Supporting Victoria’s Agriculture

Agriculture Victoria Strategy
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A message from the Minister for Agriculture

I am proud to present the Agriculture Victoria Strategy.

The Victorian agriculture sector is vitally important to the Victorian economy and to regional Victoria. The sector produces over $13 billion worth of milk, fruit, vegetables, meat, fibre, eggs and grains, and employs around 193,000 people in production and manufacturing. The sector also supports many more indirect jobs, in areas such as logistics, transport and advisory services. Most of these businesses and jobs are located in regional Victoria.

The Victorian Government has identified food and fibre as a priority industry sector with the potential to drive significant jobs growth, attract future investment and contribute to action on climate change. Agriculture also provides an opportunity for inclusive growth in rural Victoria. The government’s Food and Fibre Sector Strategy sets a vision for the sector in 2025. Its focus is on helping businesses to innovate, attract ideas and investment, capture market opportunities and improve freight, water and ICT infrastructure.

The Department of Economic Development, Jobs, Transport and Resources (DEDJTR) is committed to delivering strategies and actions which ensures ‘a productive, competitive and sustainable Victorian economy that contributes to a prosperous and inclusive society’.

This Agriculture Victoria Strategy responds to and aligns with these overarching strategies, describing a clear direction for us to work towards.

It challenges us to acknowledge and harness the diversity of agriculture and rural and regional Victoria and position the sector to become more globally competitive, innovative and resilient for future success.

Victoria has significant competitive advantages in food and fibre, including a diversity of products, a long history of excellence in research and development, a global reputation as a source of clean, safe food and fibre, established ties with growing Asian markets, good transport and export infrastructure, and strong safety and biosecurity systems. While continuing to support and strengthen these advantages, we will work together with industry on priority actions in six areas:

1. Trade and Market Access
2. Smart Agriculture
3. Smarter Regulation
4. Risk Management
5. Intensification of Agriculture
6. Animal Welfare

This strategy highlights where we are going. My challenge to you is to shape your efforts and projects to deliver against this platform for change and help to forge a strong and exciting future for agriculture in Victoria.

Thank you to the many stakeholders who have provided input to the development of the strategy. Agriculture Victoria is committed to working with industry, education institutions and other parts of government to enable the sector to capture opportunities, tackle challenges and better manage the risks and opportunities facing Victorian agriculture.

Hon Jaala Pulford MP
Minister for Agriculture
Agriculture Victoria, in its various forms, has a long history of growing and supporting the agriculture sector and supporting and enabling its related industries. Agriculture Victoria has opened up new markets, invested in science, research and extension to enhance productivity, mitigate and adapt to climate change and protect this growing sector from invasive pests and diseases.

Agriculture Victoria’s new strategy recognises the sector’s vital contribution to economic growth and its potential for enhancing social and economic wellbeing across Victoria. The plan provides direction and guidance for Agriculture Victoria’s activities, aligned with the Victorian Government’s aspirations for the agriculture sector and regional communities.

This strategy responds to economic, environmental and social drivers such as emerging markets, climate change, and changing consumer demands. It contributes to the Victorian Government’s goals of growing jobs and the economy, and the vision of a high growth, high value food and fibre sector set out in Victoria’s Food and Fibre Sector Strategy. The strategy does not identify all of DEDJTR’s work in the agriculture sector, for example our key operational and extension activities.

The strategy places strong emphasis on growth and employment in rural and regional communities. As such it aligns with DEDJTR Delivers - Strategic Plan 2016 and its overarching vision for a ‘productive, competitive and sustainable economy contributing to a prosperous and inclusive society’. It also aligns with the DEDJTR Outcomes Framework, which links DEDJTR’s activities with the benefits the department seeks to achieve for Victorians across six domains. The implementation of the strategy will be in keeping with the intent of DEDJTR Connects, our Organisational Development Strategy.

The strategy recognises that growing Victoria’s agriculture sector is vital to the economic and social prosperity of rural and regional communities across the state. Unlike the expanding services sector, which is likely to favour growth in metropolitan centres, agricultural activity underpins rural and regional Victoria. Agriculture provides many quality jobs on and off farm across rural Victoria. While the sector has a history of economic growth, there has been a gradual decline in the number of jobs. Demand from the emerging Asian middle class presents a major opportunity for growth in Victorian agriculture, with benefits flowing through to local economies, towns, businesses and households.

The strategy identifies a clear, targeted role for government in supporting and enabling industry to make decisions and investments that will grow the sector. It will also drive collaboration across the Victorian Government and with other Australian jurisdictions, industry and universities and educational institutions.
## Objectives

<table>
<thead>
<tr>
<th>What</th>
<th>Globally Competitive</th>
<th>Innovative</th>
<th>Resilient</th>
<th>Diverse</th>
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<tbody>
<tr>
<td>Position Victoria as a preferred global supplier of clean and safe food and fibre</td>
<td>Drive creativity and the adoption of new ideas to improve productivity and efficiency of agriculture supply chains</td>
<td>Build the capabilities and capacity to manage risks and challenges</td>
<td>Harness the diversity of Victorian agriculture and its communities</td>
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<tr>
<td>How</td>
<td>Increase domestic and export trade and attract investment in agriculture</td>
<td>Create an innovation system that drives the application of new ideas to improve agriculture and value-added products</td>
<td>Understand, influence, educate, inform and facilitate</td>
<td>Recognise and strengthen the capabilities and capacities of primary industries businesses and workers</td>
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<tr>
<td>Challenge</td>
<td>Maintaining existing markets, accessing new international markets, and attracting investment</td>
<td>Capturing the potential of emerging science and technologies, business models and investment</td>
<td>Fostering creative approaches to effectively anticipate and respond to risks, challenges and shocks</td>
<td>Accepting change and implementing new ideas and approaches</td>
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## Strategies and Priority Actions

<table>
<thead>
<tr>
<th>Domain</th>
<th>Strategy</th>
<th>Priority Actions</th>
<th>16</th>
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</thead>
<tbody>
<tr>
<td>Trade and Market Access</td>
<td>Maintain existing and facilitate new access to export markets</td>
<td>1   Gain access to new markets for Victorian agricultural produce</td>
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<td></td>
<td></td>
<td>2   Defend Victoria against loss of market access</td>
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<td>Smart Agriculture</td>
<td>Improve productivity through an innovation system that creates and applies new technologies and practices</td>
<td>3   Increase total investment in science through partnerships</td>
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<td></td>
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<td>4   Develop an ICT strategy for Victorian agriculture to harness technological advances</td>
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<td></td>
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<td>5   Develop a comprehensive agriculture innovation policy framework</td>
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<td>Smarter Regulation</td>
<td>Create a business environment with clear and responsive legislation and regulation that balances economic, environmental and social outcomes</td>
<td>6   Deliver contemporary legislative and regulatory reform</td>
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<td></td>
<td></td>
<td>7   Identify and pilot behavioural insights and other approaches to improve regulatory outcomes</td>
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<td></td>
<td></td>
<td>8   Drive best practice regulatory approaches</td>
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<td></td>
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<tr>
<td>Risk Management</td>
<td>Support agricultural industries managing transition, climate change and shocks to minimise economic, environmental and social impacts on rural and regional communities</td>
<td>9   Appoint the Rural Assistance Commissioner and develop a new model for delivering rural assistance</td>
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<td></td>
<td></td>
<td>10  Deliver research and capacity building programs that help farmers adapt to climate change</td>
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<td></td>
<td></td>
<td>11  Deliver research and capacity building programs that help farmers and the supply chain reduce emissions</td>
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<tr>
<td>Intensification of Agriculture</td>
<td>Support changing production systems and industry innovation through industry policies, access to information and strategic advice that recognise local impacts and underpin investor confidence</td>
<td>12  Implement the government response to recommendations by the Animal Industries Advisory Committee</td>
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<td></td>
<td></td>
<td>13  Work with stakeholders and proponents through the Agribusiness Development Facilitation model to improve the prospects of positive developments</td>
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<tr>
<td>Animal Welfare</td>
<td>Develop contemporary animal welfare policies, legislation and regulation that protect animals, recognises the social and economic importance of animals to our society, while supporting the agricultural sector’s ability to trade internationally and maintain their social licence</td>
<td>14  Establish a strategic action plan for animal welfare in Victoria which includes a culture of shared responsibility</td>
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<tr>
<td></td>
<td></td>
<td>15  Deliver a contemporary legislative and regulatory framework for animal welfare</td>
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</table>
Agriculture is important to the Victorian economy and rural and regional prosperity

While the nature of farming has changed dramatically in recent decades, the agriculture sector continues to make a major contribution to Victoria’s economic and employment growth.

In Victoria there are almost 31,000 farm businesses employing around 80,000 people operating across more than 12 million hectares of farmland. These businesses produce a variety of farm products, valued at over $13 billion and consumed throughout Australia and abroad.

**Figure 1**: Gross value and diversity of Victorian agriculture commodities by major commodity group ($m)

**Source**: ABS 7503 Value of Agricultural Commodities Produced
Victoria is the powerhouse of Australian food and fibre exports. In 2015-16 Victoria exported almost $12 billion worth of food and fibre. This represents 26 per cent of Australia’s total; the largest of any state or territory. Consistent export growth has been recorded over the past five years with strong demand for Victoria’s red meat, particularly beef, in the United States, fruit in Hong Kong, almonds in India and across most commodities in China.

**Figure 2: Value of food and fibre exports by state ($m)**

Agricultural activity underpins rural and regional Victoria. Figure 3 highlights the relative importance of agriculture across Victoria. The background to the mapping shows the proportion of the workforce in agriculture based on the 2011 Census. Towns with an unusually high level of employment in a particular sector are also highlighted. Towns with a population greater than 200 are categorised according to whether they have more than 15 per cent of their employed workforce in selected sectors (agriculture or agri-food manufacturing, forest and wood products industries; other manufacturing, accommodation and food services). The map for example shows the importance of agriculture in North West Victoria and West Wimmera.

Figure 3 clearly identifies towns where agri-food (production or related manufacturing), forestry, manufacturing or accommodation and food services (such as tourism) are particularly important.

NB Other refers to exports from the Australian Capital Territory, Northern Territory, re-exports and exports for which no state details are released for confidentiality reasons.

Source: DEDJTR (2016) Food and Fibre Export Performance Report
Figure 3: Agriculture, agri-food manufacturing and other notable industries in regional Victoria

Agriculture’s future prospects for economic growth are very strong

Demand for Australian and Victorian food and fibre is high

The future for Victorian agriculture is promising. Strong domestic demand driven by population growth (Figure 4) and increasing international demand driven by a fast-growing global middle class and changing diets (Figures 5 and 6) are set to continue. The largest growth is expected in emerging markets, niche products and services, innovative processes and environmental services and technologies.

Figure 4: Australian food consumption ($m)

Figure 5: Current and projected (2050) global demand for major Australian agricultural exports


Figure 6: Projected value of Victoria’s food and fibre exports by 2030 based on 2009–10 to 2013–14 exports growth ($m)

Source: CIE & DEPI (2014) Food and fibre production scenario modelling
Australian agribusiness is the sector with the strongest correlation to Australia’s competitive advantages and it is producing what the world increasingly wants (Figure 7). There are positive indications that the sector can leverage these advantages. The country’s high value biosecurity status, stable and attractive business environment, high education levels and close proximity to export markets provide the foundations for the next wave of growth in Australia.

**Figure 7: Australia’s current, next and future waves of growth to 2033**

Research shows that Australian products are well regarded on a number of criteria, including value and safety (Figure 8). Victoria is well placed to meet the demand for many high-value and high-quality products such as nuts, fruit and wine, along with dairy and meat products. Not only does the state produce these products already, it has established exports markets and capacity to expand production.

**Figure 8: Comparison of Australian food brand attributes with key competitors**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Australia</th>
<th>Malaysia</th>
<th>US</th>
<th>China</th>
<th>France</th>
<th>Brazil</th>
<th>Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Value</td>
<td>32%</td>
<td>21%</td>
<td>30%</td>
<td>31%</td>
<td>20%</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>High Quality</td>
<td>37%</td>
<td>14%</td>
<td>41%</td>
<td>12%</td>
<td>42%</td>
<td>18%</td>
<td>34%</td>
</tr>
<tr>
<td>Expensive</td>
<td>21%</td>
<td>10%</td>
<td>39%</td>
<td>8%</td>
<td>41%</td>
<td>18%</td>
<td>24%</td>
</tr>
<tr>
<td>Safe</td>
<td>39%</td>
<td>17%</td>
<td>34%</td>
<td>13%</td>
<td>31%</td>
<td>19%</td>
<td>36%</td>
</tr>
<tr>
<td>Sustainable</td>
<td>31%</td>
<td>15%</td>
<td>19%</td>
<td>13%</td>
<td>20%</td>
<td>21%</td>
<td>25%</td>
</tr>
<tr>
<td>Good taste</td>
<td>27%</td>
<td>18%</td>
<td>28%</td>
<td>20%</td>
<td>30%</td>
<td>27%</td>
<td>24%</td>
</tr>
<tr>
<td>Healthy</td>
<td>30%</td>
<td>13%</td>
<td>21%</td>
<td>12%</td>
<td>22%</td>
<td>18%</td>
<td>26%</td>
</tr>
<tr>
<td>None of these</td>
<td>2%</td>
<td>15%</td>
<td>4%</td>
<td>25%</td>
<td>3%</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>13%</td>
<td>25%</td>
<td>8%</td>
<td>12%</td>
<td>12%</td>
<td>18%</td>
<td>15%</td>
</tr>
</tbody>
</table>

*Source: Austrade (2013) Brand Australia Global Food Strategy Research*
Victoria’s climate, biosecurity status, infrastructure, supply chains and opportunities for consolidation provide additional advantage over other Australian states. These are key drivers behind Victoria’s forecast employment growth in the agriculture, fisheries and forestry sector. From November 2015 to November 2020 Victoria is expected to create an additional 1,200 jobs in the sector, half of which will be in the Melbourne metropolitan area. This reverses a long term trend of employment decline, something which is set to continue in most Australian states. The 1.5 per cent increase will see Victoria overtake New South Wales as Australia’s largest state employer in the sector.

**Figure 9:** Current and projected employment in agriculture, fisheries and forestry sector (‘000)

Source: Commonwealth Department of Employment (2016) *Employment projections for the five years to November 2020*
Victorian agriculture faces challenges and opportunities

Infrastructure

Victoria is Australia’s freight and logistics capital. The Port of Melbourne is Australia’s largest port and Melbourne Airport is the nation’s largest mover of airfreight. However, Victorian agriculture faces a challenge to address supply chain inefficiencies including improving road and rail freight flows, using ports more efficiently and maintaining airfreight capacity. Victorian agriculture also faces challenges to improve regional information communication technology (ICT) infrastructure, particularly wireless broadband and mobile, to meet current and future demand and to ensure that new irrigation infrastructure promotes sector growth and water use efficiency.

Addressing freight and logistic issues offer the opportunity to capture more value along the supply chain and contribute to economic and jobs growth. Improvements to ICT and irrigation infrastructure offer the potential for significant productivity improvements.

International markets

Victorian agriculture is well placed to capture the opportunities presented by a growing international middle class. However, it faces challenges to resolve technical trade barriers which remain a persistent issue in key exports markets and to attract foreign investment to promote sector growth. For example, Dairy Australia has estimated technical barriers to trade have a cumulative cost to Australia’s dairy industry of $1.6 billion annually. This affects Victoria’s dairy sector more so than other states and demonstrates the business case for an increased focus on resolving technical trade barriers over the next few years.

Victoria must also maintain its robust technical capability and systems to address a growing range of biosecurity threats. Responding to these issues effectively offers the opportunity to grow Victorian agricultural exports and the agriculture sector’s contribution to the Victorian economy.
Capability

Victorian farmers face a number of challenges related to capability. These include adapting to climate change, using new and emerging technologies, responding to the potential for increased land use conflict, managing agriculture’s social licence to operate and meeting rural health needs. Labour is also increasingly being replaced by technology such as GPS-guided tractors, computerised irrigation systems, laser levelers and precision sowing and harvesting technologies. As a result, the Victorian agriculture workforce increasingly requires specialist technical and managerial skills. Increasing farmer skills and capability offers the opportunity for the Victorian agriculture sector to better respond to future risks and challenges.

Victorian agriculture needs to become more effective at attracting institutional investment. Farmers, therefore, must improve their financial literacy and business management and performance reporting skills. Their enhanced skills will alert them to potential financial pitfalls and provide transparency of business rates of return to investors.

Climate Change

Climate modelling has shown the planet is moving towards a future of likely severe weather volatility with periods of extreme heat and drought interspaced with periods of more intense rainstorms and flooding. The challenge for governments is to encourage farmers to develop farming practices which mitigate the impacts of climate extremes and which are adaptive to weather volatility.

Innovation

Victorian agriculture needs to lift productivity after recent decades of stagnant growth. Opportunities lie in new and emerging technologies such as robotics, new packaging material, biotechnology and digital and wireless technologies for data measurement, weather monitoring, animal monitoring, geospatial monitoring, and precision application of water and chemicals. Building the capabilities to respond to these new and emerging technologies and investing in research and development will contribute to innovation and improve productivity. This will also require an effective system which leverages the contributions of government, industry and research institutions with a clear pathway to implementation on-farm and by businesses.

Regulation

It is important to ensure that Victoria’s regulatory system operates effectively and efficiently. Best practice regulation offers the potential to minimise barriers to growth and reduce regulatory burden on businesses and consumers. A strong regulatory environment also maintains Victoria’s reputation as a clean and safe food and fibre producer. It is important that Victoria’s regulatory framework is contemporary, responds to emerging issues (such as changing community expectations for agriculture) and considers alternative regulatory approaches.
The Victorian Government’s Food and Fibre Sector Strategy – released in March 2016 – has a vision that in 2025, Victoria’s food and fibre sector:

- will be creating new jobs, attracting talent and providing rewarding careers.
- has seen remarkable growth, with more value adding and product differentiation.
- is a recognised leader in the Asia-Pacific region and is a destination of choice for investors.
- is demand-driven, achieving strong and sustained export growth.
- exceeds customer expectations for safety and quality.
- has welcomed a diversity of business models, technologies and production systems.
- sees more small and medium enterprises (SMEs) on strong growth trajectories.

The strategy commits to various actions to help achieve the government’s vision. This includes actions relating to marketing, building investment readiness, establishing innovation networks, skills and capability development, technology adoption, ethical production, biosecurity, water, and improving the business operating environment. Agriculture Victoria will play a lead or support role in the delivery of 10 actions, all of which are captured in this strategy.

A number of Agriculture Victoria’s Food and Fibre Sector Strategy actions will be delivered via the government’s $200 million Agricultural Infrastructure and Jobs Fund. This initiative was launched to support transport, irrigation and energy projects, and fund skills development programs and market access campaigns that predominantly benefit the agriculture sector.

Similarly, the Victorian Government’s $20 million Food Source Victoria program was launched to encourage businesses to work together across the supply chain to increase exports, jobs and skills. The program includes grants for developing growth plans and funding for study or training courses to boost business growth and exports. The program will be subject to ongoing review to ensure maximum value is delivered to business and regional communities.

The food and fibre sector is one of eight priority sectors targeted by the Victorian Government’s $200 million Future Industries Fund. This fund is designed to support industries where Victoria can lead the world and which have the potential to drive economic growth and create jobs. The government recognises the food and fibre sector’s growth requires market and supply chain development and improved business management.
Other initiatives supporting agriculture and the broader food and fibre sector include the government’s:

- Trade mission and a special invitation program. These initiatives will build stronger connections between international buyers, investors and Victorian producers and exporters.
- Roll out of the biggest transport infrastructure agenda in Victoria’s history. Many of these initiatives, in particular the Western Distributor Project, major freeway expansions, Murray-Basin Rail Project and water irrigation modernisation will enhance capacity and efficiency for producers and their supply chain.

Agriculture Victoria has a vision to grow Victorian agriculture and support the achievements of the government’s aspirations and programs for the food and fibre sector. To achieve these aims Agriculture Victoria delivers the following services:

- Facilitate access for Victorian primary producers to new markets, maintain and grow access to existing markets, and play a leadership role across the department to improve regulatory practice.
- Undertake research and development and make the results available through appropriate channels, including commercialisation where opportunities exist.
- Provide industry development and transition support through policy, regulation and advocacy to the Australian Government.
- Respond to biosecurity threats and emergencies (including climate change, bushfire relief and recovery).
- Deliver frontline programs and services that support agricultural trade and market access, productivity and profitability.
- Ensure compliance with roles and responsibilities associated with animal welfare, chemical use, invasive species and plant and animal health and food safety.

Agriculture Victoria employs over 1000 staff, with more than half located in regional Victoria, operating from 51 sites across the state. This includes large, internationally-renowned laboratories like AgriBio, significant research farms like Ellinbank, and emergency response centres in particular Attwood. Staff also work on private farms, in commercial processing facilities and on public land and collaborate with global innovators and traders, industry partners, primary producers as well as rural and regional communities. Agriculture Victoria has capabilities in agricultural and veterinary science; social, economic and physical sciences; contemporary regulation and policy development. The organisation also has expertise in emergency management and response, law enforcement and pest management.

**Figure 10: Agriculture Victoria staff locations**
Agriculture Victoria’s objectives

To drive growth, Victoria’s agriculture sector needs to be **globally competitive, innovative** and **resilient**. To deliver growth, Victoria needs to support and enable its **diverse** resources and capabilities.

These strategic opportunities respond to economic, environmental and social changes that are shaping our operating environment. Each strategic opportunity provides Agriculture Victoria with a key challenge:

- **Globally competitive** – Position Victoria as a global leader in providing clean and safe food and fibre.
- **Innovative** – Drive creativity and the adoption of new ideas to improve productivity and efficiency of agriculture supply chains.
- **Resilient** – Build capabilities and capacity to manage risks and challenges such as social licence and climate change.
- **Diverse** – Harness the diversity of Victorian agriculture and its communities.

The agriculture sector provides one of the best opportunities for economic growth in Victoria’s regions. However, economic growth is not an end in itself. An inclusive growth agenda that reduces inequality, strengthens resilience and respects diversity is key to Victoria’s social and economic prosperity.

Achieving inclusive growth is possible by focusing on the number and quality of jobs, and the drivers of a modern and flexible economy. These drivers include an educated, productive and engaged workforce, an attractive business and investment environment, resilience when shocks and change inevitably present, a commitment to outcomes-focused innovation and growth in exports.

The diversity of the agricultural sector and its communities is a core strength for Victoria. Understanding the diversity of Victorian farming, and understanding what different agricultural businesses contribute to Victoria, is crucial. It provides insights into how the agriculture sector can respond to opportunities and challenges in a way that achieves economic growth for rural Victoria.

Agriculture Victoria has a vital role to play in facilitating inclusive growth by seeking to understand and harness Victoria’s agriculture diversity and through investing in a range of human skills, communities, business types, products and services. In doing this, we will help secure social wellbeing and economic prosperity across rural Victoria, and ensure that the social fabric of Victoria’s farming and rural communities is strong and vibrant.
Globally competitive

Being globally competitive creates opportunities to increase trade and attract investment in agriculture. The Victorian Government has identified the food and fibre sector as a high priority sector that is critical to securing Victoria's future as a competitive, innovative and vibrant economy with the capacity to create high-skill, high wage jobs.

Victoria's food and fibre producers are export oriented and strongly integrated with international food and fibre markets. Food and fibre is one of Victoria’s strongest and best performing export sectors.

Victoria has many competitive advantages in international markets. These include high quality products, proximity and strong links to key markets, and a strong international reputation. On the supply side it has excellence in research and development, strong quality assurance, safety and biosecurity systems, good infrastructure and supply chains, a skilled workforce and potential for counter seasonal supply.

Victoria’s food and fibre exports have grown significantly over recent years. Recent bilateral and multilateral Free Trade Agreements (FTAs) with key trade partners will further assist this growth. Future international demand for food and fibre is predicted to be strong, driven by the changing consumer preferences of a growing global middle class (up from around 1.8 billion people in 2009 to 4.9 billion in 2030).

The outlook is positive, but Victoria faces strong international competition. For example a number of Australia’s competitors, such as the United States of America, South Africa, New Zealand, Brazil, Chile and Peru are performing better in Asia (Figure 11). Agricultural trade barriers remain a persistent issue and Australia will need substantial growth-oriented capital in the coming decades to support the expansion of agricultural production and exports.

**Figure 11:** Index of Australian agricultural exports to Asia and Asian agricultural imports.

![Graph showing the index of Australian agricultural exports to Asia and Asian agricultural imports from 1990 to 2012.](image)

**Note:** e = preliminary estimates  
**Source:** ABS, FAO, AFI analysis
Innovative

Australia needs an innovation system that implements new ideas from research resulting in improved agriculture and value-added products. This includes building efficiencies in new value added products and services, and improving the productivity of our farms and supply chains. Capturing the promise of new and emerging technologies, business models and approaches to investment is vital.

Since the 1980s the gap in agriculture productivity growth between Australia and its key international competitors has been increasing (Figure 12). This is largely due to the amount of arable land remaining static and the decline in water resources as a consequence of climate change. Other factors such as a decline in research and development intensity are also influential. Innovation can address this gap and significantly drive productivity and growth. For example the use of new and emerging DNA sequencing technologies such as molecular breeding and biopharming can increase yield while decreasing farm inputs and costs.

**Figure 12:** Comparison of rates of national agricultural productivity growth.

The Victorian Food and Fibre Sector Strategy recently identified the need for the agriculture sector to adopt new technologies for growth and productivity and to keep pace with change. Poor broadband and mobile telecommunications reduce productivity and on-farm safety. Improved ICT services also potentially deliver complementary benefits including improving emergency services and public safety (which are at heightened risk of bushfire and flood) and providing transport, health and education services.

Food and non-food supply chains operate in an increasingly complex and dynamic environment characterised by new consumer demands and preferences, new technologies, changing structures and cooperation modes. Consumer demand is evolving with regard to quality attributes, such as authenticity, standards, certification, healthiness, provenance, and animal welfare. Other innovations lie in novel and emerging business and investment models (such as short value chains, leasehold and share farming). These have promising application in addressing under-investment in agriculture. They may also assist in capturing new business opportunities as rural and regional businesses transition from agriculture to service industries, tourism and niche sectors.

Resilient

Agriculture is a volatile sector, and Australian farm incomes are the most variable of any OECD country. This is due to system shocks such as market and input-price variability, changing consumer preferences, pest and disease outbreaks, drought and fire, and extreme weather events. Climate change is another shock, despite the impact being less discernable and occurring over a longer period of time. These events require a response to minimise production loss and event recovery.

In regards to climate change it is forecast that over the next thirty plus years Australian agriculture yields will decline approximately 2.7 per cent in the absence of adaptation measures (Figure 13). It will also be difficult to compete against countries close to the north pole, for example Russia, who are forecast to increase around 7 per cent. Maintaining competitiveness will require adaptation measures amounting to 10 per cent.

**Figure 13: Forecast change in agriculture yields due to climate change**

Managing shocks in agriculture is important because farming underpins many regional Victorian economies. Some rural economies are wholly dependent on agriculture while others have other businesses and industries built around the sector. In addition to the immediate impacts of shocks on Victoria’s economy, severe shocks can set back industry and regional development by years or decades.

Volatility also has a detrimental impact on the wellbeing and mental health of farmers and their families, and their financial security. Most evidence suggests farmer mental health is worse than the broader community, especially during times of extended drought.

It is critical that we build the skills and capacity in the agriculture sector to anticipate and manage change. Strategic opportunities are not mutually exclusive and many actions to address one event can have positive benefits for another.
Diverse

Victoria produces a diverse range of products ranging from grains, vegetables and fruit to meat, dairy products and wine. This is expanding further with the emergence of medicinal crops (poppies and cannabis), agri-food tourism and the potential for a significant game meat industry. In this context increasing diversity is generally a response to changing consumer demands and supply chain requirements.

Similarly, Victorian farm businesses are diverse in their type and organisation (Table 1). Generally there are two ‘profitable’ segments and four ‘non-profitable’ segments. The ‘large profitable’ and ‘farm-dependent middle’ segments make significant contributions to the regional economy. This is apparent from their contribution to on-farm and indirect (upstream) employment. Businesses with low median household incomes on the other hand may be in need of appropriately tailored business improvement measures, social support or structural adjustment.

Table 1: Victorian farm segments

<table>
<thead>
<tr>
<th>Large Profitable</th>
<th>Small profitable</th>
<th>Farm dependent middle</th>
<th>Off-farm dependent middle</th>
<th>Younger low income</th>
<th>Older low income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>Profitable farms with gross turn-over greater than $400,000.</td>
<td>Profitable farms with gross turn-over less than $400,000.</td>
<td>Farms with low profitability but adequate household income, more than half from farm.</td>
<td>Farms with low profitability but adequate household income, less than half from farm.</td>
<td>Farms with low profitability and low household income, younger than 60.</td>
</tr>
<tr>
<td>Mean weekly household income*</td>
<td>$3,128</td>
<td>$2,368</td>
<td>$1,453</td>
<td>$2,043</td>
<td>$824</td>
</tr>
<tr>
<td>Average farm gross turn-over</td>
<td>$1.2 million</td>
<td>$186,000</td>
<td>$350,000</td>
<td>$111,000</td>
<td>$211,000</td>
</tr>
<tr>
<td>% income from farm</td>
<td>76</td>
<td>78</td>
<td>74</td>
<td>20</td>
<td>31</td>
</tr>
<tr>
<td>Main sectors</td>
<td>Grains, dairy</td>
<td>Grains, dairy, sheep</td>
<td>Grains, dairy, sheep</td>
<td>Beef</td>
<td>Grains, dairy, beef</td>
</tr>
<tr>
<td>% of farms</td>
<td>10</td>
<td>14</td>
<td>27</td>
<td>29</td>
<td>10</td>
</tr>
<tr>
<td>% of gross value of production</td>
<td>38</td>
<td>9</td>
<td>32</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>% of on-farm jobs*</td>
<td>19</td>
<td>12</td>
<td>32</td>
<td>20</td>
<td>7</td>
</tr>
</tbody>
</table>

Based on 2014 Regional Wellbeing Survey, which included 1,484 Victorian farmers, and also informed by data from Survey of Income and Housing, ABARES Farm Survey, Agricultural Census 2011, and data from Neil Clark and Associates. This dataset under-represents the contribution from large corporate farms, of which few were included in the 2014 RWS. * Includes full-time jobs, and part-time jobs which are assumed to equal one third of an FTE. # equivalized for household size

Source: Agriculture Victoria (2016) Internal analysis
The specialised knowledge required to manage a farm has been increasing for many years. As a consequence, farms are moving away from solo owner-operators to farm business management. This broadening of the workforce skills set is being met by the expanding farm business advisory sector and other more traditional workforce development approaches. Supporting this momentum ensures the sector obtains the skills and workforce it needs in the future.

Australia has a high proportion of young farmers aged under 35 years (10–12 per cent). This is second only to New Zealand in the developed world. Nationally, Victoria has a higher proportion of young farmers (with 13 per cent under the age of 35). Often tech-savvy and operating on larger farms, these young farmers are likely to generate a higher share of farm output than their numbers suggest. Providing opportunities for young people to pursue a career in agriculture provides a process for succession planning and injection of new ideas and methodologies. It can also assist in maintaining or growing the population of rural communities.

The Victoria Government is committed to helping young farmers build rewarding agricultural careers. Two initiatives include:

- The Young Farmers Ministerial Advisory Council, which gives young farmers a strong voice by bringing together 11 passionate young professionals to advise government about practical actions and opportunities to attract and retain young people in agriculture.
- The Young Farmers Scholarship program, which provides up to $10,000 for young farmers aged 35 and under to ‘upskill’ and ‘invest’ in their careers.

Women, indigenous and culturally and linguistically diverse people play an important and often unrecognised role in farm management and employment. It is important these groups are given the recognition they deserve, barriers to career advancement are removed and opportunities for leadership and innovative thinking are provided where appropriate.
Agriculture Victoria’s strategies and priority actions

Trade and Market Access

Maintain existing and facilitate new access to export markets

Addressing trade barriers is a significant opportunity for Australian and Victorian agriculture to boost existing markets and enter new markets. Based on an internal review of key market access barriers affecting Victoria’s agri-food sector (which included targeted consultation with key Commonwealth, State and industry stakeholders), Agriculture Victoria has identified key priorities that, if resolved, could deliver $4 billion in additional exports over 10 years.

States and territories play an increasing role in shaping free trade negotiations and addressing market access issues, including providing technical evidence to support key negotiation positions such as proposed phytosanitary treatment options. This is especially the case for Victoria. We have a strong record of leadership in research and development, hosting overseas delegations to inspect production and quality assurance systems, and delivering industry capacity building programs.

Robust systems and traceability to meet technical requirements and manage risk are essential to supporting the market access aspirations of industry. Effective biosecurity systems, based on sound science and risk-based policy and regulation are required to support market access and export growth for Victorian agricultural products. These systems provide evidence of provenance and the absence of important pests, and minimise the loss of trade during pest and disease incursions. Continual improvement of these biosecurity systems is required to maintain current market access arrangements. We must ensure Victoria remains free from new pests and diseases and minimise the impact of pest and disease incursions. There is a strong need to reduce costs of control and develop the sanitary and phytosanitary protocols to open new markets for Victorian food and fibre.
I  **Short-term:** Develop a market access prioritisation framework to evaluate trade barriers affecting agriculture (including phytosanitary controls, residue testing, labelling and shelf life) and determine which issues should be prioritised.

II  **Medium-term:** Consistent with the framework, deliver projects with the Commonwealth, other jurisdictions and relevant industries to deliver improved market access and trade development outcomes (including fruit fly management, sheep and goat electronic identification system, other summer fruits to China following the recent success with nectarines and a new protocol for woodchip fumigation).

Work with the Australian Government to address trade barriers (*Food and Fibre Sector Strategy – Strategic Goal 10 Action 19*).

III  **Long-term:** Work with other Australian jurisdictions to deliver a national framework that has harmonised requirements wherever possible and aligns technical market access expertise with market access priorities. Develop strong collaboration nationally to identify, sustain and apply critical technical capability to underpin market access negotiations, research and development, protocols and industry engagement.
Being able to trace and control livestock across the supply chain is essential for protecting market access, maintaining profitability and biosecurity control.

Victoria’s sheep and wool production is valued at over $2 billion per annum. Victoria is a major producer of high value lamb to local and export markets. Implementing mandatory electronic identification of sheep and goats will provide trading partners with increased confidence in the safety and origin of Victorian products, protecting and enhancing access to these markets.

From 1 January 2017, Victoria commenced the transition to an electronic National Livestock Identification System (NLIS) for sheep and goats born in Victoria. Consultation will occur with industry to develop agreed standards for the operation of the system as well as a transition package to support industry implementation to a mandatory electronic system.

This decision is based on compelling evidence that the visual, mob-based system is not capable of quickly and accurately tracking sheep and goats in the event of a food safety or animal disease event. A national tracing exercise highlighted the weaknesses in the system and revealed that, despite investment in the system, no meaningful progress has been made in improving traceability standards, posing significant risks to market access. The decision also supports the unanimous recommendation of the Victorian Sheep and Goat Identification Advisory Committee and the Victorian Auditor General’s Biosecurity-Livestock Report.

The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) estimates that a one percentage point improvement in traceability results in a reduction of 1 to 3 per cent in the impact of a foot and mouth disease outbreak. This is significant given a potential foot and mouth disease outbreak in Australia has been estimated to cost between $17 and $52 billion.

Electronic identification simplifies the recording of production related information leading to better on-farm decision making. By minimising the need to physically handle sheep and goats during the reading of tags, stress and the risk of injury to animals and people is reduced. Electronic identification technology can also provide producers with the opportunity to better manage their flocks and secure a competitive advantage for Victoria’s sheep meat industry in domestic and export markets.

There are export benefits of being able to better track and promote where the meat was sourced from (providence). In an increasingly discerning international buyers market, being able to trace clearly where the product was grazed and raised has significant market access and export value growth benefits arising from the promotion of Australia as an environmentally clean country.

Case study: Improving traceability of sheep and goats

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**Priority action 2: Defend Victoria against loss of market access**

I **Short-term:** Establish biosecurity management systems to meet technical requirements, manage risk and build the technical capability of industry to protect exports. The systems will include surveillance, monitoring, traceability and response activities for plant pest and animal diseases, welfare and chemical residues. A risk-based prioritisation identifying and targeting those commodities that are most vulnerable to a market access risk/challenge should be used.

Bolster biosecurity capabilities to maintain market access (*Food and Fibre Sector Strategy* – Strategic Goal 10 Action 19).

II **Medium-term:** Monitor, review and renew systems and industry technical capacity as required.

III **Long-term:** Work with other jurisdictions to develop a consistent biosecurity regulatory framework with cost-sharing and emergency response arrangements.
Case study: Eradication of Red Imported Fire Ants

Red imported fire ants (RIFA) are one of the world’s most invasive pests. Often found in open, disturbed habitats, such as roadsides, these South American pests cause widespread damage across the economy, environment and to human health.

Fire ant colony numbers can vary from 100,000 to 250,000. Nest building and foraging cause damage to infrastructure and equipment. As omnivores, they feed on invertebrates, vertebrates, and plants. When disturbed they also aggressively sting humans, causing symptoms ranging from burning and swelling to development of allergies, and in some cases, death from anaphylactic shock.

Most of the southern part of the United States of America is infested with RIFA. This culminates to around 14 million human stings and $US7 billion in management cost, excluding environmental cost, per annum. More than 80 deaths have been recorded in the country.

The first detection of red ants in Australia occurred in Brisbane in 2001. This triggered a national cost-shared eradication program led by Queensland’s Department of Primary Industries. Activities included preventing spread, surveillance in high-risk areas, baiting to kill nests and public information. This has contained, not eradicated, the ants from the Brisbane area.

Agriculture Victoria is working with the Commonwealth and other state and territory governments to develop a comprehensive ten year eradication plan. It is proposed that at a cost of $38 million per annum the red ants would be eradicated from Australia by 2027. Achieving this outcome requires intensification of surveillance and treatment activities, including making use of improved habitat modelling and treatment techniques developed in recent years.

Delivering the eradication program has many benefits. For farmers it helps protect livestock injury and death, damage to farm machinery and irrigation systems, and control costs. More broadly it helps protect our market access, infrastructure, natural attractions and places where our children can play and socialise. Overall it is estimated that RIFA would cost the Australian economy around $1.5 billion annually if left uncontrolled.

Agriculture Victoria will work with other portfolios and agencies on program funding and delivery. It is critical these pests do not invade our state and reduce our livability and economy.
Smart Agriculture

Improve productivity through an innovation system that creates and applies new technologies and practices

Smart agriculture focuses on the creation of knowledge and technologies and their successful adoption into farming practices and business models. This leads to increased productivity, profitability and competitiveness in markets and positive natural resource management outcomes.

More specifically, smart agriculture includes:

- increasing yields from genetic and genomic technologies developed in partnership with industry and the private sector.
- using digital production cycle and supply planning, created from geo-enabled data and technology expertise to increase yields and input efficiencies.
- increasing the quality and quantity of agricultural production via automated sensing technology, using intelligent farm systems connected locally, nationally and internationally where relevant.
- improving sustainability and environmental protection through collaboration between ecosystem services and on farm practice, supported through ICT-based applications and open source data.
- improving inclusiveness by linking producers from traditional and non-traditional backgrounds with agribusiness enterprises and supply chains.
- participating in the international innovation system through reciprocity that promotes Australia’s agriculture innovations and results in outcomes adaptable to Victorian conditions.
- in cooperation with Australia’s national biosecurity system, safeguarding the environment, human health and Victorian agriculture’s market access by underpinning biosecurity surveillance, diagnostics and management with science and innovation.
- maintaining a talented and skilled workforce who understand and apply best practice farming and business management techniques.

Accelerating smart agriculture requires the development of AgTech companies and capabilities across the state. Supporting entrepreneurs, through skills development and innovation pathways, and attracting domestic and foreign investment into start ups, will drive the development of technologies that Victoria can use and sell to the world.
**Priority Action 3: Increase total investment in science through partnerships**

I **Short-term:** Tighten the focus on industry sectors and cross-sector issues in alignment with DEDJTR’s revised role in the National Primary Industries Research, Development and Extension Framework (NPIRDEF) to:

- Improve animal and plant selection and breeding through development and application of advanced genetic and genomic technologies.
- Investigate critical pest and disease management technologies.
- Translate and package the results of research into industry-ready information.
- Improve water use productivity through adoption of new technologies.
- Increase and track food safety, quality and nutritive value through the supply chain to meet market requirements.

II **Medium-term:** Develop an agriculture science and partnering strategy between Victoria’s researchers, government and industry that aligns with DEDJTR’s role in the NPIRDEF and industry commitment to improve productivity and regional outcomes (*DEDJTR Delivers Priority Action 10.6*), including by:

- designing, undertaking and delivering food and fibre research, development and practice change services in partnership with industry and private businesses (*DEDJTR Delivers Priority Action 5.3*).
- building on existing bilateral agreements with grains and dairy, developing new agreements in other industry sectors to provide stability in funding and facilitating capability development.
- extending pilots in grains and food to establish industry-owned knowledge, access and sharing networks in sectors of importance to Victoria.
- investing in agricultural research and development and supporting the Victorian Platform Technologies Network and key research centres like Carbon Nexus (*Food and Fibre Sector Strategy – Strategic Goal 3 Action 7*).

III **Long term:** Boost the extent of industry-research collaboration by lifting awareness of opportunities from innovation.
Priority Action 4: Develop an ICT strategy for Victorian agriculture to harness technological advances (DEDJTR Delivers Priority Action 6.23)

I Short-term: Understand on-farm ICT needs and use, technology options/specification, costs to engage industry and other jurisdictions to solve ICT access and implementation issues. Establish web-based platforms to support learning networks to foster collaboration between the public research sector, government and industry.

II Medium-term: Support and help establish innovation clusters to drive high technology food and agriculture production. For example, work across government to encourage investors in AgTech, and private providers of advanced technologies in automation, drone sensing and geo-spatial data application to co-locate to key regional precincts.

III Long-term: Connect Victoria’s producers to one another and along the supply chain for collaborative planning and working with environmental change using open data and collaborative networks fostered by Agriculture Victoria.

Enhance on farm capacity and Support businesses to adopt new technology and implement best practice (Food and Fibre Sector Strategy – Strategic Goal 5 Action 11).

Priority Action 5: Develop a comprehensive agriculture innovation policy framework (DEDJTR Delivers Priority Action 5.1)

I Short-term: Develop an integrated science strategy and innovation policy framework to:
- Increase adoption of new technologies/practices by addressing behavioural and social aspects of valuing technology on farm and in the value chain.
- Identify collaborative opportunities to increase participation of science, technology, engineering and mathematics (STEM) graduates in the Victorian agriculture value chain.

II Medium-term: Develop a policy framework to better manage investment risk in new science discoveries and support diverse agribusinesses to:
- Establish regional innovation networks at key agriculture centres to foster collaboration along the supply chain and to deliver regional economic and industry outcomes.
- Collaborate with local, national and international innovation networks to facilitate the transfer of new technologies and practices to local businesses.

III Long-term: Maintain and grow Victoria’s capacity to enhance food production through novel and integrated technologies such as sensors, robotics, real time data systems genomics and advanced diagnostics.
- Enhance efficiency and effectiveness by fast tracking the adoption of digital data collection, communication and knowledge management tools across supply chains.
Case study: Innovating through biosciences for the dairy industry

Driving transformational change requires investment and partnerships in research, development and extension.

The Dairy Futures Cooperative Research Centre (CRC) was a life limited research centre that captured bioscience based innovations for the Australian dairy industry. This six year initiative, which commenced in January 2010 and expired in June 2016, involved 16 partners, including the Victorian Government, working together to improve the dairy industry’s two main profit drivers – pasture and herds.

Breakthroughs in DNA sequencing, genomic selection for animals and development of new pasture varieties have been made from this work. As a result farmers can:

- Select bulls that are up to five years younger than before, making it possible to improve herds at double the current rate.
- Select for traits requiring improvement, such as fertility, as well as select for new traits such as feed efficiency.
- Adopt new hybrid or select better genomic breeds of ryegrass to increase yield, energy density and persistence.

These outcomes are estimated to provide the agriculture industry with over $1 billion of economic benefit to 2030. This is a ratio of benefit to cost of 6:1.

A new dairy bioscience initiative, called DairyBio, commenced immediately after Dairy Futures CRC to continue the innovations and gains for industry. This investment, by the Victorian Government and Dairy Australia, will continue to develop new pasture varieties and cattle genetics to increase pasture productivity by $800/Ha/year and herd productivity by $350/cow/year.
Smarter Regulation

Create a business environment that has clear and responsive legislation and regulation that balances economic, environmental and social outcomes

Ensuring that regulation and its implementation is modern, efficient and effective is a priority area for government. Smarter regulation has two dimensions:

- Better regulatory design — through regulatory instruments that impose minimal burden while achieving government objectives and that prioritise regulatory effort to achieve the best outcomes for the community.
- Better regulatory practice — compliance (including enforcement) activities that are efficient and effective.

Risk-based regulation managed by Agriculture Victoria applies to both regulatory instruments and compliance activities. For example, a risk-based approach would provide for regulatory instruments designed to address greater potential harms, and compliance (including enforcement) activities targeting non-compliant individual or businesses where the risk of harm is significant. Smarter regulation also seeks to improve economic efficiency; for example, by removing regulations that unnecessarily restrict competition or by ensuring that appropriate fees and charges are set.

Continuous improvement of the regulatory framework managed by Agriculture Victoria is a priority. Regulation must be efficient, effective and flexible enough to deal with future structural and technological challenges in the sector. Smarter regulation ensures compliance with legislation in the most streamlined and least burdensome way possible. Examples include education to encourage voluntary compliance, simplification of forms and permits, and engaging with stakeholders to consider co-regulatory approaches. It requires a willingness and flexibility to explore alternative, innovative regulatory approaches.

An effective regulatory framework with best-practice compliance (including enforcement) activities underpins Victorian agriculture product quality and integrity in global markets, providing an export platform.
Priority Action 6: Deliver contemporary legislative and regulatory reform

I  **Short-term:** Deliver priority reforms, in particular the remaking of the *Livestock Disease Control Regulations 2006* and the *Agriculture and Veterinary Chemicals (Control of use) Regulations 2007*.

Review existing food safety regulatory frameworks in meat and dairy industries (*Food and Fibre Sector Strategy* – Strategic Goal 18 Action 33).

II  **Medium-term:** Implement further reforms to invasive species control legislation and revised ag-vet chemicals controls.

III  **Long-term:** Establish a new food safety regulatory framework.

Priority Action 7: Identify and trial behavioural insights and other approaches to improve regulatory outcomes

I  **Short-term:** Identify areas suitable for applying behavioural insights and develop a program. Consider areas for applying other regulatory approaches (co-regulation, and community and industry engagement).

II  **Medium-term:** Trial at least two alternative regulatory approaches.

III  **Long-term:** Embed all successful alternative regulatory approaches within the Agriculture Victoria regulatory framework.

Priority Action 8: Drive best practice regulatory approaches

I  **Short-term:** Externally publish summaries of compliance strategies, including performance measures.

II  **Medium-term:** Develop, publish and report on compliance plans, including performance measures and enforcement outcomes.

III  **Long-term:** Review and improve compliance strategies and compliance plans.
Case study: An efficient and targeted regulatory approach for green snails

The implementation of importation restrictions for regulated plant pests and diseases works best when the implications to trade and cost to business are considered. Considerations need to also balance the need for an appropriate level of protection and effective options for interstate trade.

All states in Australia apart from Western Australia and Queensland currently regulate the importation of green snail host material. Green snail is an endemic pest to Western Australia and in 2012 it was detected near Cobram, Northern Victoria. In August 2013, a national committee determined that funding for an eradication program in Victoria would not be enacted and therefore pest management would need to transition to a state management program.

Quarantine entry requirements enacted for properties in Western Australia are based upon distance from detection of green snail. This type of legislation requires differing importation requirements based upon property location from detection; in this case, the distances are 2km from a detection, between 2-25km and more than 25km. These measures do not recognise good business practices and therefore impact many growers who could be considered low risk.

To enact the least restrictive trade measures, Victoria implemented property based management of the pest. This allowed for properties to be recognised as either infested with the pest, linked to an infested property or free from the pest. Implementation of these measures ensures only businesses that have actually been involved with the pest are required to meet intrastate and interstate quarantine conditions. Other properties are able to continue trading under property freedom recognition. This has proven to be an effective option, preventing the risk of green snail spread, while limiting the implications to trade.
Risk Management

Support agricultural industries managing transition and shocks to minimise economic, environmental and social impacts on rural and regional communities

Risk management is an essential tool for farmers, businesses and communities to anticipate, avoid and manage shocks. An efficient risk management system will preserve the standard of living of those who depend on farming, strengthen the viability of farm businesses and provide an environment that supports investment in the farming sector.

Risk management requires government to match capability to a rapidly changing environment, while balancing the safety and wellbeing of staff working in challenging and potentially dangerous situations. It also requires assessment of the role of government versus the role of industry, reputational risk and risks to delivery. Risk management includes consideration of:

- biosecurity incidents (such as giant pine scale, foot and mouth disease)
- natural disasters (such as fire, flood, locusts, blue green algae)
- market shocks (such as dairy milk price reduction, SPC Ardmona, unexpected challenges/non recognition of phytosanitary status)
- business volatility (such as terms of trade, input cost, commodity prices)
- climate change (such as increased frequency of natural events, reduced water availability)
- water security and realising the benefits of irrigation modernisation (in line with action 14 of the Food and Fibre strategy)
- food safety (such as salmonella contamination in lettuce)
- zoonotic infections (such as highly pathogenic avian influenza, hendra virus or rabies).

Agriculture Victoria has a significant role in emergency management through:

- working with industry and agencies to mitigate the impacts of significant emergencies to Victorian agriculture (DEDJTR Delivers Priority Action 9.5).
- preparing for, responding to and supporting recovery from, emergencies (including animal welfare issues, biosecurity incursions, trade incidents and natural disasters) to enable market access and minimise impacts (DEDJTR Delivers Priority Action 9.8).
**Priority Action 9:** Appoint a Rural Assistance Commissioner and develop a new model for delivering rural assistance

I **Short-term:** Appoint the new Commissioner (which replaces the Rural Finance Corporation Victoria). The new Commissioner is designed to strengthen the government’s capacity to oversee the effective delivery of rural assistance schemes to rural and regional communities.

II **Medium-term:** Develop and embed a new delivery model for rural assistance.
Collaborate across DEDJTR to advance economic inclusion and transition assistance. This includes:
- implementation of the Koori Business Strategy (DEDJTR Delivers Priority Action 3.4).
- development of an economic inclusion policy framework to be applied across DEDJTR in collaboration with other departments (DEDJTR Delivers Priority Action 4.1).
- development of an Aboriginal Employment Strategy (DEDJTR Delivers Priority Action 4.3).
- development of a Latrobe Valley Economic Development program to support economic transition in the Latrobe Valley (DEDJTR Delivers Priority Action 4.4).

III **Long-term:** Review the activities of the Commissioner to make improvements.

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**Priority Action 10:** Deliver research and capacity building programs that help farmers adapt to climate change (DEDJTR Delivers Priority Action 3.10).

I **Short-term:** Deliver a pilot adaptation action plan for agriculture, including actions such as climate impact modelling and decision support tools for farmers.

II **Medium-term:** Conduct research to investigate:
- impacts of hotter, drier conditions on crops, grains, pastures and animals.
- use of genomics to develop climate-adapted crop varieties.
- models to help agricultural industries better understand the impacts of climate change and the potential trade-offs in agriculture.
- wheat growth and plant diseases under elevated CO2 conditions (AGFACE).
- impact of CO2 on soil processes (SOILFACE) and grapes (GRAPEFACE).

III **Long-term:** Work with farm businesses, banks and accountants to develop strategies to manage variable seasons and longer dry periods.
Priority Action 11: Deliver research and capacity building programs that help farmers and the supply chain reduce emissions (DEDJTR Delivers Priority Action 3.10).

I  **Short-term:** Deliver research and capacity building programs that enable farmers to reduce emissions by:
   – optimising efficient use of nitrogen fertilizers.
   – reducing methane emissions from ruminant animals.

II  **Medium-term:** Develop policy tools supporting emissions reduction from agriculture, including nitrous oxide emissions (fertilizer), methane emissions (ruminant animals) and energy emissions.

III  **Long-term:** Develop policies that support offsetting emissions from agriculture and the supply chain.
Drought is part of rural life in Australia and many parts of Victoria have experienced drought conditions over the past two decades.

In 2014, much of Victoria received below average rainfall. As a consequence many of Victoria’s farmers produced very low crop yields and/or incurred additional costs for carting water for livestock. These conditions created financial and mental health issues, particularly in the state’s north west; the area hardest hit.

The Victorian Drought Preparedness and Response Framework provides flexibility in drought response. Essentially, it is the degree of impact that determines the extent of intervention. It builds on the principles that:

• Drought is a legitimate business risk for which farmers and other businesses should take reasonable steps to prepare.
• Drought support should only be directed to those farm businesses that have taken reasonable steps to prepare.

In November 2015 the Victorian Government announced a $27 million Drought Response Package for the north west region based on the framework. This included programs to support farming communities, such as farming advice, financial counselling, family support, health programs, emotional help and social events to bring communities together. It also included support for fast-tracking important infrastructure and water projects to create jobs and drive economic growth in regional Victoria.

Agriculture Victoria will continue to lead implementation of the package and efforts to improved preparedness and response to drought and other adverse events.

Case study: Building preparedness and resilience to drought

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Intensification of Agriculture

Support changing production systems and industry innovation through industry policies, access to information and strategic advice that recognise local impacts and underpin investor confidence

As global and domestic population increases, new domestic and global market opportunities will emerge and there will be increased demand for agricultural commodities. With reduced land available for agriculture, this demand is likely to be met in part through more intensified production systems. Intensification will not be limited to animal production; it will also apply across the suite of agricultural commodities.

There is a strong and steady trend for agricultural intensification, as indicated by increasing stocking rates and yields, increased areas under irrigation, the growing use of precision agriculture, increased farm fertiliser, pesticide and food stock inputs, and the conversion of farms to more intensive forms. These activities have transformed many farm businesses, related upstream businesses and food and fibre supply chains.

Intensification presents a variety of opportunities to grow markets, improve resource efficiency, mitigate and adapt to climate change, improve environmental outcomes more broadly and grow and revitalise rural and regional communities. However it also creates a new set of challenges related to outdated or absent codes of practice. Another challenge is the capacity of planning agencies to manage change and social licence. Tackling these challenges requires better understanding of sustainable intensification opportunities and trends, policy and legislation modernisation and exploration of innovative farming systems, plant, animal genetics and enabling services.
Priority Action 12: Implement the government response to recommendations by the Animal Industries Advisory Committee

I  **Short-term:** Implement governance and management frameworks around the committee’s recommendations so that delivery is assured and expectations are managed.

II  **Medium-term:** Reprioritise resources to reflect the committee’s priorities, noting national and industry-wide priorities, commitments and coordinated responses.

III  **Long-term:** Work to support, inform and influence the national animal industries innovation system, so that capability exists to respond to future challenges.

Priority Action 13: Work with stakeholders and proponents through the Agribusiness Development Facilitation model to improve the prospects of positive developments

I  **Short-term:** Establish a facilitation service to assist with new agribusiness developments (*Food and Fibre Sector Strategy* – Strategic Goal 17 Action 30).

II  **Medium-term:** Implement changes or improvements to the model and recommended responses in terms of policy, regulations or other human capabilities.

III  **Long-term:** Work with industry and local government agencies to address land use planning and related resource-access constraints on agribusiness development, in order to realise strategic regional growth opportunities.
The sustainable growth of intensive agriculture requires balancing economic, environmental, community, and health and welfare matters, among others.

Intensive animal industry codes for piggeries, cattle feedlots and chicken meat (broilers) were developed as part of Victoria’s land use approvals system. The codes are intended to provide a framework of accepted environmental and community amenity standards for establishing and operating these intensive animal industries. Unfortunately, the codes do not address some changes in farming practices and do not extend to other animal industries such as eggs, sheep and goats.

There is strong support for reforming the intensive animal industry code framework so that evolving production systems can be appropriately managed to provide economic benefits while protecting the environment and public amenity. This will be achieved by creating a single general-principles code to apply to all intensive animal industries, supported by specific technical guidelines for each industry (pigs, eggs, etc). A risk management framework will apply to the ongoing operation of the relevant farming business and councils will be supported with information about the farming operations.

Modernising the codes will create flexibility for innovative practices and technology across production systems, while protecting the environment and public amenity. The new framework will provide confidence and clarity for current and future activity and investment in intensive animal industries in Victoria by enhancing consistency of outcomes for the community and investors.

Case study: Modernising codes of practice for intensive animal industries
Animal Welfare

Develop contemporary animal welfare policies, legislation and regulation that protect animals, recognises the social and economic importance of animals to our society, while supporting the agricultural sector’s ability to trade internationally and maintain their social licence.

Animal welfare is a priority area for government, industry and the community. It is a complex area that has significant community interest and implications for our economy and market access as well as the social licence of our industries to operate.

Our knowledge and understanding of animal welfare is evolving and this has changed expectations of how we treat animals. Animal welfare encompasses more than simply preventing or prosecuting cruelty to recognising the need to minimise negative and promote positive experiences for animals.

Farmers monitor animal behaviour and output, and provide regular quality feed, water, shelter and veterinary services to their animals. Healthy farm animals have higher rates of growth, production and reproduction and command higher prices than unhealthy or neglected farm animals. For example, data from Texas’ A&M’s Ranch to Rail Program found the price difference between healthy and unhealthy cattle to be $200/head.

Producers, consumers, communities and markets have different expectations about the way animals are used to produce food and fibre and how animals are cared for.

There are certain practices that are not consistent with community expectations. Pressure from consumers and non-profit organisations has seen industries move away from close confinement systems, in particular cages for hens and sow gestation crates. There are also expectations that animal welfare standards across Australia’s states and territories should be streamlined and harmonised. Such shifts need to be considered and where appropriate reflected in the codes, legislation and practice.

Victoria’s laws have been in place for over 30 years. While the Prevention of Cruelty to Animals Act 1986 has fulfilled the purpose it was introduced for, this purpose and its provisions are reactive. The regulatory framework needs reform to ensure it is capable of supporting minimum standards that reflect these changes and can be updated as our knowledge of animal welfare improves.

A new Act for animal welfare is needed. It needs to be flexible enough to encourage the adoption of new innovative animal husbandry methods, that improve welfare outcomes, while continuing to discourage animal mistreatment. This includes adapting to new research and development, such as gender selection in chicks, and other scientific advancements.

Having a clear direction for animal welfare and modern legislative framework will ensure Victoria remains proactive in our treatment of animals and retains the high regard of our communities, trading partners and other important stakeholders.
**Priority Action 14:** Establish a strategic action plan for animal welfare in Victoria which includes promoting a culture of shared responsibility

I **Short-term:** Develop a strategic action plan for animal welfare in Victoria to identify the main actions areas, activities and responsibilities for the future of animal welfare in Victoria.

II **Medium-term:** Implement the strategic action plan and continue to build strong relationships with key stakeholders to identify opportunities for innovation and improvement in animal welfare within Victoria’s agricultural and animal industries.

III **Long-term:** Build stakeholder ownership and industry leadership for animal welfare.

**Priority Action 15:** Deliver a contemporary legislative and regulatory framework for animal welfare

I **Short-term:** Implement recent legislative amendments related to animal welfare, including reducing the regulatory burden and improving cost recovery mechanisms and enforcement powers. Deliver on legislative requirements including sunset reviews and drive consistent animal welfare standards in national forums.

Implement the Victorian Government’s animal welfare reforms (*DEDJTR Delivers Priority Action 2.6*).

II **Medium-term:** Ensure that Victoria has a contemporary and effective animal welfare regulatory framework that promotes the welfare, protection and humane and ethical treatment of all Victorian animals across species and uses.

III **Long-term:** Develop a smarter and more effective enforcement framework, which could include improved enforcement tools, effective triage systems, and partnerships with other enforcement agencies with consideration of other systems such as co-regulation.
Case study: Increased welfare complaints and impact on animals demonstrate need for change

The past ten years has seen a consistent increase in the number of animal welfare complaints received by Agriculture Victoria and the RSPCA. In 2015 Agriculture Victoria animal health and welfare staff responded to over 900 animal welfare issues involving alleged cruelty incidents, disease related welfare issues, and emergency events such as bushfires and livestock transport accidents.

Community expectations of animal welfare standards have risen rapidly in recent years as have the expectations on enforcement agencies to intervene early and take effective action to alleviate animal welfare issues.

Agencies are reviewing their processes and employing risk based approaches to compliance. However, the current suite of tools is limited and legislation is reactive making it difficult to intervene successfully at an early stage.

A recent example was a Sale district farmer who pleaded guilty to 33 charges of animal cruelty, 11 of which relate to aggravated cruelty. The farmer was convicted in the Sale Magistrates Court, fined $12,000 and disqualified from being a person in charge of any farm animals for ten years. In applying for the disqualification order, Agriculture Victoria told the court the animals were subjected to prolonged pain and suffering, despite the fact the farmer had repeatedly been provided with advice and guidance by animal welfare officers. Ultimately, the farmer’s failure to prevent further instances of cruelty on his farm led to the seizure of the sheep flock.

In another case, a cattle property running in excess of 500 head, 50 per cent of the animals were severely emaciated. The owner acted upon the notice of intent to seize and destocked the high risk animals but only after considerable efforts from Agriculture Victoria staff.

Animal welfare legislative reform is required to improve enforcement tools available to staff, consider cost recovery options (to support adequate resourcing of increased complaints) and adopt more proactive approaches to animal welfare cruelty.
Priority Action 16: Support implementation of Regional Partnerships (Food and Fibre Sector – Strategic goal 16 Action 29) to strengthen growth of Victoria’s agriculture sector

I Short-term: Develop an agricultural prospectus for each region that describes programs and services provided by Agriculture Victoria, as well as the issues and opportunities facing the agriculture sector in each Victorian region. Service priorities include: supporting agricultural businesses to drive sustainable growth including on-farm development, while managing risks and minimising externalities; supporting industry transition, shocks and emergencies; supporting market access and trade, including through regulation and compliance; and frontline emergency response and recovery services.

Deliver projects to support new growth opportunities:

– Identify promotion opportunities for Victorian food and fibre products in the domestic market (Food and Fibre Sector Strategy – Strategic Goal 11 Action 22).
– Support implementation of the Strategic Business Relationship Model across DEDJTR, aligned with the Food and Fibre Sector Strategy and other economic development strategies such as the Koori Business Strategy and Small Business Strategy (DEDJTR Delivers Priority Action 2.1).

II Medium-term: Lead broad collaboration with key government agencies (including the Departments of Health and Human Services and Education and Training) to develop cross government modelling for delivering integrated place based services.

Support foundational projects that secure resource access and improve efficiency:

– Identify and prioritise ‘first and last’ kilometre routes for investment (Food and Fibre Sector Strategy – Strategic Goal 12 Action 24).
– Develop and release a Water Plan in 2016 (Food and Fibre Sector Strategy – Strategic Goal 14 Action 26).
– Improve water and irrigation infrastructure in key regions (Food and Fibre Sector Strategy – Strategic Goal 14 Action 27).

III Long-term: Tailor policies and programs to regions through routine application of socio demographic and economic data.

Cross cutting

Agriculture Victoria has one priority action and a number of actions under the Food and Fibre Sector Strategy and DEDJTR Delivers which deliver against two or more strategies. These cross cutting actions are captured below.
Outcomes logic model

**DEDJTR Vision**

A productive, competitive and sustainable Victorian economy, that contributes to a prosperous and inclusive society

**DEDJTR Outcome Domains**

- Victoria is prosperous and inclusive
- Victoria is liveable
- Victoria is productive
- Victoria is innovative
- Victoria is globally connected

**Ag Vic Strategic Outcome**

Victoria’s agriculture is globally competitive, innovative and resilient

**Ag Vic Outcomes – Long Term**

- **Trade and Market Access**
  - Victorian agricultural businesses maintain existing and expand their markets and trade
- **Smart Agriculture**
  - Victorian agricultural sector is more productive and innovative
- **Smarter Regulation**
  - Victoria’s agricultural regulatory environment is best practice and delivers confidence to the Victorian community and economy
- **Risk Management**
  - The Victorian agriculture sector is better able to manage risk and challenges and minimise impact
- **Intensification of agriculture**
  - Community, consumers and investors have increased confidence that the intensification of agriculture is managed responsibly

**Ag Vic Outcomes – Short / Intermediate Term**

- **Victorian agricultural sector produces a diverse range of products to meet international and domestic requirements**
- **Victorian agriculture understands opportunities and customer and market requirements**
- **Victorian agriculture is able to prioritise its market access needs and work towards them**
- **Victorian agriculture builds capacity to meet technical market access requirements and to be export investment ready**
- **Victorian agriculture establishes and maintains robust systems and technical requirements and manage risk and challenges**
- **Victorian food and fibre supply chain meet international consumer requirements**
- **Victorian agriculture sector builds relationships with markets**
- **Victorian agriculture sector is able to work effectively to secure market access agreements**
- **Industry has skills and capability and adopts new technologies and practices**
- **Victorian agriculture has a strong cohesive pathway for delivery and adoption of research outputs and knowledge**
- **Victorian agriculture has access to nationally and internationally connected Research and Development capability**
- **Victoria more effectively pools commercial, industry and government investment in high impact Research and Development**
- **Investors view AgTech as a destination of choice**
- **Victorian agriculture and the community are not unnecessarily burdened (economic or otherwise) by regulation**
- **Victorian agriculture and the community perceive positive benefits of regulation**
- **The community and consumers trust the regulatory framework**
- **Business and people understand their regulatory obligations**
- **Victorian agriculture has effective platforms for mapping community and business expectations**
- **Government ensures regulatory frameworks are best practice (compliance strategies, education, co-regulation)**
- **Regulation achieves its objectives**
- **Victorian agriculture understands prepares for and responds effectively to predictable and unpredictable risks, challenges and shocks**
- **Victorian agriculture is better able to adapt to climate change and transition**
- **Victorian Government minimises the impacts of emergencies**
- **Agriculture businesses have improved skills and capacity to manage risk and challenges through access to information and services to support timely decision-making**
- **Improved collective understanding of the benefits and trade-offs of intensification by all stakeholders**
- **Collective long-term planning by regional stakeholders seeking agreed agricultural land uses**
- **Government, industry and community engage in conversations about future regional land use planning, including strategic agriculture land use**
- **Improved collective understanding of the benefits and trade-offs of intensification by all stakeholders**
- **Government and Industries work to develop a culture of improvement in animal welfare**

**Animal Welfare**

- Victorian animal welfare practices meet community, consumer and market expectations