# Agri Leaders Wanted EDUCATION IN AGRICULTURE

The Red Meat Industry CHALLENGES AND OPPORTUNITIES FOR THE FUTURE

# Contents

Context
Prior knowledge and links to students' understanding and interests
Time frame
Learning intentions
Learning objectives
Curriculum links
Key understandings
Resources
Questions to support inquiry learning 9
Year 9 Economics activities10Activity 1: Economic terms and vocabulary.Activity 2: A big customer.Activity 3: From farm to table.Activity 4: Interdependence and sustainability
Year 10 Economics activities15Activity 1: Economic terms and vocabulary.Activity 2: Creating a flow-of-income diagram.Activity 3: Analysing flow of income.Activity 4: Using economic data to measurethe contribution of the RMI to the economy
Year 9 Business enterprise activities
Year 10 Business enterprise activities.26Content explored in the activities

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**EDUCATION** 

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The New Zealand Red Meat Sector has always been a principal driver of New Zealand's economy, generating nearly \$8 billion annually in export earnings and forming the basis of the visual and social landscape of New Zealand.

The Meat Industry Association of New Zealand and Beef + Lamb New Zealand initiated the development of this sector strategy to identify ways in which the profitability of the red meat sector can be increased sustainably, and re-investment in the industry can be promoted.

Source: Meat Sector Strategy Report

# Context

This teaching and learning resource supports teachers to create learning opportunities for students studying within the social studies curriculum. It will introduce the study of business and economics to students in years 9 (Level 4) and 10 (Level 5), through the context of the red meat industry (RMI), with specific reference to the beef and lamb industry.



# Prior knowledge and links to students' understanding

This resource builds on students' interests through activities that focus on their roles as stakeholders within the RMI. Students do not need to have prior knowledge of the economics or business learning areas. This resource can lead to further study in economics and business or entrepreneurial studies at year 11 and beyond.



# **Time frame**

At year 9 this resource is designed to be used over 9 periods, based on three teaching and learning sessions per week, including some additional study at home.

At year 10 it is anticipated that the separate courses for economics and business could cover an additional 3–4 weeks in total.

The unit provides opportunities for students to sample the content and methodology of a social science subject before beginning full-time NCEA Level 1 study. Preliminary summative assessment opportunities have been included for teacher use in both economics and business at year 10 level.



# Learning intentions

#### Social studies: Year 9

Students will:

- develop knowledge and understanding of economic and business concepts as part of a social studies programme
- understand how innovation creates opportunities and challenges for people, places and environments and how students can see themselves as entrepreneurs
- understand how economic decisions impact on communities and people.

#### **Business: Year 10**

Students will explore the concept of entrepreneurship by investigating examples of New Zealand innovation and collaboration in fibre and meat products to understand the challenges and opportunities facing the RMI.

#### **Economics: Year 10**

Students will build on their economics knowledge from year 9 through an introduction to the flow-of-income model, showing how the RMI contributes to the New Zealand economy and links with other sectors of the economy in New Zealand and overseas.

# **Achievement objectives**

#### **Social sciences**

Level 4	Students will gain knowledge, skills, and experience to understand how exploration and innovation create opportunities and challenges for people, places, and environments.
Level 5	<ul> <li>Students will gain knowledge, skills, and experience to:</li> <li>understand how economic decisions impact on people, communities, and nations</li> </ul>
	<ul> <li>understand how people's management of resources impacts on the environment and social sustainability</li> </ul>
	<ul> <li>understand how people seek and have sought economic growth through business, enterprise, and innovation.</li> </ul>

# **Curriculum links**

#### **Key competencies**

*The New Zealand Curriculum* identifies five key competencies. The activities in this resource provide opportunities for students to develop and practise these key competencies.

**Participating and contributing:** Students will develop an understanding of the opportunities and challenges faced by the RMI. They will gather financial information about market share and current and possible export markets to draw evidence-based conclusions and offer possible solutions to problems.

**Thinking:** Students will explore innovative solutions to some of the challenges that face the RMI, including competition from within New Zealand and overseas and the recruitment of future beef and lamb entrepreneurs.

**Using language, symbols, and texts:** Students will interpret and present economic and financial information.

**Relating to others:** Students will work collaboratively in groups to research information and solve problems.

# Key understandings

- Farmers have developed premium, value-added products for domestic and international consumers.
- RMI contributes significantly to New Zealand's economy and must meet the challenges and opportunities of operating in a global market.
- Innovation in the beef and lamb industry can contribute to an economically sustainable future for New Zealand.
- Production and productivity in the beef and lamb industry impacts on New Zealand's standard of living.
- Economic and environmental sustainability are interdependent in the RMI.
- There are a wide range of career options in the RMI.
- RMI contributes to to the fast food industry, which impacts on local communities.

# Resources

These resources support an introduction to this topic and are useful sources of information for the teaching and learning activities. The New Zealand Young Farmers team of Territory Managers are also available to provide a range of support to schools, using this topic as a context for learning. They can help you to locate guest speakers and farms to visit.

#### Meat in Focus

This pdf of a Meat Industry publication provides a useful overview of the meat industry. It covers its scale, markets, history and diversification in an accessible format suited to a student audience.

#### Unlocking Value – Meat Industry Brief

This pdf of a Meat Industry publication provides a practical introduction to New Zealand's meat industry (RMI). Topics covered include meat industry statistics, the meat industry workforce, environmental impacts, innovation in the industry, its contribution to scientific research and trade.

#### Beef and Lamb New Zealand

This website provides economic data and industry analysis to farmers. There is content that will support year 10 economics students to apply their knowledge to the context of the beef and lamb industry. The content covers the economic outlook for the beef and lamb industry, export markets, and the importance of exchange rates.

#### McDonald's New Zealand

Given the importance of the RMI to McDonald's (100% of the beef used in NZ burgers is sourced locally) this is a good context from which to develop engaging teaching and learning opportunities. This case study could support students to apply a critical lens to a business that impacts on their daily lives. Connections could be made to interdependence, innovation, critical citizenship and environmental sustainability.

#### Impossible Foods and Beyond Meat

These two websites are interactive and engaging. The concept of innovation and globalisation are linked to the learning outcomes for years 9 and year 10 students.

#### Ministry of Primary Industries and

Ministry of Business Innovation and Employment New Zealand government websites. While the resources may not be appropriate for independent use by students in years 9 or 10, the Primary Growth Partnership (PGP) graphic could be displayed in the classroom. This outlines the wide range of innovative research programmes being undertaken in NZ primary industries.

#### Radio New Zealand podcast interview with MEAT film maker David White Trailer for NZ documentary MEAT

Interview with Davis White about his documentary investigating where New Zealand meat comes from.

#### First Light Foods

Website of a New Zealand company adding value by growing grass-fed cattle to produce wagyu beef.

#### **Greenlea Meats**

Website of a NZ company that uses technology to provide product traceability and support health and safety regulations.

# Questions to support inquiry learning

- What is the Red Meat Industry (RMI) and why is it important to the New Zealand economy?
- · Who are the stakeholders in the RMI?
- How do these stakeholders interact with each other to create economic prosperity for New Zealand?
- How can economic models, such as the basic and complex circular flow of income model, be used to explain relationships between stakeholders?
- Why are entrepreneurs important to New Zealand's prosperity?
- What are the qualities and behaviours required of an entrepreneur working sustainably within the RMI?
- How can New Zealand entrepreneurs respond to globalisation through innovation?
- How does the government support innovative projects?



# **Year 9 Economics activities**

## Activity 1: Economic terms and vocabulary

Copy, laminate, then cut into segments the contents of the economic terms and vocabulary chart for use as a mix-and-match activity. Have the students match the vocabulary items with their definitions. In pairs they can then explain to one another how these terms relate to the RMI. This could be a formative assessment activity.

#### **Economic terms and vocabulary chart**

Vocabulary	Definition
Scarcity	The underlying concept behind economics is that all resources are scarce. RMI will always have to make choices as to how best to use their scarce resources.
Natural resources	Natural resources are provided by nature. New Zealand is fortunate to have an abundance of natural resources that can be cultivated or extracted.
Human resources	Human resources are the physical and intellectual activities of people. New Zealand's population allows for a range of human resources to be employed in creating and developing value from our natural resources.
Capital resources	Capital resources are goods produced and used to produce other goods and services. In the RMI, capital expenditure allows farmers to add significant value to natural and human resources through applying research and technology to boost productivity and add value to products.
Supply chain	A supply chain is a sequence of processes for the production, handling, transport, and distribution of goods. Supply chains can include physical links, such as transport, and virtual links, such as communication. Supply chains co-ordinate and manage the production process to ensure that the right product is created and transported to the right place at the right time.
Entrepreneur	An entrepreneur is a person who develops new business opportunities. Sometimes entrepreneurs will take financial risks in the hope of making a profit from their business activities. The RMI provides much scope for entrepreneurs.
Primary industries	Primary industries are those involved in the extraction and collection of natural resources. Farming, forestry, horticulture, viticulture, and fisheries are primary industries.
Secondary industries	Secondary industries are those that process the raw materials of the primary industries into food or manufactured goods.
Tertiary industries	Tertiary industries are the service industries that deliver the products of the primary and secondary industries to customers. They include the transport and retail industries.
Interdependence	A concept indicating that primary, secondary, tertiary and quaternary sectors, rely on each other to drive economic activity and add value in the production process of the RMI.
Stakeholders	Groups of people who have a stake in a business but who are not directly part of the supply chain are called stakeholders.
	RMI stakeholders include rival competitor farms, the business community, other primary industries, such as dairy and the government. Importers, exporters and foreign investors may be stakeholders. Citizens are stakeholders in RMI as the industry impacts on the natural environment. Consumers who purchase products of the RMI are also stakeholders.

## Activity 2: A big customer

Use the questions below to create a quiz activity (Kahoot! is a source of templates) about the role of McDonalds as a RMI customer. Refer to the website section, Where Your Money Goes, on the McDonald's New Zealand website.

Quiz
Question 1: How much did New Zealand McDonald franchises spend on New Zealand produce in 2015? Answer: \$202 million
Question 2: How much beef did New Zealand McDonald franchises use in 2015? Answer: 5.1 million kilograms
<b>Question 3:</b> How much of this meat did New Zealand McDonald franchises use in its Angus burgers? <b>Answer:</b> 514,000 kilograms
Question 4: What percentage of McDonald's total meat use in New Zealand was Angus beef? Answer: 10%
<b>Question 5:</b> How much did New Zealand producers export to MacDonald's markets in other countries?
Answer: \$211 million
<b>Question 6:</b> Name two geographical areas New Zealand producers exported to for McDonald's. <b>Answer:</b> USA and the Pacific Islands



### **Activity 3: From farm to table**

Where does my Big Mac come from?



# Suggested questions for discussion or class activities

- What happens to the animal once it has left the farm?
- How is the meat processed into a burger pattie?
- Why is the transport of processed and uncooked meat patties an expensive process?
- New Zealand meat is considered to be of a very high quality. Why is this important for RMI stakeholders?
- The lettuce in a burger is usually a more expensive ingredient than the meat patty. Why is this the case?
- The RMI provides meat for Big Mac burgers and for higher-priced burgers, such as the Angus burger. Why do McDonald's charge a higher price for an Angus burger than for a regular or a Big Mac burger?
- Investigate how other fast food manufacturers in New Zealand, such as Burger King, Burger Fuel and Carl's Junior, work with the RMI as part of their supply chain.



## Activity 4: Interdependence and sustainability

Pose these questions to prompt group or class discussions.

Define the term 'interdependence'.

Why is the interdependence of the primary, secondary, and tertiary sectors important to the RMI?

What is environmental sustainability?

Why is it critical that stakeholders in the RMI take environmental sustainability into account when they operate their businesses?

How might McDonald's operations benefit when the RMI demonstrates environmental sustainability.

- What is economic sustainability?
- Why is it critical for agricultural communities that the RMI is economically sustainable?
- If the RMI is not economically sustainable, how would this impact on agricultural communities?
- If the RMI, meat processors, and retailers did not collaborate with each other, how would their customers be affected?

#### **Triple bottom line**

To be successful in today's marketplace businesses must ensure that they meet the triple bottom line (TBL). The TBL is a framework that incorporates three dimensions of performance – social, environmental and financial. It is not acceptable for businesses to focus solely on profit. They must also focus on their effects on people and on planet Earth.

Have the students investigate how the RMI addresses these three dimensions. They can then present their findings in an infographic for class display.

#### Next steps

When this introductory unit on economics is completed, the class can progress to the year 9 unit on business enterprise.



# Year 10 Economics activities

## Activity 1: Economic terms and vocabulary

Students will learn the meanings of the economic terms and vocabulary set out in the the chart. They will need to understand and use the subject-specific vocabulary of economics in these activities. Copy, laminate, then cut into segments the contents of the economic terms and vocabulary chart for use as a mix-and-match activity. Have the students match the vocabulary items with their definitions. In pairs they can then explain to one another how these terms relate to the RMI. This could be a formative assessment activity.

#### **Economic terms and vocabulary chart**

Vocabulary	Definition
An economy	An economy is the result of the interaction between consumers, producers, government, and financial institutions. This network creates wealth through the production of goods and services.
Gross Domestic Product (GDP)	GDP is a measure of the total output of an economy in a given time period, usually one year.
Economic growth and the standard of living	Any positive change in GDP is viewed as a positive for an economy and is defined as economic growth. The standard of living is a measure of economic prosperity. Economic growth leads to an increase in living standards. As a significant contributor to the GDP of New Zealand, increases in the economic growth of the RMI will lead to improvements in the standard of living.
The circular flow of money	This is the name of a model that shows how money is circulated throughout an economy.
Financial sector	The financial sector is made up of banks and other institutions that hold savings and provide funds, loans, and other financial services.
Overseas sector	The overseas sector is made up of overseas businesses and consumers who trade directly with New Zealand businesses.
The New Zealand Government	The New Zealand Government collects taxes on business profits. It also provides financial guidance to businesses.
Households	Households are the consumers who purchase goods and services and who work in the industry sectors.
Firm	This is another word for a business organisation. Firms or businesses may be linked to each other through their supply chain. Businesses can act as a supplier or as a customer to other businesses.
Injection	An injection is an increase in funds into the circular flow of money. It generates increased economic activity leading to higher growth. Investments, exports receipts, and government spending are viewed as injections.
Withdrawal	A withdrawal is a decrease in funds in the circular flow of money. It generates a slowdown in economic activity, leading to slower growth. Taxes, import payments, and savings are viewed as withdrawals.

## Activity 2: Creating a flow-of-income diagram

To show the significance of the RMI within the wider context of the New Zealand economy, the class can explore an economic model known as the circular flow of income.



A basic example of the circular flow of income

Source www.boundless.com



An example of a more complex flow of income diagram

Source: Wikipedia

Have the students in pairs create their own basic flowof-income diagram, showing the RMI and its connections to other businesses (suppliers or retailers), the government, and financial institutions. They do not need to include the overseas sector.

#### 'What if? analysis'

Using the flow-of-income diagram, students can investigate what will happen to economic activity should:

- the RMI invest or increase its output – how will the increase in economic activity impact on households and other firms in the supply chain, including secondary and tertiary industries? Have the students explain, using economic terms, the implications for economic growth and the standard of living in the country over time.
- the RMI be forced to reduce expenditure or decrease output – how will the decrease in economic activity impact on households, other firms, and secondary and tertiary industries in the supply chain? Have the students explain, using economic terms, the implications for economic growth and the standard of living in the country over time.

## **Activity 3: Analysing flow of income**

Use the complex flow-of-income diagram to broaden students' understanding of the role of the RMI within the New Zealand economy and abroad.

#### 'What if? analysis'

The RMI launches a new strategy to compete in global markets.

- How will the RMI's actions affect employment opportunities for households, economic growth, and the standard of living in New Zealand?
- · Could this strategy have some negative impacts? What might they be?
- How might this new strategy affect the price of hamburgers in New Zealand? (Consider the concept of scarcity.)



# Activity 4: Using economic data to measure the contribution of the RMI to the economy

This activity could be carried out as a summative assessment where students apply and consolidate their knowledge.

Have the students explore the Beef and Lamb NZ and Industry Insight – Westpac websites.

These sites have a wealth of information that supports year 10 economics activities.

Have the students focus on:

- the economic outlook for the beef and lamb industry
- export markets
- employment in the RMI.

Students could present their findings as a group report, with each member taking responsibility for one aspect of the RMI's contribution to the economy. The report should cover these topics:

An overview of the industry

- types of farming in the RMI
- · regional variations in farming practice
- · changes in farming methods 2006–2016

An overview of the livestock farmed in New Zealand

- sheep
- beef
- deer
- dairy
- goats
- pigs.

The value of New Zealand's meat exports

- monetary value of our exports
- export markets
- changes in export markets 2006–2016

The value of New Zealand's wool exports

- contribution to exports
- export markets.



# Year 9 Business enterprise activities

## **Content explored in the activities**

#### **Business content**

Entrepreneurship in New Zealand and the importance of small businesses to the New Zealand economy. Over 60% of New Zealand businesses have no employees. This indicates that the majority of businesses are run as sole traders.

Sole traders as entrepreneurs

The role and features of an entrepreneur

Entrepreneurial qualities that can lead to successful risk-taking:

- Determination
- Resilience
- · Investigating new opportunities where others may not
- · Seeking and financing innovation.

## **Activity 1: Exploring self-employment**

Have the students consider whether they would like to set up their own business. Have them explain in detail why or why not this is an option they would like to explore. They could do this in small group discussions or in writing.

Have them list their reasons under headings, such as:

- Personal (ambition, independence, utilising personal skills, flexible working environment, autonomy, trying out innovative ideas)
- Family and whānau (creating employment opportunities for whānau or community, ability to combine work and family responsibilities, work/life balance, creating a family legacy)
- Financial (exploiting a potential profitable opportunity in an existing or new market, trying out innovative ideas).

## Activity 2: Working as a sole trader

Students can investigate the opportunities and challenges of working independently as a sole trader. This could be tied in with a farm visit or an interview with a farmer. Alternatively, a person working in the primary industries could be invited to speak to the class.

Challenges of a sole trader	Opportunities
Start-up finance is required. Where will this come from?	Independent decision making gives the sole trader greater control in the running of the business.
Long hours of work with the sole trader taking all the responsibility.	Successful risk taking could result in high profits that do not have to be shared.
The sole trader will experience unlimited liability should the business not become economically sustainable.	

Level 1 Business Studies Assessment for Year 9/10 is a Level 1 NZQA unit standard. Demonstrate knowledge of innovation and entrepreneurship in business contexts



## Activity 3: How to become an entrepreneur

Have the students research the qualities that make an entrepreneur.

Start with a brief investigation of the entrepreneur, Nadia Lim. The class can read her story and the story of her enterprise, My Food Bag.

Through class discussion the students can then consider these questions as the basis of an inquiry into entrepreneurship.

- What enterprising qualities and behaviours does Nadia Lim demonstrate?
- Did she take any risks that did not pay off?
- How did she show resilience in the face of setbacks to her plans?
- Why did she decide to set up her own business?
- Once they achieved their goals of creating a sustainable or profitable business, did she continue to grow it? How?
- · What factors helped her to be successful?
- · How has she shown innovation?
- Have her innovations had positive or negative impacts on planet Earth?

Students can then choose two New Zealand and two global entrepreneurs to study, basing their study on the questions covered in the class discussion.

Examples of New Zealand-based entrepreneurs include:

- Sam Morgan Trade Me
- Steve Dunstan Huffer Clothing,
- Sir Stephen Tindall The Warehouse
- · Sir William Gallagher Gallaghers
- Examples of global entrepreneurs include:
- Mark Zuckerberg Facebook
- Steve Jobs Apple
- Bill Gates Microsoft
- Evan Spiegel Snapchat
- Anita Roddick The Body Shop
- Elon Musk Tesla.



## Activity 4: Identifying opportunities and challenges in the RMI

The students can investigate working within an established business that provides opportunities for independent decision making.

Working as an independent farmer within the context of an established business can reduce the risks associated with creating and operating a new business in a competitive, global market. Invite a farmer or a person working within the supply chain of the RMI to speak to the class about the challenges and opportunities of working in the primary industries.

Opportunities for independent farmers within the RMI	Challenges of working in the RMI
A network and community of knowledge available to new farmers Industry support and training from the RMI.	Industry-level decisions may conflict with personal goals.
Marketing strategies, the supply chain and distribution are managed on an industry-wide basis.	Some profits may have to be shared within the industry.

Students can use a SWOT analysis to examine the strengths, weaknesses, opportunities and threats that could arise when working as an independent farmer within an established industry.

<b>Strengths</b>	Weaknesses
These come from within the business. They	These come from within the business. They
are an internal perspective and highlight	are also an internal perspective and highlight
what the business has to offer.	concerns about how the business functions.
<b>Opportunities</b> These are external influences that could benefit the farmer. They occur outside the farm. Examples might include growing markets, expanding economies, price hikes, and the availability of expert advice.	Threats These are external influences that could harm or devalue the farming business. They occur outside the business. Examples might include increased competition due to the global economy, government or industry regulations and environmental issues.

Students in groups or in pairs can create a table identifying the strengths, opportunities, weaknesses and threats that exist in the RMI.

## Activity 5: Investigating jobs in the RMI

There are a wide range of employment opportunities available within the RMI. Have the students investigate some of these opportunities.

They can start their research by scrolling through the jobs database for the primary industries on the Careers New Zealand website. Have them choose one job from the database that would provide employment in the RMI and, using the information provided, design a leaflet that includes a job description for the job and outlines the level of training and experience required and the employment opportunities that are open to people doing this job. This exercise could be extended to students making contact with and interviewing on video a person who is working in the job. The videos can then be viewed by the class and used as prompts for a class discussion on employment opportunities in the RMI.



# Year 10 Business enterprise activities

## **Content explored in the activities**

#### Content linked to challenges and opportunities in the future

#### Innovation

Continuing innovation in production and marketing processes and product innovation enables the RMI to compete with other meat producing countries.

#### Globalisation

The integration of world markets. The global marketplace provides opportunities and challenges for the RMI.

#### Inquiry focus:

- · What is innovation and why is it critical for RMI's success in the global marketplace?
- What strategies do the RMI and its members need to consider to remain competitive and economically sustainable in the next 5–10 years?

## Activity 1: Exploring innovation in the Red Meat Industry

The Meat Industry Research and Innovation Fund (MIRIF) has identified four objectives to increase the profitability of the RMI.

- 1. Increased quality and shelf life
- 2. Improved processing productivity
- 3. New and higher value products
- 4. Safer food.

Have the students in groups investigate an area of innovation that meets one of these objectives. Students should focus on how this research or innovation will add value to the RMI. Suggested topics for investigation include:

#### **Robotics for Sheep meat processing**

#### Resources

- Ovine Automation
- Meat Industry Association Future Technologies

#### Genetics research in the RMI Resources

- · Beef and Lamb Genetics Progeny Tests
- Golden Times for Genetics Firm
- \$15m Sheep, Beef Genetics Research Boost

#### **The Deer Industry**

#### Resource

• The NZ Deer Industry

#### **Food Safety**

#### Resources

- Red Meat Industry Committed to Food Safety
- Food Safety Partnership to Protect \$50b Industry

## Activity 2: Investigating future foods

Have the students explore innovative projects that endeavour to produce meat or meat substitutes from cell culture and plant protein.

These websites www.culturedbeef.org and cultured meat introduce students to the concept of meat produced by cell culture.

These websites www.impossiblefoods.com and beyondmeat.com explain how new businesses are producing meat substitutes from plant protein. Have students in groups explore the potential benefits of these future foods. Allocate each group a specific context for their investigation. Contexts explored should include:

- Environment
- · Animal welfare
- · Feeding the world's population
- · Human health.

Have the groups present their findings to the class through oral presentations or an infographic.

Complete this activity by organising a class debate on the topic *Future foods are a major threat to New Zealand's Red Meat Industry*.



## **Activity 3: Globalisation and local markets**

The world is becoming increasingly interconnected as a result of communication technologies and expanding transport systems. Multinational corporations with subsidiaries in many countries have taken the place of national companies. New Zealand's economy is now part of a huge global economy based on international trade.

This global market presents many challenges to the RMI with increased competition from other countries, particularly those in South America.

The growth of international trade and the transport of food products around the world has resulted in the growth of the Local Food Movement. This movement is concerned with the environmental costs of food miles and the disadvantages faced by local farmers when they have to compete with international conglomerates, which have large scale operations.

Separate the students into two groups. Have one group investigate the effects of globalisation on New Zealand's exports while the other investigates the issues that have led to the growth of the Local Food Movement. Questions students consider might include:

- Is globalisation a gift to New Zealand farmers?
- What are the advantages of buying local food?
- Is the Local Food Movement a threat to New Zealand exporters, given that New Zealand is isolated from its markets?
- How can New Zealand farmers offset the environmental costs of food miles?
- How do traceability systems allow farmers to produce products for more high-end or niche markets?

Have each group present their findings to the class. Compile a class list of the opportunities and challenges presented by these two movements.

#### Resources

- Ministry of Agriculture and Fisheries, Meat: The future (pp. 49–55 Mega-trends affecting the future)
- Local Food Movement
- Food Miles
- Meat product traceability There's big value in it
- · British chain to stop selling NZ lamb
- UK supermarkets urged to stock more British lamb