APPLIED

Australian Academy of Technology & Engineering

POSITION STATEMENT
April 2014

Enabling growth in agriculture

The Academy calls for the integrated pursuit of increased productivity and the enhancement of ecosystems to secure the future growth and profitability of Australia's agricultural and food sectors.

The future of Australian agriculture

The world is facing a confluence of pressures which, on current indications, will increasingly threaten global food security and agricultural production for the foreseeable future, arising mainly from the effects of population growth, changing dietary preferences, climate change, and increasing competition for natural resources. Concerted action by industry and governments is required across agricultural and food value chains to increase the use of technology, science and engineering in offsetting and reducing these pressures.

Australia's agrifood industries face new opportunities in production, processing, and marketing to meet growing international demand for safe, high-quality food and fibre products, especially from an increasingly affluent middle class in Asia. To be in a position to create enduring advantage from growth opportunities in these competitive markets, the output, quality, value, and sustainability of Australian agriculture must improve. The availability of water, infrastructure, transport systems, and global market access are also critical to agriculture's success.

There is increasing pressure on the availability of natural resources for agricultural production, due to drought, changing land and water use patterns, competition from other industries, increased input costs (e.g. energy and nutrients), and environmental degradation. In order to maintain and accelerate growth in agricultural production where possible, Australia's natural resources must be utilised more efficiently and protected against future depletion.

By embracing all the tools for innovation in production, processing and marketing that are available, Australian agricultural and food industries can meet these challenges and take advantage of new opportunities. This will require partnerships and collaboration between industry, governments and financial systems to invest in future international competitiveness.

The vision

The Academy sees vigorous and globally competitive Australian agriculture and food industries thriving through investment in technology, science and engineering innovation. These industries will seize the considerable market opportunities arising now and in the coming decades, in the face of significant competition and environmental challenges. Greater engagement across agrifood value chains will be crucial, as will the ability of industries to respond rapidly and flexibly to changing market needs.

Through ecologically responsible intensification, innovative agrifood businesses will reap the rewards from the increasing wealth in Asia while building resilience for future challenges.

Value

The production, processing, and export of safe and high-quality food and other agricultural products is a crucial part of Australia's economy, particularly in rural and regional areas, and a major contributor to the country's wealth and high standards of living. Affordable and nutritious food is also fundamental for people's health and well-being.

In 2011-12 the food value chain in Australia had a combined worth of $270 billion[1]. This included $43 billion in farm and fish production, $91 billion in food and beverage processing, and $136 billion in retail food sales. Australia also exported $30 billion and imported $11 billion worth of food and beverages. In the same period, the entire food industry, from farm production and manufacturing to retail food service, employed 1.6 million people, around 15 per cent of Australia's total employment.

Australia has significant comparative advantages in agriculture and food production over regional trading partners, making these sectors an essential strategic economic investment. A focus on improving profitability from the farm-gate across the whole value chain will see excellent returns on this investment. A strong and innovative agriculture and food sector is also an integral part of Australia's contribution to the global community.

Priority focus areas

Technology, science and engineering-driven innovation have key roles to play in achieving this vision. Priority areas include:

» **Biotechnology,** integrated with modern genetics, breeding, and other techniques, offers opportunities to improve agricultural productivity, natural resource management, and consumer demand, while offering new opportunities for bio-industries across the agricultural value chain. Appropriate regulation is essential for public acceptance and safe deployment.

» **Information technology services** can revolutionise agricultural production systems. Increased deployment and penetration of ICT and high-speed internet access will enable greater use of real time data analysis and agri-informatics, and improve the competitiveness of industries and services.

» **Water** is fundamental to agricultural production. Efficient use of water resources, better water conservation technologies and infrastructure, and enhanced climate and long-term weather forecasting can deliver better environmental outcomes and productivity in both rain-based and irrigation-based systems.

» **Environmental impacts and natural resource management** are critical to the future of agriculture. Mitigation of environmental damage through reducing emissions intensity, soil degradation, and nutrient pollution, among others, is essential for both commercial and sustainability imperatives. Maximising the availability of scarce resources in a more sustainable way through improved regional and local natural resource management capabilities will secure ongoing agricultural production while maintaining ecosystem health.

» **Biosecurity** is essential to protect natural ecosystems, farm productivity, and access to sensitive export markets. Stronger partnerships with industry would enhance Australia's biosecurity capabilities and capacity in prevention, response and recovery.

» **Enhanced product specifications and certification** requiring high standards of environmental management, safety, and quality can offer a premium market position to Australian agrifood exports. Advanced food processing techniques can also produce high-performing, highly-specified functional foods and ingredients.

» **Waste reduction** across entire value chains is increasingly essential. The recovery and recycling of non-renewable and scarce resources, such as nutrients and water, maximising value chain efficiency and transforming waste streams into output will enhance the productivity, sustainability and profitability of agricultural and food production.

The way forward

The Academy will analyse these priority focus areas through the following reference matrix to clarify actions to strengthen innovation in agriculture and food industries in Australia.

Public policy

» The interaction of industries, individual businesses, research institutions, and government departments in the agriculture and food policy space will determine the level of success or failure in securing Australia's agricultural future. This includes interaction around regulatory environments, public funding mechanisms, international relations and trade, and the finance and investment sectors, among others.

Innovation

» Ongoing, broad-based innovation provides the foundation to adapt to and mitigate threats while increasing productivity, profitability, and sustainability into the future. A strong scientific, research, and engineering capability in agriculture, food, and related areas will enable innovation through knowledge, practices, and technologies. Developing and maintaining this capability requires a strategic, long-term approach, increased business investment, and a focus on international and national collaborative research partnerships.

Education

» Enhancing Australia's human capital in agriculture, food production and natural resource management will be essential to achieve this vision. A greater appreciation of the opportunities in and importance of food and agriculture across the whole of society, alongside the revitalisation of agriculture and food science related education, will ensure the continued strength and growth of this key economic sector.

Sources
1. Australian Food Statistics 2011-12, Department of Agriculture, Fisheries and Forestry, Commonwealth of Australia

GPO BOX 4055
Melbourne, 3001
VIC, Australia

T +61 3 9864 0900
F +61 3 9860 0930
E info@applied.org.au

applied.org.au