

2 DELPHI SURVEY OF SHEEP MEAT AND BEEF SECTOR

In 2008, MAF completed a Delphi survey of New Zealand's sheep meat and beef sector. This study would not have been possible without contributions from across the sector and MAF is grateful to all those who participated.

The Delphi method was chosen as a means for drawing on the sector's collective knowledge and expertise. Respondents included farmers, processors, stakeholder groups, researchers, observers, government, and international contacts and customers. This method was seen as a way of looking beyond the immediate circumstances of the industry to identify medium and long-term views of the sector. Appendix A contains further details on the Delphi method.

The intention of the study was not to gain a statistically robust representative view of the meat sector as a whole, but rather an overview of respondents' informed opinions. Although the Delphi survey sought to look 10 to 15 years ahead, the results of this study, like any opinion-based study, are inextricably linked to perception of the present time and current sector conditions. This is something to be aware of when interpreting the results.

STRATEGICALLY IMPORTANT FACTORS

The study asked people what factors were most important for the sector in the next 10 to 15 years. It then asked (a) what change they desired in that factor and (b) what change they expected to see in that factor. Finally, they were asked how confident they felt that the expected change would in fact occur.



TABLE 2.1: TOP 10 FACTORS OF STRATEGIC IMPORTANCE IDENTIFIED IN DELPHI SURVEY¹

FACTORS OF STRATEGIC IMPORTANCE	RANK
Sheep and beef farm overall profitability	1
Investment in sector research and development	2
Meat processing companies' overall profitability	3=
The importance to sales from using "New Zealand" in branding	3=
Reliance on generating and growing new markets to sustain the meat sector	5=
New Zealand ownership and control of sheep meat distribution and marketing networks and firms	5=
Level of co-operation between NZ companies to develop and sustain marketing internationally	7
The reliance on producer and processor efficiency to sustain the meat sector	8
Use of forward supply contracts for supplying livestock to processors	9
Marketing expenditure as a proportion of total expenditure by the sheep and beef sector	10

Note

¹ The rankings were established after the second survey asked respondents to reassess their answers after seeing the results of the first survey.



IMPORTANCE

The Delphi survey identified the top 10 most important factors for the industry over the next 10 to 15 years by averaging responses to the first survey, then feeding these averages back to respondents in the second survey and asking for confirmation of their rankings. As a result of this process some overall rankings changed between survey one and two. The top 10 most important factors are listed in Table 2.1 and discussed in more detail later in this section and in Appendix B.

Respondents identified both overall farm and processor profitability, investment in research and development, and the use of “New Zealand” in branding as the factors of most strategic importance to the sector. While all of the factors are to some degree linked, future farm and processor profitability are intrinsically caused by changes in other factors and also impact to varying degrees on these other factors.

DESIRABILITY AND CONFIDENCE

In the first survey, respondents were asked to identify their *desired* future changes in these factors, that is, what they would like to see happen.

Respondents were also asked to identify the change that they *expected* to see happen, that is, what is most likely. A measure was then made of the *difference*

TABLE 2.2: THE GOOD NEWS: DESIRED CHANGE = EXPECTED CHANGE¹

CONFIDENT	LESS CONFIDENT
Increased prevalence of forward supply contracts	No discernable change to average size of processing plants
Increased use of “New Zealand” in branding	Reduced use of brokers and agents to market meat industry products
Increased reliance on producer and processor efficiency	A decreased proportion of beef that is sold in North America as manufacturing beef
Improved labour efficiency	Reduced proportion of total New Zealand sheep meat that is sold in Europe
Increased size of sheep and beef farms	A small increase in the proportion of processing capacity owned by co-operative companies
Increased price of sheep and beef farm land over the next 10 to 15 years	Increased New Zealand investment in offshore sheep farming
Improved environmental performance on sheep and beef farms	

Note

¹ The items in bold were among the top 10 strategic factors identified in the survey.

between desired and expected change. Respondents were also asked how *confident*³ they were that the expected changes would occur.

Table 2.2 summarises factors where expected change equals respondents' desired change, that is, what they think will happen is the same as what they want to happen.

Respondents had high confidence in some of their answers – these changes can be seen as largely predictable. Respondents had less confidence in other answers – while these factors could reasonably be ignored in any high-level analysis, they could have wildcard implications so should not be completely discarded.

Table 2.3 summarises factors where expected change differs substantially from respondents' desired change, that is, what they think will happen is different from what they want to happen. As above, respondents had high confidence in some of their answers and less confidence in others.

CONCLUSIONS ON STRATEGICALLY IMPORTANT FACTORS

Action is needed to address factors where the expected change differs substantially from respondents' desired change. This is because there is a large *difference* between what respondents want to happen and what they think is likely to happen. Factors with a large

TABLE 2.3: THE BAD NEWS: DESIRED CHANGE ≠ EXPECTED CHANGE¹

CONFIDENT	LESS CONFIDENT
A less-than-desired increase in sheep and beef farm profitability	A less-than-desired increase in research and development investment
A less-than-desired increase in reliance on growing new markets	A less-than-desired increase in processing companies' profitability
Reduction in size of national sheep flock more than desirable	A less-than-desired increase in co-operation between New Zealand meat companies in international marketing
A less-than-desired increase in processing plant modernisation investment	A less-than-desired increase in marketing expenditure as a proportion of total expenditure
A less-than-desired increase in processors' profits generated by further processed products	A less-than-desired increase in New Zealand ownership and control of distribution and marketing networks
	Increase in the proportion of farm debt to equity although respondents wanted a decrease
	Decrease in the importance of wool to net farm profit although respondents wanted an increase
	A less-than-desired increase in the proportion of beef sold to countries outside North America

Note

¹ The items in bold were among the top 10 strategic factors identified in the survey.

³ Low confidence may be expressed for a variety of reasons. Some factors are genuinely more difficult to predict than others. Respondents' confidence is also likely to be affected by their level of knowledge in particular areas. For example, those involved at the marketing end of the supply chain may have less knowledge of the on-farm factors, and therefore be less confident in these answers.

difference (that is, those in Table 2.3 that are in bold are also one of the top 10 most important factors) have particularly high strategic significance. These factors, and what different changes in them may look like, are used later in this report to differentiate between four future scenarios.

ADDITIONAL FACTORS

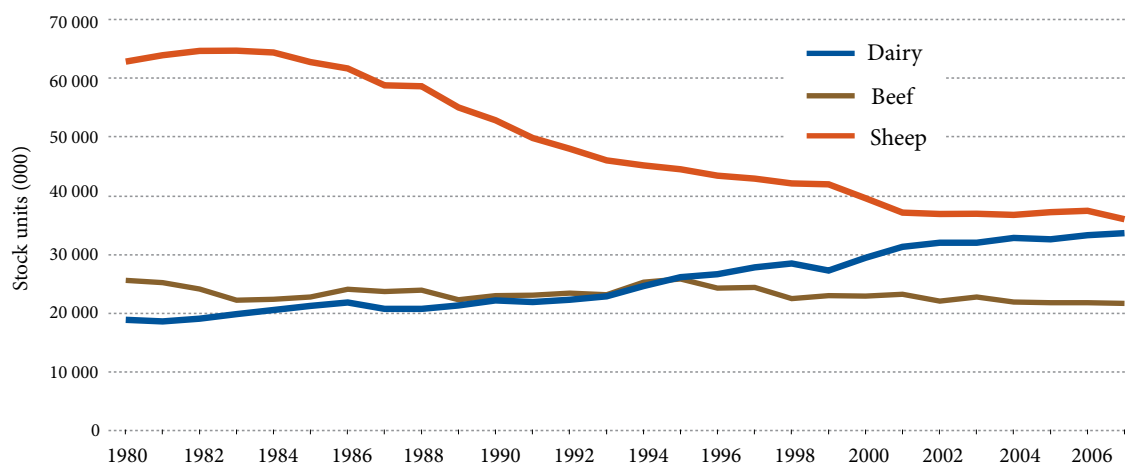
Some of the other factors identified as important, although not in the top 10, are discussed below.

SIZE OF SHEEP AND BEEF SECTOR

The land area under sheep and beef farming has recently reduced as a result of conversion to other land uses. National sheep and beef farm land area dropped 2 percent between 2002 and 2006 – from a total of 5.87 million hectares to 5.75 million hectares. Looking out over the next 10 to 15 years, 84 percent of respondents considered that a loss of at least 5 to 10 percent of farm land is likely and 45 percent of respondents considered that the loss of sheep and beef farm area will be at least 10 to 15 percent of existing land.

Figure 2.1 shows the change in New Zealand's actual livestock numbers over the last 25 years.

FIGURE 2.1: STOCK UNIT¹ TRENDS OVER TIME



Source: MAF.

Note

¹ A useful, although somewhat imprecise, way of combining different species and classes of livestock is to calculate stock units. The stock unit coefficients reflect live weights and production of the mid-1960s. Since then live weights and production outputs per breeding animal have increased and, while relativity between coefficients might be reasonably indicative today, their absolute level is understated. One stock unit may be about 1.3 today. Livestock numbers measured are numbers of breeding animals.

The Delphi survey responses indicate that sheep numbers may decline more than the total land area under sheep and beef farming.

Respondents considered that this downward trend in sheep numbers will largely continue, albeit at a slower rate. Responding to a question on likely national sheep numbers, 71 percent of respondents expected sheep numbers will decrease by at least 10 to 20 percent – down to between 30 and 34 million sheep – while 96 percent predicted a decrease of up to 10 percent⁴.

The Delphi survey responses indicate that sheep numbers may decline more than the total land area under sheep and beef farming. This could be due to one or more of the following reasons:

- › continued productivity improvements allowing the sector to carry reduced numbers of breeding animals;
- › a greater proportion of the industry becoming extensive⁵ sheep and beef farms – this is consistent with the loss of intensive finishing farm land to other land-uses;
- › individual farms becoming more extensive – a potential lower stocking rate may be a response to increased feed risk from extreme climatic conditions and/or the need for a reduced environmental impact;
- › the ratio of sheep to beef on mixed livestock farms changing in favour of beef.

Respondents considered that total beef numbers would be much more stable:

- › Half expected the national beef herd to be within 5 percent of present.
- › Most of the remainder expected an increase or decrease within 5 to 10 percent.

While the 2007 national beef herd consists of 4.4 million animals, the total dairy herd accounts for another 5.1 million animals. The dairy sector contributes substantially to the beef sector directly or indirectly through the supply of cull cows and bobby calves. Over half (59 percent) of respondents expect beef production sourced from the dairy sector to grow from 65 percent in 2007 to between 70 and 80 percent of total beef over the next 10 to 15 years.



⁴ The national sheep flock was estimated to be 38 million at the time of the survey.

⁵ Extensive farming (as opposed to intensive farming) is a low-input system of farming that is conducted on vast areas of land with relatively low productivity.

Environmental management controls were identified as an important challenge and opportunity for the sector.

TABLE 2.4: ENVIRONMENTAL COMPETITIVE ADVANTAGE

WILL ON-FARM ENVIRONMENTAL PERFORMANCE BE A COMPETITIVE ADVANTAGE FOR NEW ZEALAND IN 10 TO 15 YEARS?	PERCENTAGE OF RESPONDENTS
Yes – across all markets	69
Yes – in Europe only	12
Yes – in some other markets only	12
No – not in any markets	7

Source: MAF.

FARM ENVIRONMENTAL PERFORMANCE

Environmental management controls, either through regulation or to meet market requirements, were identified as an important challenge and opportunity for the sector. When asked whether on-farm environmental performance would improve over the next 10 to 15 years, 91 percent of respondents thought that it would. Respondents clearly considered that this improved on-farm environmental performance will be a competitive advantage for New Zealand producers, as shown in Table 2.4. Improved environmental performance is also likely to be necessary due to increasing pressure on New Zealand's natural resource base and New Zealand society increasingly expecting that agriculture will reduce its impact on the environment.

Respondents generally expected that the future sector will see more environmental controls than at present. Figure 2.2 summarises respondents' expectations for environmental controls on certain aspects of the meat industry in 10 to 15 years (answers were able to vary between voluntary and mandatory requirements). Areas that are expected to see a substantial amount of future mandatory controls include:

- › stricter controls on processing plant discharges of water;
- › limits on stream and ground water abstraction;
- › on-farm animal welfare management plans;
- › on-farm nutrient budgeting.

FURTHER FINDINGS FROM THE DELPHI SURVEY

Respondents were also asked a variety of other questions. A number of interesting findings are summarised below. Appendix B contains further discussion.

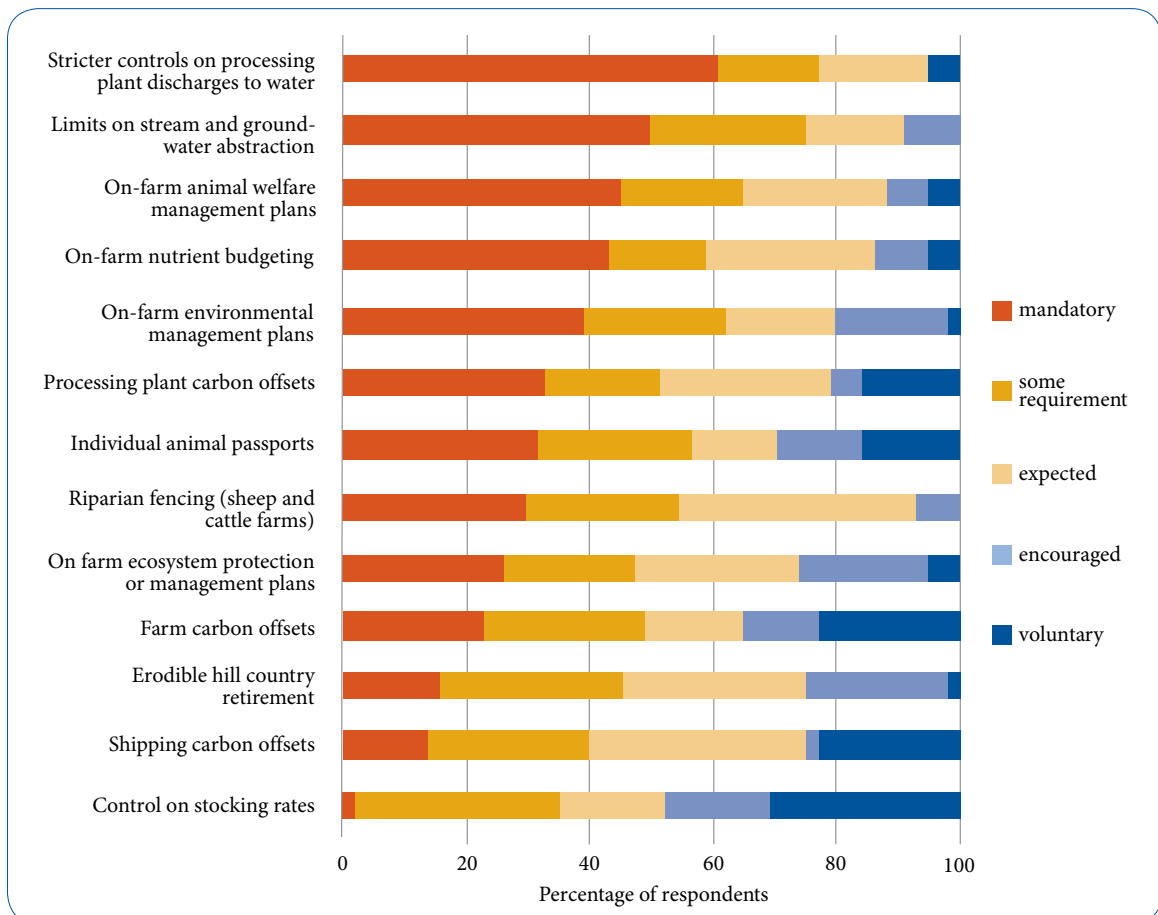
DRIVERS OF PROFITABILITY

Respondents were asked to identify the most important drivers for improved on-farm and processor-level profitability.

The three most important drivers for on-farm profitability were identified as follows:

- › **HIGHER GLOBAL MEAT PRICES:** Largely an external driver – a function of global demand and supply. Respondents were concerned about the sector’s exposure to international prices and competitors.
- › **HIGHER PRICES PAID FOR NEW ZEALAND MEAT COMPARED WITH INTERNATIONAL COMPETITORS:** This implies that New Zealand meat will be embedded with extra value compared with products from international competitors. This may be due to New Zealand’s food safety and disease-free reputation, product branding or more sophisticated verifiable attributes in areas such as environmental and social sustainability.
- › **IMPROVEMENTS IN ON-FARM EFFICIENCY:** The meat sector will continue to strive for improvements in productivity.

FIGURE 2.2: ENVIRONMENTAL CONTROLS ON THE SECTOR





The two most important drivers for processor-level profitability were identified as follows:

- › **CO-ORDINATION/CO-OPERATION THROUGHOUT THE VALUE CHAIN:** This is likely to include both horizontal and vertical co-ordination. Horizontal co-ordination may include a higher level of co-operation between New Zealand companies to develop and sustain marketing internationally. Vertical co-ordination may include greater use of strategic relationships and a move away from the spot market⁶. Respondents clearly identified that unattractive contract prices were the main barrier to farmer uptake of procurement contracts, and that farmer preference for spot markets was the second most important factor.
- › **INDUSTRY RATIONALISATION AND/OR CONSOLIDATION:** Changes to industry structure may be required if the size of the sector reduces. Alternatively, certain commercial strategies will probably lend themselves to changes in industry structure.

Also identified as important for processor profit, but to a lesser degree, was investment in developing new markets and/or products. While investment in developing new markets was seen as important for the fortunes of the industry, investing in developing traditional markets was not considered as being a major driver for profitability.

EXPECTED FUTURE MARKET SHARE

Respondents' expectations of future export markets identify a potential increase in the proportion of sheep meat going to the Middle East/North Africa and to China (and potentially Russia and India). Respondents believe New Zealand will rely less on exports to the European Union (EU) and to a smaller extent

TABLE 2.5: EXPECTED PROPORTION OF SHEEP MEAT EXPORTS BY VALUE IN 10 TO 15 YEARS

PROPORTION OF TOTAL SHEEP SALES	CURRENT (%)	10–15 YEARS (AVERAGE %)	STANDARD DEVIATION ¹
European Union	64	55.1	8.6
Middle East and North Africa	6	15.8	3.6
China	3	7.3	2.9
North America and Mexico	14	9.0	3.1
Japan	2	2.6	1.2
Other (including Russia and India)	12	10.2	5.0

Note

¹ Standard deviation is a measure of the dispersion of individual answers from the mean. Generally speaking, the higher the standard deviation, the lower the degree of certainty.

⁶ The spot market is characterised by transactions that have immediate effect, rather than, say, agreeing to a contract with a delivery rate at some time in the future.

North America (Table 2.5). The expected reduction in the proportion of sheep meat exports to the EU is relatively uncertain. No significant changes in market share are expected for beef exports (Table 2.6). These views are broadly consistent with some of the broad trends in population, income growth and forecast global demand identified later in this report.

TABLE 2.6: EXPECTED PROPORTION OF BEEF EXPORTS BY VALUE IN 10 TO 15 YEARS

PROPORTION OF TOTAL BEEF SALES	CURRENT (%)	10–15 YEARS (AVERAGE %)	STANDARD DEVIATION
United States and Canada	47	44.3	6.8
South Korea	11	11.4	2.2
Japan	10	10.6	2.2
Taiwan and ASEAN ¹	18	19.3	3.9
European Union	6	6.8	3.4
Other (including Russia and India)	8	8.5	4.1

Note

¹ ASEAN is the Association of South East Asian Nations.

INNOVATION INVESTMENT

The reliance on producer and processor efficiency to sustain the meat sector was ranked as the eighth most important strategic factor, whereas respondents identified the need for increased investment in research and development as the second most important. The importance placed on research and development investment is consistent with a strong recognition of innovation more broadly⁷ in the survey.

For instance, respondents also considered the following factors to be of future importance:

- › Processor investment into market and/or product development.
- › Improved on-farm environmental performance.

While productivity improvements will be important to remain competitive, the sector's future clearly lies in creating more value in its products, rather than competing on price alone.

MAF also considers that human capability is a vital component of the sector's investment in innovation. Challenges exist in attracting labour right through on-farm labour to

⁷ Research and development, although important, are not the sole activities associated with innovation. The "innovation value chain" comprises a suite of complementary activities, including: education and training; research, science and technology; technology transfer and product development; commercialisation; and market development. This value chain is not linear and innovation results from complex interactions between different components. Successful innovation systems require alignment and co-ordination between all of the constituents involved.

The sector is adept at identifying both challenges and opportunities, but less confident about its ability to fully exploit them.

processing workers to top management. A sector so important to the New Zealand economy needs to be able to attract the best and brightest. Investment in people can lift the skill base in the industry, and attract and retain top people who can then help drive the sector forward.

MARKETING

Most of the identified factors of strategic importance could be portrayed as either an opportunity or a challenge. This duality is especially relevant in marketing. Respondents generally agree that value can be added at the marketing end of the business. Some of the mechanisms that the sector could employ include a greater proportion of expenditure on marketing, increased ownership or control of marketing and distribution channels, more use of “New Zealand” in branding and a higher level of co-operation between companies in international marketing. None of these can be seen as a single solution, nor are options limited to this subset of choices. Indeed it is apparent that, while some change in marketing is required, the exact change is likely to differ in different companies and for different products.

POTENTIAL BIOSECURITY INCURSION

Most of the Delphi survey respondents agreed that New Zealand would probably have a significant biosecurity incursion in the next 10 to 15 years. Increased global movements of goods and people present challenges for all countries in maintaining biosecurity. Respondents also generally agree that the control methods and procedures are good and improving, so that the incursion would be contained and controlled. Nonetheless, respondents disagreed about the incursion’s significance on exports, ranging between the following extremes:

- › produce from containment areas would be isolated, while exports from other parts of the country would continue as usual;
- › major controls on all imports from New Zealand could lead to a six-month period of disruption, at least; New Zealand’s reputation would suffer, leading to reduced ability to market.

These diverse views suggest that the impacts could differ for different marketing and sales strategies: commodity traders expect to continue to maintain throughput, albeit at low prices, while niche marketers may lose comparative marketing advantage, forcing lower prices – both immediately post-incursion and potentially well into the future.

A major food safety scare could possibly have similar impacts on the sector’s

reputation. Supply chain management and verifiable traceability systems could reduce the risk and impact of any such occurrences.

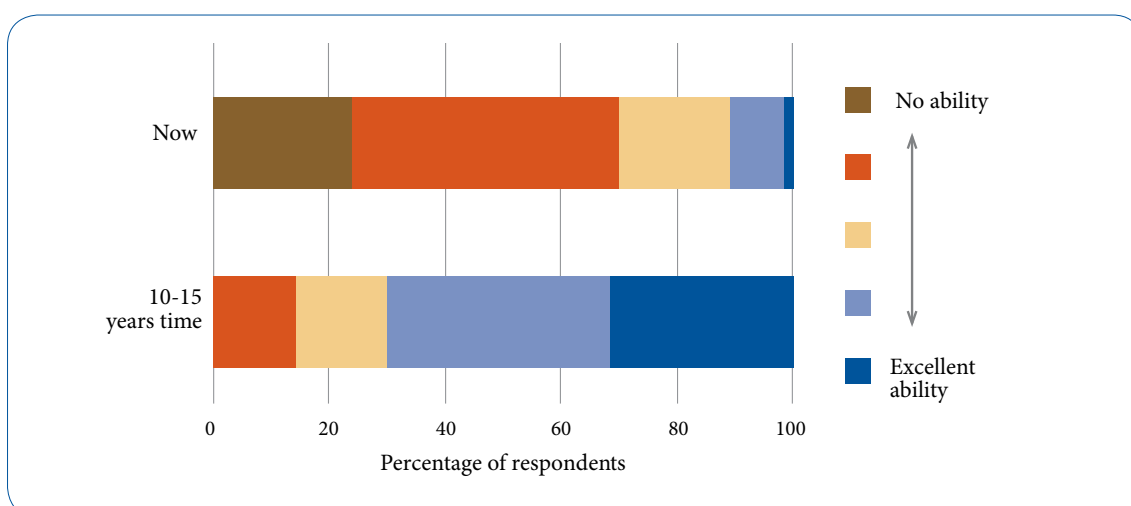
FUTURE STATE OF THE SECTOR

Most respondents were optimistic in general about the long-term future of the sheep meat and beef sector, despite many of their specific expectations being negative. Two-thirds of respondents agreed the sector would be a good investment in 15 years (a capstone question intended to summarise their views), while a further quarter neither agreed nor disagreed.

The sector is adept at identifying both challenges and opportunities, but less confident about its ability to fully exploit them. Notwithstanding this, the sector appears to be more optimistic for the future than they are in the present. Respondents were asked their opinions on the sector's ability to meet challenges and take advantage of opportunities now and in 15 years. Generally, the sector's future abilities were considered better than its current abilities. This could reflect either general emotion-based optimism or a real expectation based on analysis. The Delphi survey doesn't allow us to distinguish between these possible explanations.

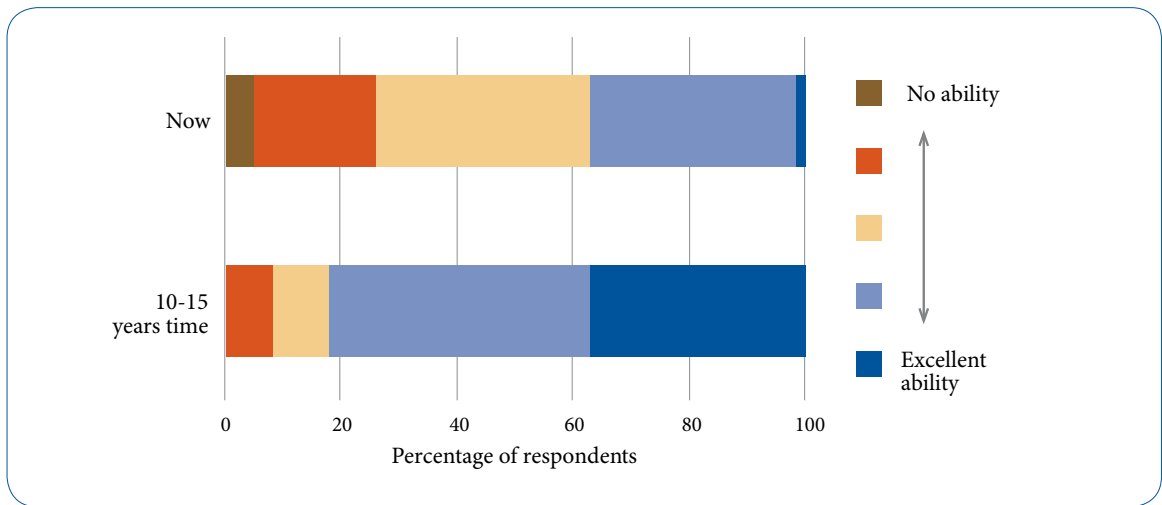
For instance, respondents considered that the sector will have greater future ability to meet challenges from a strong New Zealand dollar (Figure 2.3). This may be due to, say, increased innovation and marketing investment leading to the sector creating and capturing more value. Respondents were not, however, confident in the sector's ability to undertake the desired increase in investment in these areas, making it difficult to

FIGURE 2.3: SECTOR'S ABILITY TO MEET CHALLENGES FROM A STRONG NZ DOLLAR NOW AND IN 15 YEARS



ascertain the source of this optimistic future. In contrast, the sector's ability to take advantage of environmental, ethical and food safety attribute opportunities (Figure 2.4) can be clearly linked to respondents' confidence in improved on-farm environmental performance.

FIGURE 2.4: SECTOR'S ABILITY TO TAKE ADVANTAGE OF ENVIRONMENTAL, ETHICAL AND FOOD SAFETY ATTRIBUTE OPPORTUNITIES NOW AND IN 15 YEARS



MAJOR CONSTRAINTS TO THE FUTURE SUCCESS OF THE SECTOR

Respondents saw the sector's culture (87 percent agreed) and structure (76 percent agreed) as major constraints to the sector. The culture and structure of the industry is to some extent the consequence of the competitive industry environment where industry participants respond to the economic drivers, particularly the need to maximise throughput.

However, a culture may become ingrained within companies and, by extension, within New Zealand's sheep meat and beef industry. For instance, in the meat industry, we can see collaboration in some areas but much less of an appetite to work together in other areas. The intensely competitive nature of the sector's procurement and export markets may possibly foster a certain adversarial culture in the sector. The perpetuation of this adversarial culture may lead to a less-than-optimal level of collaboration in areas such as research and development and market development, where it may be otherwise economically rational to collaborate.

The intensely competitive nature of the sector's procurement and export markets may possibly foster a certain adversarial culture in the sector.

Cultural constraints are unlikely to be limited to the processing sector. On-farm decisions and farmers' relationships with processors significantly influence the success of the sector. As a generalisation, farmers' short-term price maximisation behaviour results in the predominance of spot market relationships between farmers and processors. While farmers may benefit in the short-term from overcapacity in the processing industry, because it provides them with more power in the supplier-processor relationship, this may not be in their longer-term interests. Overcapacity may reduce processors' ability to make sufficient returns to enable them to invest in areas that could improve future returns to the sector. Short-term profit maximisation may be at the expense of medium-term viability.

Farmers seem reluctant to commit to longer-term contractual relationships with processors, despite those relationships potentially benefiting both parties. It is difficult to ascertain to what extent this reluctance is simply farmers responding to incentives (for example, spot prices may provide better returns for farmers) or whether, as identified by respondents, cultural constraints have a significant impact (for example, a lack of trust between farmers and processors).

SUMMARY CONCLUSION

The Delphi survey results could be summarised as follows:

- › Respondents have a clear vision for the sector in 10 to 15 years; the vision is of a economically and environmentally sustainable industry that invests in research and development, has a greater focus on the market, and is more co-ordinated across the value chain.
- › Respondents are less certain that this vision can be achieved.
- › They are confident, however, that in the future the sector will be better placed to meet challenges and take advantage of opportunities than it currently is.



