, Pastoral House, PO Box 2526, Wellington 6140

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AND BEEF SECTOR OVER THE NEXT 10 TO 15 YEARS**

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Hamish Forsyth and Russell Knutson

**Ministry of Agriculture and Forestry
Pastoral House
PO Box 2526
Wellington 6140**

Summary

This paper identifies and synthesises strategic opportunities and challenges facing New Zealand's sheep meat and beef sector over the next 10 to 15 years. A Delphi survey draws on the sector's collective knowledge and identifies areas of consensus and divergence of opinion. Using the results of this survey, as well as looking at other key industry features and mega-trends affecting the sector, four scenarios are developed that portray various possible futures where the industry has adapted or failed to adapt to the challenges and opportunities it is presented with. While the paper concludes that there is a generally positive outlook for the sector it notes that carrying on as normal is unlikely to provide the desired outcomes identified by the sector.

Keywords

Sheep; beef; scenario analysis; strategic analysis

Introduction

In 2008 the Ministry of Agriculture and Forestry undertook a sector study of New Zealand's sheep meat and beef industry (MAF, 2009i). The study took a strategic view of the sector, looking out over the next 10 to 15 years to identify and synthesise some of the main strategic opportunities and challenges facing the sheep meat and beef sector.

As part of that study a Delphi survey was undertaken of the sector in order to draw on the collective knowledge of the industry itself (MAF, 2009ii). One hundred and eleven potential respondents were drawn from farmers, processors, stakeholder groups, researchers, observers, government, and international contacts and customers. The Delphi method involved two rounds of anonymous survey questions. The survey did not seek to gain a statistically robust representative view of the sector as a whole, but rather sort both areas of consensus and disagreement in respondents' informed opinions.

The study also considered some of the current sector's main characteristics and constraints. Firstly, the sheep meat and beef sector is heavily reliant on a small number of traditional markets; although there has been recent growth into new markets, particularly in Asia. The sector faces a variety of international competitors and competes against a number of other food protein sources.

The processing sector appears to have faced capital constraints due a lack of incentives for farmers to invest, which may limit processors ability to invest in areas such as innovation and expansion. Structural overcapacity in the meat processing industry, resulting from reduced stock numbers and lagged adjustment of processing capacity, can also lead to sub-normal profits for meat processing firms, further limiting their ability to invest in the future. The dynamics of seasonality and seasonal (as opposed to structural) overcapacity, as well as the allocation of quota, can contribute to spot market relationships between farmers and processors and production-driven business models.

Competing land uses and relative industry returns have seen a recent large number of conversions from sheep and beef to dairy or dairy support. There is also a risk that sheep and beef farming could begin to face competition for land use, especially marginal hill country land, if the returns to forestry improve. The cost and security of access to inputs such as water and fertiliser, as well as the quantity and quality of human capability in the sector are likely to become more important issues in the future.

There is currently a misalignment of objectives between individual participants across the value chain. For instance, processors see benefits in being able to elicit long-term supply commitments from farmers to ensure certainty of supply. At the same time processors face short-term financial incentives to procure on the spot market to both maximise capital utilisation and gain maximum access to quota markets. Processors may also value farmers smoothing their supply curves in order to reduce seasonal spikes. Conversely, farmers may find it hard to credibly commit a large proportion of their production to longer-term contracts due to the difficulties implicit in producing meat in a climatically influenced production system and the loss of flexibility that long term contracts imply.

The study also summarised several forecasting and foresight initiatives which have been undertaken recently to identify large-scale drivers for change, many of which have particular relevance to the agricultural sector. These mega-trends present both opportunities (changing global demographics and wealth; wealthy consumers demanding food products that help define their image and that make connections with their core beliefs); and risks (globalisation increasing competition from low cost emerging international competitors as well as local and regional producers in market; climate change; and increasing pressure on New Zealand's natural resource base) to New Zealand's meat producers and processors.

Drawing on these findings, this paper summarises four scenarios describing the degree to which the sector variously adapts or fails to adapt to the challenges and opportunities for the meat sector over the next 10 to 15 years. The purpose of this scenario analysis is not to predict the future of the sector but rather to encourage debate and inform decision-making by highlighting strategic issues and challenges.

The first - a bleaker scenario - outlines a possible future where the sector does not adapt to evolving opportunities and challenges. The three other scenarios describe a range of futures where the sector variously adapts to the opportunities and challenges it faces.

Part of the value of this approach is that there is wide agreement that some changes within New Zealand's sheep meat and beef sector are likely to occur. Opinions on other factors differ significantly. The possible trajectories of these factors may have profound consequences for the sector.

The scenarios presented are not exhaustive and there are a multitude of other possibilities that could have been developed. However, the report concentrates on just four, which were chosen on the basis of the factors identified in the Delphi survey as the most important but uncertain strategic issues.

The operating context for all scenarios

A core set of assumptions have been identified from the Delphi survey, the current industry features and key mega trends where likely changes have generally been agreed (Table 1).

Table 1: Core set of assumptions

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| <ul style="list-style-type: none">- Changing demographics, increased wealth in developing countries- Increased international competition and increased product supply from other countries- Market expectations putting greater emphasis on climate change and environmental sustainability- Increased use of "New Zealand" in branding- Improved producer and processor efficiency, including improved labour efficiency- Greater use of forward supply contracts between farmers and processors- Improved on-farm environmental performance- Increased average farm size and higher average land prices |
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These core assumptions form the operating context of the four scenarios. While none of these changes in the core assumptions are guaranteed to occur it is assumed they will for the purposes of analysis. This enables an exploration of what the future may look like. Some of these assumed changes occur to a lesser extent in the first scenario.

This core set of assumptions shape an operating context that includes the following:

Global conditions

An economic system in 2023 largely similar to that of early 2008, without any ongoing impact from the current economic crisis or any other major international or domestic shocks. The New Zealand dollar continues to fluctuate. Climate change impacts are becoming apparent, but largely reflect an exacerbation of existing extreme events rather than tipping point changes.

International competitors

Competition in core markets increases, especially from temperate South American producers. International competitors increasingly adopt New Zealand-type pastoral farming technology and methods, but have lower labour and capital input costs.

Markets and consumer preferences

World demand for meat protein has continued to grow as consumers in developing countries become wealthier and more discerning. Sheep meat remains a small part of total global meat consumption. World sheep meat and beef prices continue to demonstrate cyclical supply and demand patterns.

Sheep meat consumer demographics have changed in core markets, as younger consumers have less loyalty to “New Zealand lamb”, prefer convenience foods and eat out more than older consumers.

In developing Asian markets, target consumers’ disposable income levels increase and this increases the demand for premium meat products significantly. Food safety and supply certainty are among the key attributes demanded. Urbanisation drives growth in the food service industry and thereby increases demand for safe, quality manufacturing beef.

Many product attribute standards become prerequisites, such as food safety, traceability and animal welfare, as well as farm conservation and wildlife management plans. These factors remain an intrinsic competitive advantage for New Zealand.

Forward supply contracts

Forward supply contracts become the increasingly preferred supply arrangement between farmers and processors. This enables greater certainty of supply for processors. Suppliers and processors work together more closely – forward contracts are not just about committing to supply in a certain period, but are also related to the qualities inherent in the slaughter stock. Farmers are willing to commit more supply to forward supply contracts as they are adequately compensated for higher levels of risk, for

example, where adverse weather conditions preclude them from profitably fulfilling their supply contracts.

Efficiency improvements

On-farm production and processing level efficiency gains enable a greater amount of output from fewer inputs. These efficiency gains are made in a number of ways, but in particular through the increasing adoption of current technologies and innovations, ensuring more of the industry is now undertaking “best practice”.

Farm environmental performance

Environmental management controls, either through regulation or to meet market requirements, are widely applied across the sector. On-farm environmental performance remains a competitive advantage for New Zealand sourced meat. Farmers can demonstrate carbon neutrality. Water for irrigation will be more tightly managed and this may impact on the viability of producers in some areas, as well as the viability of other land uses. Increased storage of water, however, will lengthen the potential growing season in some areas, support a greater variety of land-use options and reduce the impact of drought or dry seasons.

Land use and farm management

On-farm productivity improvements partially offset any reduction in sheep numbers. There is a trend towards a drier east coast and more extreme weather events are occurring. Farms tend to be more extensive than previously, as lower stocking rates are important to provide farms with a buffer for coping with increased impact and frequency of droughts while meeting supply contracts. Ownership patterns have changed. Larger farms and larger multi-farm enterprises are common and may have some advantages in terms of economies of scale and diversity of land type.

Nevertheless, “family” farms remain a core part of the industry. They continue to have certain advantages in management oversight and performance incentives. Family farms also prove more resilient during periods of poor returns due to a greater ability to reduce drawings and general farm expenses.

Differing opinions, diverging scenarios

The operating context forms the basis of the four scenarios. Other changes are less certain to occur, but may still have a major impact on the sheep meat and beef sector’s future.

The first scenario describes an industry where the failure to address key opportunities and challenges leads to a substantial reduction in the sector’s size and scope. Profits not only retain their cyclical variations but become systemically lower. This scenario paints a bleak future for the sector; it extrapolates current negative trends and describes a future where the sector has failed to adapt to changing circumstances.

The sector, of course, has great scope to adapt to meet opportunities and challenges. The remaining three scenarios describe possible futures where the sector has, to varying degrees, managed to capitalise on opportunities and meet certain challenges.

These three scenarios are predominantly differentiated using the following variables:

- innovation investment;
- reliance on developing new markets;
- marketing expenditure and operation, including:
 - total expenditure spent on marketing;
 - co-operation between New Zealand companies in international marketing;
 - New Zealand ownership or control of distribution and marketing networks;
- on-farm changes.

In respect to on-farm changes, farmers' ability to profitably adapt to meet certain future opportunities will depend on a number of factors:

- How will farmers react to the changing incentives offered by processors?
- How do farmers value the relative “freedom” of supplying stock on the spot market rather than through longer-term contracts?
- To what extent will farmers be prepared to commit to supply contracts that specify particular product attributes?
- How will other factors (such as the possibilities of a significantly smaller sector, increased incidence of adverse weather events and market requirements for higher environmental standards) affect the overall performance and resilience of sheep and beef farming?

On-farm adaptability will be driven in part by regional geographic variations (some regions will be more easily able to spread their supply season). Advances in and adoption of new technologies and farm practices will also enable farmers to adjust their production systems.

Scenario analysis

This section outlines the four main scenarios that have been developed. The main features of these scenarios are also summarised in Table 2.

Table 2: Summary of scenarios

	<i>Scenario one</i> Slippery slope	<i>Scenario two</i> A new market orientation	<i>Scenario three</i> Shrink-to-fit	<i>Scenario four</i> The knowledge industry
Market	<ul style="list-style-type: none"> - Inability to credibly meet more stringent consumer requirements in areas such as environmental performance - Inability to compete on price with lower-cost exporting countries 	<ul style="list-style-type: none"> - Substantial investment into new markets - Less dependence on traditional markets - Companies use varying marketing arrangements and cooperate in international marketing - Processors have invested in marketing and distribution channels 	<ul style="list-style-type: none"> - Exports continue to predominantly go to traditional European and North American markets - Supply into these markets is based around New Zealand's natural seasonal variations - Products are more specialised with specific attributes such as environmental credentials 	<ul style="list-style-type: none"> - There are a number of strategic partnerships between processors and international customers - The sector is producing a variety of new and differentiated products, possibly in collaboration with other food producers - These products are specifically tailored to customers requirements
Processors / exporters	<ul style="list-style-type: none"> - Continual decline in the total numbers of livestock leads to ongoing overcapacity in the processing sector - Processors compete vigorously for stock on the spot market – perpetuating low profit margins - Inability for processors to make new investments due to low profit levels and capital constraints 	<ul style="list-style-type: none"> - Greater processing economies of scale are evident - Some successful consolidation of larger processors - Important role of innovative small processors 	<ul style="list-style-type: none"> - The processing industry continues to make efficiency gains - There has not been large scale amalgamation of processors – there remains a number of diverse processing firms, although some down-size or exit the industry - Cooperatives remain a core part of the processing industry 	<ul style="list-style-type: none"> - A step-change in the amount of innovation investment - Greater use and adoption of new and existing technologies - Processors are more diverse in the offerings they provide - Cooperatives' capital structures evolve allowing greater access to capital - Innovation leads to outward investment and internationalisation
On-farm	<ul style="list-style-type: none"> - Continual decline in size of sheep and beef farming sector - Natural resource constraints increase the costs to farming - Reduced sheep & beef profitability compared to other land uses - Low profitability reduces resilience – adverse weather events cause further destocking 	<ul style="list-style-type: none"> - Farmers have responded to price incentives and now supply livestock more evenly throughout the year - There is greater use of longer-term supply contracts - The on-farm sector has maintained its size and scope 	<ul style="list-style-type: none"> - Reduction and stabilisation in size of sheep and beef farming sector - Returns increase for those who remain due to reduced supply - Improved on-farm environmental performance is the main source of competitive advantage 	<ul style="list-style-type: none"> - Farmer-shareholders receive incentives from cooperatives to encourage greater investment - Farmers generally work together with processors to meet specific customer requirements - Farmers receive suitable financial incentives to meet such requirements

Scenario one: Slippery slope

Consumers in wealthy markets continue to demand more attributes from their food. The New Zealand sheep meat and beef sector becomes increasingly marginalised from this market due to its inability to credibly meet these increased requirements. This is due to a combination of wealthy consumers preferring locally sourced food; local producers in our main export markets increasing their abilities to deliver on specific customer requirements; and the New Zealand sector being unable to either improve its environmental performance or effectively communicate its improved environmental performance.

Any improvements in environmental performance are not enough to redress overseas consumers' concerns regarding the consumption of New Zealand meat, including concern over distance travelled by products. Improving environmental performance also costs money: without a focused effort to credibly verify environmental performance, consumers switch to products with more validated attributes.

New Zealand sheep meat and beef also becomes increasingly marginalised in volume markets. This is due to a combination of:

- competitors in low-cost countries vastly ramping up their production and export potential;
- improvements in international competitors' market access arrangements and food safety reputation;
- New Zealand's increasing cost structures reducing the sector's ability to compete on price, even given some incremental efficiency improvements.

Essentially, the sector becomes stuck in the middle and is neither able to effectively compete at the top end in premium markets nor compete on price in value markets. The sector fails to come up with a coordinated response to address the decline.

Spot contract relationships continue to dominate between farmers and processors. Use of forward supply contracts has increased, but their use is sporadic and the contracts are, for varying reasons, not always fulfilled.

A continual decline in livestock numbers exacerbates overcapacity in the processing sector – there is a lag between a reduction in livestock numbers and a reduction in processing capacity. Processors compete vigorously on the spot market to ensure they maintain sufficient throughput. This excessive competition reduces processors' profitability and they are unable to make significant new investments due to low profits and capital constraints.

Overall returns to sheep and beef farming continue to fluctuate, but returns are in systemic decline. The sector's ability to compete with other land uses is reduced. Land

suitable for dairying goes to dairying or dairy support. Land suitable for forestry goes into trees. The sheep and beef sector is left with a much smaller geographic footprint and a greater reliance on extensive hill country farms.

Also impacting on resilience are the sector's reduced scale and scope, as well as fewer, smaller "good time" profits to sustain firms through the bad times. During each drought or adverse weather event the sector destocks further and does not bounce back to its previous levels.

Scenario two: A new market orientation

A cyclical upswing in commodity prices and a cyclical weakening dollar temporarily increases returns and profitability across the meat industry. The sector takes advantage of this window of opportunity by investing in developing new markets. Making progress in these new markets does not come cheap; a step-change in its marketing expenditure is required.

These investments start to bear fruit as Asia, the Middle East and North Africa form a significantly greater proportion of total exports. Traditional markets remain important; it is predominantly the cash flow from these markets that has provided the cash flow to sustain continued investment in new markets.

A greater proportion of exports are sold via marketing arrangements that involve a higher level of cooperation between New Zealand companies. This particularly helps establish a greater market share in Asia. This higher level of cooperation between New Zealand companies in international marketing is focused on building New Zealand brand recognition.

The "New Zealand story" is successfully communicated to a significant proportion of wealthy consumers in developing markets.

The sector moves towards developing new markets for a number of reasons, namely:

- returns in new markets are at least as good as current markets;
- more growth potential in developing markets;
- diversifying risk – less dependent on quota markets;
- traditional markets are demanding more specific attributes – returns from new markets are based on current New Zealand competitive advantages (food safety, certainty of supply, environmental reputation).

A higher proportion of New Zealand ownership and control of marketing and distributional channels reduces the number of layers in the value chain. Firms capture a greater share of the value created by controlling a greater proportion of the value chain.

New markets require more year-round supply as these markets do not have domestic industries that complement New Zealand's natural seasonal production.

Processors/exporters are able to source year-round supply to serve these new markets, while the seasonal peak (albeit reduced) continues to complement domestic supply in traditional northern hemisphere markets.

Processors/exporters secure an increasing proportion of stock using forward contracts and longer-term supply agreements. Forward contracts allow for greater certainty of supply for processors and the provision of more complex incentives in terms of product attributes.

Farmers produce flatter average supply curves compared with the current situation. Larger facilities and companies are now more cost effective, enabling the big processors to become more profitable and efficient compared with some of the smaller facilities.

Consolidation at the processor level has been driven by a number of factors:

- Processors have more certain supply because of the increased use of longer-term supply contracts and flatter seasonal supply curves.
- Capital invested in processing capacity is therefore used more efficiently as it is left idle for shorter periods of time.
- Capital-intensive processing facilities have an improved competitive advantage, increasing the incentive for large-scale investment into and adoption of new technologies.
- These new economies of scale benefit large facilities and companies – the realisation of such economies of scale provides for successful processor consolidation through mergers or acquisitions.

The role of the smaller processors, however, remains important. Indeed, in many ways the smaller processors have been instrumental in opening up new markets through their ability to niche market premium products and thus build up the image of New Zealand meat in new markets.

Increased market returns coupled with more effective use of processing capacity enable processors to pay farmers sufficient premiums to more than offset farmers' increased costs of out-of-season supply.

Farmers adjust farm management practices and supply patterns in response to economic incentives provided by processors. Pushing supply out into the shoulder of seasons increases costs and risks to farmers. Some farmers and regions are better able to respond to these new pricing incentives and supply requirements.

A number of factors have allowed the industry to overcome the on-farm challenges of longer-term commitments and year-round supply. (1) Improving on-farm profitability means sheep and beef can compete with dairy for the use of relatively flat finishing land – this mitigates some of the feed risk faced by hill country farmers. (2) Some farmers switch to a lower stocking rate; they are able to achieve higher net returns from “fewer but better” animals. A reduced carbon footprint from lower stocking rates adds to this

financial incentive. (3) Processors and farmers work together more closely – farmers minimise their financial risks from adverse weather events that would prevent them profitably meeting forward supply commitments. This includes the use of insurance. (4) Ongoing innovation and adoption of new technologies and farm management practices gives farmers a greater degree of certainty when planning ahead. The confidence that forward contracts gives farmers also means they are able to undertake medium-term investments with greater certainty.

Other farmers struggle to rearrange their supply profiles due to, for example, geographic or climate constraints. These farmers continue to supply according to their traditional supply profiles. However, these suppliers also benefit from processors facing less capacity pressure at the height of the season.

By maintaining its profitability relative to other land uses, sheep and beef farming is able to retain its scale and scope. This critical mass enables continual efficiency gains through ongoing investment in on-farm industry-good innovation.

Scenario three: Shrink-to-fit

Changing land use is driven by relative profitability in certain industries, leading to the national sheep flock reducing and stabilising at 32 million animals. Some hill country has been retired or planted in forestry for a new carbon farming industry. More quality finishing country has been taken over by the dairy industry, either as dairy conversion or dairy support. Lack of finishing land and more dependence on extensive farms has also meant a lower average stocking rate on hill country farms to better deal with feed and seasonal risk. Small pockets of farming land have also been lost to urban encroachment and lifestyle blocks.

While the reduction in size has been substantial over the intervening years, the size of the sector has stabilised as reduced supply of New Zealand prime beef and lamb has led to higher average farm-gate prices.

While the national prime beef herd has decreased in size, the national dairy herd continues to grow, with a resulting increase in the number of cull animals delivered to the meat sector. Further, the widespread use of sexed semen and other breeding technologies in the dairy industry significantly reduces the number of matings needed to breed dairy replacements. As a result there is an increase in the number of high-quality, beef-sired “bobby” calves available to the sector for use as veal or to be grown on as prime beef or crossbred breeding cows for the beef industry.

Many processors exit the industry or significantly scale back their operations. This reduces the scale of the industry, but increases returns to remaining participants. Although average profitability has increased, profits continue to show large fluctuations, exacerbated by dependence on only a few markets.

The overall capacity in the processing sector has decreased in response to reduced stock numbers. As reductions in national stock numbers impact on some regions more heavily than others, processing adjustments take place in greater proportion in the south and east of the South Island. The same regions that have been impacted most heavily by the reduction of total hectares in sheep and beef farming also display the highest growth in dairy, with a resulting higher number of dairy cull cows.

There has not been large-scale amalgamation at the processing level, as increased economies of scale are not able to be realised. Many smaller processors continue to outperform some of the larger processors. Large processors, either directly or indirectly, continue to provide primarily to large supermarket chains and the food service industry. Smaller companies primarily niche market their products at the premium end of the market.

Cooperatives remain a core part of the industry. During cyclical downturns in the industry, cooperatives retain their patronage-value to shareholders (as opposed to investment-value) and thus cooperatives are better able to cope with periods of low profitability.

The use of forward supply contracts increases, although supply is still dominated by natural seasonal variations. Fluctuating supply means that processors with flexible facilities, low overheads and nimble resources maintain a competitive advantage in the domestic processing industry.

Supplying seasonal fresh product into traditional markets continues to complement domestic production in those countries. This enables farmers to continue to maximise the use of grass as the cheapest form of feed, although this comes at the cost of idle processing capacity in off-peak times. The reduced size and scope of the sheep and beef farming sector, and the increased prevalence of extreme weather events, means that the risk/costs of supplying out-of-season is generally too great compared with the extra returns farmers would receive.

Europe and North America remain the dominant markets for New Zealand's sheep meat and beef exports. While there is general agreement on the desirability of developing new markets, the reduced lamb and prime beef kill refocuses exporters on better serving traditional markets rather than seeking to supply large additional quantities to new markets.

Products become more specialised and customers demand a greater number of attributes. New Zealand is able to maintain market share and grow brand prominence in traditional markets through improvements in, and validation of, on-farm environmental performance. However this does not come at a price premium. Such attributes are now minimum market requirements and need to be met to ensure the sector's products stay on the shelves.

Ongoing production and processing efficiency gains also help. This is achieved through a combination of collaborative research and development and individual investment into,

and adoption of, new technologies. Ongoing confidence in New Zealand's food safety and disease-free status is maintained and with it New Zealand's reputation as a safe and secure supply source. Any major incursions are quickly contained and controlled – thus minimising longer-term negative impacts on New Zealand exports.

Scenario four: The knowledge industry

The sector makes a step-change in its levels of innovation investment. The sector focuses on meeting and responding to the specific requirements of individual customers. Increased innovation investment leads to new product innovations, new processing innovations and the increased adoption of new and existing technologies.

The sector has embarked on a number of strategic partnerships with its international client base. This requires lower capital investment compared with the option of increasing ownership and control of marketing and distribution channels. These strategic partnerships are important because partners are able to share high-quality market and consumer information with processors and exporters, who in turn translate these into exacting supply incentives for farmers. Also, the greater certainty and long-term incentives provided by these partnerships enable processors to invest significantly in product development and processing innovation.

The sector is thus better able to deliver what the markets want and produce a greater array of value-added products. Processing plants use a higher level of robotics and are very flexible, able to adapt quickly to different throughput and different cuts and packaging to respond to market needs. Those plants that do not adapt have become obsolete and are increasingly decommissioned.

The sector's increased innovation investment was driven by a realisation that competing on cost is not a viable strategy in the long-term and therefore it needs to create more value in the products it produces. The sector has invested heavily in human capability. The attraction and retention of high-quality staff has driven the move to a more innovative industry. This innovation investment has led to increasingly differentiated products, reducing the need to compete on price alone. Critically the additional value created is at least equal to any additional costs incurred by the sector from creating such differentiated products. Opportunities are identified in product development and processing innovation and advances in these areas have allowed the sheep meat and beef sector to better serve existing markets with improved product, as well as opening up new markets and creating new demand for a variety of different products.

Smart beef breeding programmes, with dairy farmers now selecting for meat when breeding a proportion of their herd has led to gains in beef production. Increased quantities of quality beef find niche markets. This development is driven in part by the stabilisation of the dairying sector, so that herd replacement rather than growth is required. Genomic selection will likely increase the feed conversion efficiency and health of sheep and beef (making it more cost competitive with chicken and pork – both pigs and poultry will also become higher cost as a result of animal welfare controls).

Procurement model have changed. Farmers and processors/exporters work together to meet certain specifications and timetables driven by the market. There is greater long-term commitment between farmers and processor – they work together to grow the value of the product.

The structure of the industry has changed markedly as innovation investment leads to more differentiation at the processing level. There are still multiple large New Zealand owned processing companies and some of the larger processors are starting to procure and process a significant proportion of their stock offshore. Some smaller processors have grown to become world leaders in food derivatives, while others are making substantial returns from leveraging the intellectual property they have developed in processing technologies.

Some of the larger processors have the critical mass to achieve scale economies in research and development – which has led to some industry consolidation. However, as processors are increasingly differentiated, the rationale for an industry-wide merger has lessened. Large processors are predominantly pursuing different strategies and as such there are few synergy or scale advantage benefits for an industry-wide merger. Much of the research and development investment has been undertaken by larger firms due to their scale advantages, but smaller nimble firms have also benefited from collaborative research and development, open innovation and by partnering with international clients.

Meat processors in general require greater amounts of capital to make new investments. Cooperative processors, in particular, adapt their capital structures to enable them greater access to capital and providing greater incentives for farmer-shareholders to invest in cooperatives.

There is some mismatch between processing capacity and stock numbers, apparent when adverse climatic conditions and drought force farmers to reduce numbers. However, a combination of forward contracts and new, small and efficient processing plants allow greater flexibility and ability to meet demand.

Processing improvements driven by investment in research and development have improved the sector's international competitiveness. Processors are therefore able to profitably procure and process stock offshore as well as domestically. Greater internationalisation is the result of the intellectual property and capabilities developed through investing in innovation. The sector is thus able to increase its offshore investment and international connectedness. Some companies develop relationships with farms and processors in Uruguay and Mongolia to provide year-round supply. Others have supply partners in Europe, used to complement New Zealand seasonal supply, provide logistical advantages and avoid consumer concerns about fair-trade and regional sourcing. New Zealand farmers also invest directly in overseas farm ownership.

Complementary capabilities in areas such as environmental solutions are internationalised and applied to offshore pastoral farming systems. Internationalisation

does not just take place among the incumbents – it also takes place by various spin-offs and start-ups, in both the meat sector and related industries.

Summary and conclusions

While the sector is rightly focused on the current issues that it faces, it is equally important to have one eye trained on the future. The purpose of this study was in part to facilitate this by identifying and synthesising longer-term strategic opportunities and challenges facing the New Zealand sheep meat and beef sector.

The scenarios developed necessarily polarise the challenges and opportunities that may face the sector over the next 10 to 15 years. This has allowed us to concentrate on a subset of those opportunities and challenges and consider the follow-on implications of the sector's potential response to these. Again it is important to note that the scenarios are not predictions; they are simply a way of exploring possible future paths for the sector.

What is apparent from this scenario analysis is that opportunities and challenges are not consistent across sector players; there are some opportunities, such as serving new markets with year-round supply, that some firms and farmers feel they are particularly well placed to capitalise on while others may decide it is not for them.

Collectively, the opportunities identified describe the potential for a vibrant sector that places New Zealand at the forefront of high-quality, sustainably produced meat, rewarding farmers for meeting consumer expectations in both traditional and new markets. As this scenario analysis also identifies, there are a set of challenges that, if met, will strengthen the sector's position globally but, if left, might well perpetuate a lack of profitability across the sector.

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