

Queensland's agriculture sector must adapt to changing climatic conditions to ensure its long-term growth and resilience. Technological developments, sustainable farming practices, and new agricultural products and markets can support a resilient sector in the face of a volatile climate.

Megatrends are influencing the operations and performance of the Queensland agriculture sector. Technological developments have allowed farmers to gain efficiencies through use of real-time data, while increasingly variable climate and weather patterns are presenting challenges for producers. Severe weather events such as flooding and drought can cause product loss and soil degradation, with significant economic impact. These megatrends are shaping on-farm practices as well as broader agricultural commodity markets.

The agriculture sector can build competitive advantage during the transition to a zero net emissions economy through implementing sustainable practices and leveraging new financial opportunities, such as carbon markets, natural capital banking, and more climate-resilient, or new climate-suitable, crop and livestock varieties.

Megatrends



Increased uptake of alternative, low carbon energy sources, including waste-to-energy and decentralised energy resources



Robotics and automation driving more efficient and productive agricultural operations

Digital disruption through technology, innovation, big data and analytics across supply chains



Growing importance of social license, including environmental performance, animal welfare, and sustainable and healthy food

"Climate change is one of the agriculture industry's biggest concerns - climate has always been important in farming, and natural assets are front of mind."
Agriculture industry stakeholder

Agriculture is the third largest contributor to Queensland's greenhouse gas emissions. There are significant opportunities for the sector to reduce these emissions, including through participation in emerging markets for carbon offsets. Due to the physical risk of climate change on natural agricultural assets, adaptation is also essential for long-term sustainability and financial viability.

Sector overview

Gross Value Added (GVA) by sub-sector in Queensland agriculture sector in 2015-16



37% Sheep, grains beef and dairy cattle

8% Poultry and other livestock

55% Other agriculture



Livestock enteric fermentation accounts for 80% of Queensland's total agricultural GHG emissions

#16 contributor to total GVA in Queensland

Half of agricultural GVA is generated in Darling Downs-Maranoa and Toowoomba, Wide Bay and Cairns



3% of the state's employment

Note: Fisheries and forestry was excluded from the scope of the economic analysis

Sources: REMPLAN (2015-16), National Greenhouse Gas Inventory (2016)

EY analysis shows that the transition to zero net emissions presents investment opportunities to realise the opportunities of climate change and to effectively manage risks in the transition.

Key risks in a zero net emissions economy

- ▶ Increasing severity of extreme weather events, changing climate conditions, sea level rise, water contamination and soil degradation all pose a risk to agricultural productivity and supply chains. However, transitioning to a low carbon economy mitigates these risks, compared to a business as usual climate scenario.
- ▶ Insurance may be increasingly difficult, or expensive to obtain for agricultural activities due in part to weather and climate-related risks.

Key opportunities in a zero net emissions economy

- ▶ Growing demand for biofuels and bioproducts would increase demand for agricultural products and residues.
- ▶ Technology to support decision-making, sustainability, and productivity will be increasingly available and affordable.
- ▶ Increasing accuracy and accessibility of climatic data would enable improved responses to climate variability.

The current Queensland context

Livestock

- ▶ The region with the largest number of livestock is Darling Downs.
- ▶ 60% of Queensland's cattle are in Central Queensland, Darling Downs-Maranoa and Outback South.
- ▶ Japan, Korea and the USA are the top importers of frozen Australian meat.

Other agricultural products

- ▶ As at January 2019, 73% of Emissions Reduction Fund projects apply agricultural or vegetation management methodologies.
- ▶ Over half of agriculture GVA in Queensland comes from non-livestock products including broadacre crops, hay and silage, nuts, fruit and vegetables, cotton, sugar cane and nursery products.
- ▶ Broadacre crops account for more than 90% of total agricultural products in tonnes in Queensland.
- ▶ The Townsville region contributed approximately a third of total crop production in tonnes in Queensland from 2013-16, followed by Mackay and Cairns.

Queensland in a zero net emissions economy

Livestock

- ▶ Livestock are more likely to be exposed to heat stress and unreliable feed and water sources due to changes in weather patterns and temperatures.
- ▶ Supply chains will be affected by more severe weather events.
- ▶ Australian consumer preferences may shift toward lower-emissions protein sources such as game meats and lentils, while red meat demand in Asia is expected to grow.

Other agricultural products

- ▶ Supply chains will be disrupted from more severe and unpredictable climate events, including extreme rain events, heatwaves, flooding, and more intense cyclones.
- ▶ Food preferences and social awareness may drive changes in business operations to meet demand for low carbon packaging and products, and sustainable and ethical value chains.
- ▶ Growth in biofuel and bioproducts would drive demand for agricultural products, including organic waste.
- ▶ New and expanding carbon markets may provide opportunities for increased revenues within the agriculture sector.

How can Queensland position itself for the transition?

Attract investment

To attract investment in the agriculture sector, the Queensland government can:

- ▶ Develop strategies and programs to attract funding through different financial instruments such as grants, green bonds, philanthropy capital and venture capital, for developing and disseminating efficient and sustainable agricultural practices, tools and technologies.
- ▶ Position Queensland as an innovation hub of bioproducts.

Facilitate growth

To facilitate growth of the agriculture sector, the Queensland government can:

- ▶ Improve dialogue and collaboration with the industry through developing peer support networks and using clear and consistent language.
- ▶ Facilitate the provision of granular and usable climate and weather data to farmers, with accompanying decision-support tools and assistance.
- ▶ Encourage the implementation of efficient and sustainable agricultural practices and products.
- ▶ Address connectivity and communication issues which prevent smaller agricultural companies from applying existing information and tools.

To attract investment in the agriculture sector, industry can:

- ▶ Understand and use existing support and tools to take up carbon market opportunities.
- ▶ Engage with researchers and government to attract financing to develop biofuels and bioproducts, and assess the viability of leveraging these opportunities.

To facilitate growth of the agriculture sector, industry can:

- ▶ Promote 'green innovation' for farming activities through automation and robotics and the biofutures industry through biofuels, biochemicals and bioplastics.
- ▶ Develop business planning capability for small and medium enterprises to address climate risks and opportunities, especially through incorporating long-term weather forecasts and diversifying into new streams of revenue, such as carbon farming.

Proactive strategies and engagement will enable the Queensland agriculture sector to remain resilient and sustainable in the face of climate change. The sector has a significant opportunity to contribute to a future zero net emissions economy.