



Integrating value chain
solutions to increase the
share of Australian food in
the global market place

FUTURE FOOD SYSTEMS

CRC PROSPECTUS



THE OPPORTUNITY

The world is on the cusp of a leap in demand for customised, high-value food goods and Australian agrifood is uniquely positioned to benefit.

Australia is renowned as an efficient producer of safe, trusted food commodities. The next growth phase in the sector demands investment in advanced solutions for production and export of fresh and value-added goods.

Consumer preferences are rapidly changing and there is a global mega trend surrounding the connection between food and wellness, coupled with increasing pressure on social license grounds to improve the sustainability of production.

Global demand for source-verified fresh, health and personalised foods segments is projected to reach AU\$8 trillion per annum by 2025¹, with the majority of new demand arising in Asia².


Australia's proximity to Asian markets, our free trade agreements, and strong reputation for food safety and quality presents exceptional opportunities to progressive firms all along the agrifood value chain.



The opportunity is not without challenge. Currently the gross value of Australian agricultural production is \$50 Billion: the sector aspires to lift this to \$100 Billion by 2030.

1. Derived from: *Size of the Prize: An Overview of 16 Opportunities for Australian Food & Agribusinesses*, FIAL 2017.

2. *Urban world: Cities and the rise of the consuming class*, McKinsey Global Institute, 2012.



To achieve this target, new thinking is needed about how and where we grow and value-add food goods and achieve the sustainable intensification of production needed to build scale in the most profitable markets.

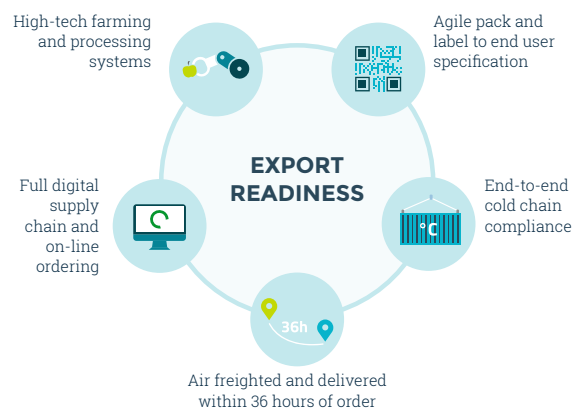
Central to the challenge is realising a new vision for regional and peri-urban agrifood. Specifically, what are the technical, design and training solutions needed to transform our regional towns and capital cities into world-class, export-ready agrifood hubs?

Led by NSW Farmers, University of NSW and Food Innovation Australia Ltd, the Future Food Systems CRC has been established to develop commercial solutions, customised to our environment and economy.

Our aim is to focus the brightest minds in

sustainable farming, precision nutrition, advanced manufacturing, economics, logistics and digital to build a new collaborative value chain that returns higher value to producers and better products to consumers.

We invite leaders in farming and food processing operations, information technology, packaging, supply chain integrity, logistics, sustainable and advanced manufacturing to partner with us in this exciting opportunity to lead the future of food supply.



"Fast-moving companies worldwide are establishing entirely new product and service hybrids that disrupt their own markets and generate fresh revenue streams."

- Austrade, Australian Disruptive Technologies, 2017

Australia will need to be competitive in a global innovation race by scaling up more high-growth industries and companies; commercialising more high-value products and services; fostering great talent; and daring to tackle global challenges"

- Bill Ferris AC, Australia 2030: prosperity through innovation

TECHNOLOGY CONVERGENCE AND CAPABILITY

Success in a fast changing, highly competitive global market place demands well-informed investment in Science, Technology, Engineering & Maths (STEM) technologies such as precision agriculture, precision nutrition, process automation, digital traceability and integrated logistics, which in turn demands investment in workforce capability.

The Future Food Systems CRC will drive and link world-class research and development across four critical innovation streams:

1. SUPPLY CHAIN TRANSFORMATION



Implementing consumer driven innovation in:

- Just-in-time production with live, market -formed production and product innovation
- Best practice on farm through to smart logistics linked to agriport facilities in cities and regional agrifood hubs
- Provenance protection underpinned by applying best practice traceability and tamper-deterrent technologies

2. SUSTAINABLE URBAN FOOD SYSTEMS

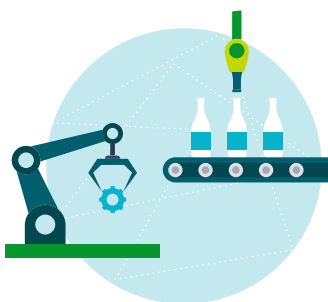


Integrating intensive agrifood in future towns and cities in ways that increase livability and create high value jobs:

- Indoor farming using tailored and modular production to achieve 5 to 10 times the output of traditional farming methods on the same land area
- Creative urban and building design using sustainable, replaceable and blended smart materials
- Retaining and integrating food production and food supply chains within the envelope of densely populated regions
- Circular economy solutions to link urban water recycling, renewable energy and waste management with sustainable food production in mosaic landscapes that provide high urban livability
- Manufacturing 4.0 approach to deliver production capability, control systems and automation, with the bonus of high environmental credentials and quality assurance



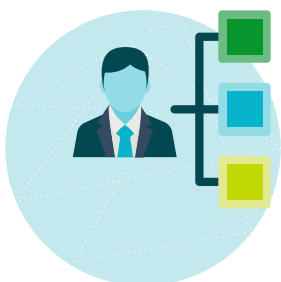
3. VALUE ADDING AND PRODUCT INNOVATION



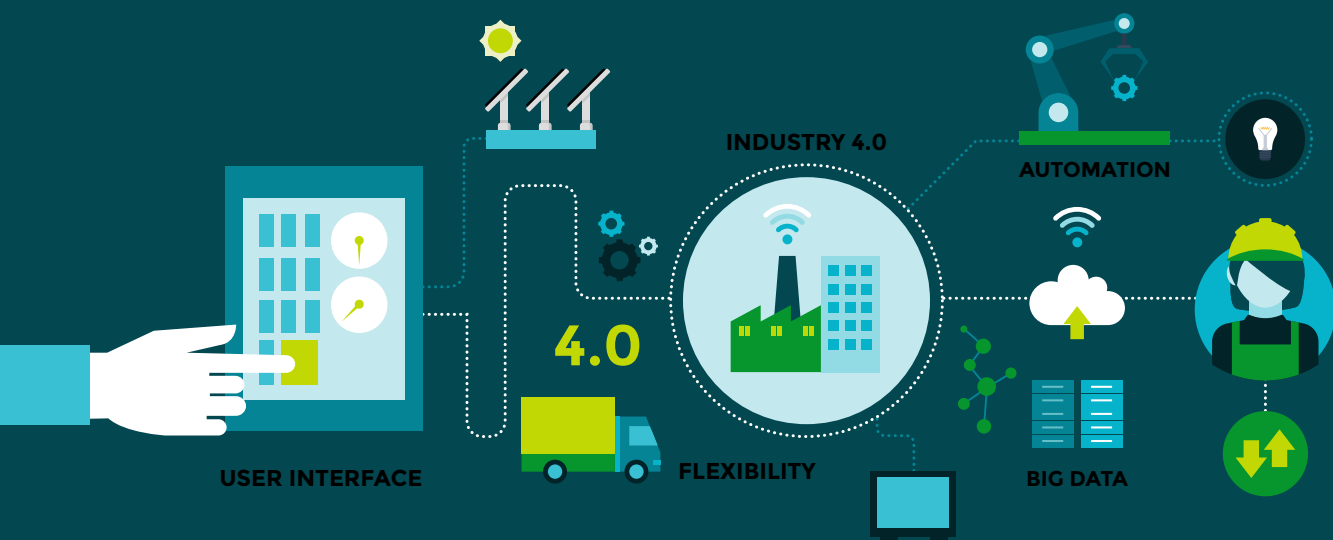
Developing new product lines and the advanced manufacturing solutions needed to maximise the value of our world-class raw materials:

- New varieties and farming methods customised to consumer preferences
- Elaborately processed health foods such as fresh convenience meals and foods for allergy sufferers
- Functional foods, nutraceuticals and medicinal plant products, including from indigenous plants

4. CAPABILITY BUILDING



Ensuring industry has support in selecting, commissioning and operating new technologies and has access to a skilled, STEM based workforce focused on consumers as well as discipline capabilities.



CUSTOMISED PRODUCTS DEMONSTRATION

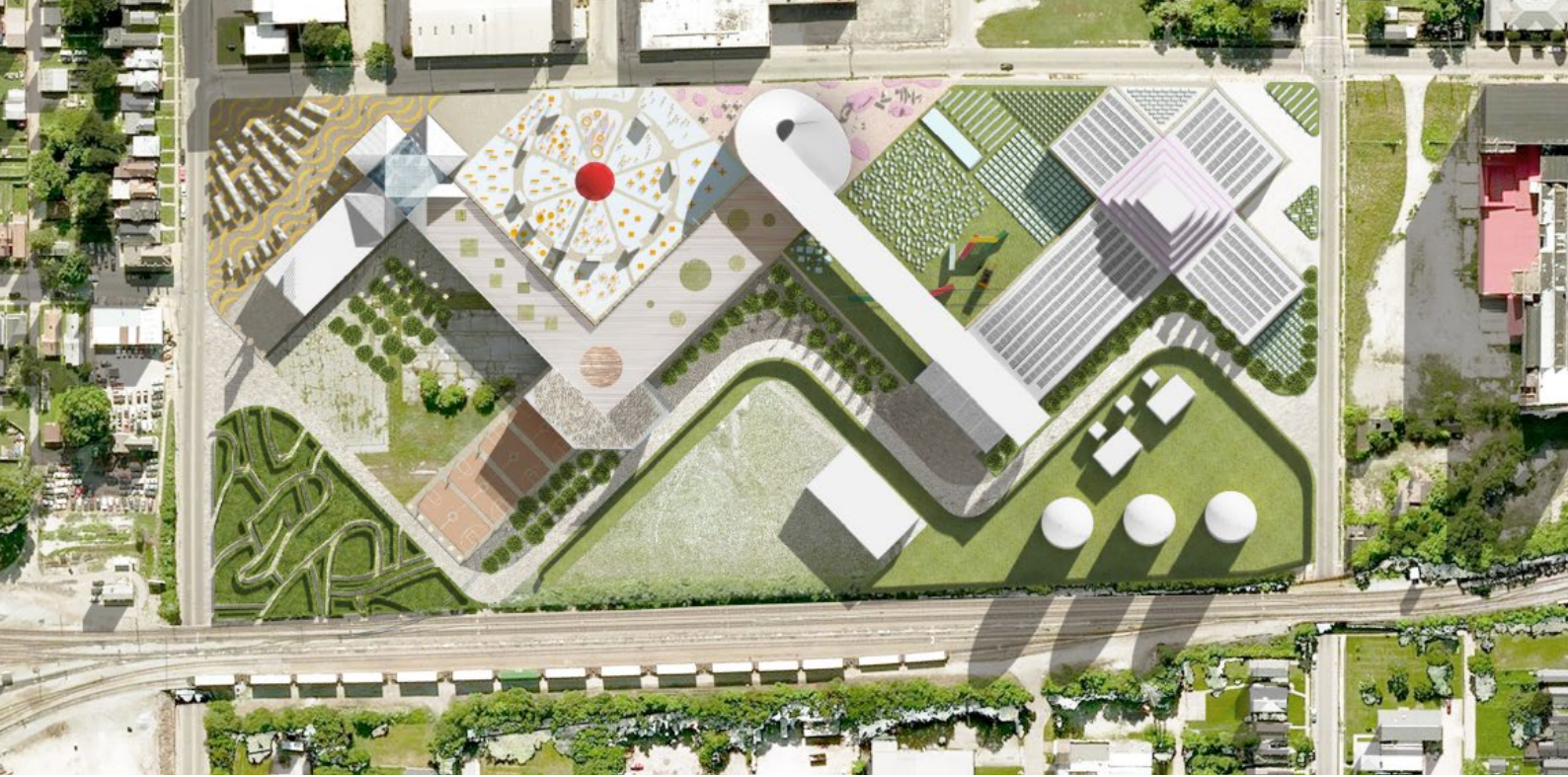
RAPID PROTOTYPING

The FFS CRC will provide full-scale technology demonstration opportunities aimed at advancing and testing new growing and value adding technologies in realistic settings. With the objective of de-risking innovation, test spaces will deploy modular manufacturing strategies to allow SMEs and larger organisations to assess their innovations and products for premium and targeted customization, at economies of scale that make sense. The test process is designed to give companies the ability to learn fast and fast adapt their innovations and products in response to customer and consumer feedback.

INDUSTRY 4.0

VALIDATING COMMERCIAL APPLICATION OF DIGITAL SOLUTIONS

Maximising margin and consumer-responsive production demands application of digital technology and automation at many points in the supply chain. In this technically complex and fast moving field, the ability to rapidly prototype and test solutions in real world applications is critical to successful investment decisions. Optimising inputs on farm, smart logistics with end to end traceability of goods, streamlining compliance with via eGovernment interfaces, connecting to consumers via digital markets are all essential to the future comparative advantage of Australian agrifood.



GREENING CITIES PRODUCTIVELY AND BUILDING FRESH FOOD PRECINCTS

Creative urban and building design solutions, including master-planned high-tech food precincts, are needed to integrate food production within the envelope of densely populated regions. The CRC will link with City Deal and regional development programs to ensure that infrastructure and planning schemes actively support and complement advanced urban agrifood. In this regard, research themes will include:



Circular economy solutions

To link urban water recycling, renewable energy and waste management with sustainable food production in mosaic landscapes that provide high urban livability.



Workforce solutions

That leverage the diversity of skills available in urban communities.



Agriport solutions

That link production and manufacturing precincts with rapid export infrastructure and advanced cold chain logistics.

CONVENIENTLY PACKED

PREMIUM FOODS

By 2025, the global market for foods catering to the demand for verified, premium find foods and health prepared 'convenience meals' alone is projected to be AU\$2.7–\$3.6 trillion.

AU\$2.7–\$3.6 Trillion/Annum

HEALTH AND

WELLNESS FOODS

Including organic foods, 'free from' foods (for people with allergies) and foods with environmental credentials, the health and wellness category of food is projected to be worth AU\$3.4 trillion per annum by 2025.

AU\$3.4 Trillion/Annum

TARGETED EATING AND

PERSONALISED FOOD

New science is revealing the health benefits of tailoring foods to suit individual genetics and to assist with the treatment of specific medical conditions. The emerging market for 'targeted eating' – product reformulation to reduce fat and sugar content, and functional or fortified foods designed to address specific nutrient needs and health concerns is projected to be worth AU\$690–AU\$770 billion per annum by 2025.

AU\$690–\$770 Billion/Annum

INDOOR

URBAN AGRICULTURE

Food Innovation Australia (FIAL) research estimates that the global opportunities surrounding indoor urban agriculture are in the order of AU\$185– AU\$395 billion by 2025.

AU\$2.7–\$3.6 Trillion/Annum

Figures from: *Size of the Prize: An Overview of 16 Opportunities for Australian Food & Agribusinesses*, FIAL 2017.



THE NETHERLANDS

A LESSON IN COMPARATIVE ADVANTAGE

The Netherlands is smaller in area than the Sydney Basin, has a population of 17 million and produces six percent of global food exports by value. Netherlands food exports in 2016 were AU\$135 billion, nearly three times more than Australia's. How do they do it? Through long term strategic public/private investment in advanced urban agrifood technology.



GEARING UP

FOR FRESH FOOD ECOMMERCE

Fresh food ecommerce is an important growth sector in high-value Asian markets. In China, for example, JD.com and Alibaba, with its subsidiary Yiguo, are making billion dollar investments in bonded warehousing and last-mile cold chain logistics to enable rapid delivery of perishable goods directly to consumers.

TMall's fresh food platform, "Miao Xiansheng" (喵鲜生 or Mr. Fresh in English) is offering attractive marketing solutions to growers who can provide premium, consumer-packed 'food with a story'. The AUA CRC will drive the supply chain innovation needed to support Australian farmers in building their own distinctive brands in China, Vietnam, Korea and other key emerging markets.





INDUSTRIAL ECOLOGY

INTENSIVE URBAN FOOD PRODUCTION

As the world urbanises and population climbs towards 10 billion it will be harder to meet society's nutritional needs solely from traditional agricultural practices. Recognition of resource constraints and demand for improved local access to fresh food is driving innovation in urban agriculture with rapid commercialisation complemented by high levels of sophistication in techniques and technology.

Closed-loop 24/7 indoor production models, vertical farming, integration of renewable energy, water efficiency and organic waste recycling, continuous monitoring of performance analytics across inputs, outputs, time, motion and quality, are fields in which Australian firms can commercialise and deploy unique solutions.





FAQs

What is a CRC?

The Commonwealth Cooperative Research Centre (CRC) Program supports industry led collaborations to address industry problems that impact on the competitiveness, productivity and sustainability of priority industry sectors. The food and agribusiness sector is of high strategic importance to the Australian economy.

A CRC provides a unique and proven way for industry, researchers and government to come together to address industry challenges and realise a significant opportunity using best practice knowledge and expertise. They are expected to deliver:

- medium to long term industry led research
- industry focused education and training that increases engagement across the sector, facilitates technology development, develops skilled employees, and builds research and development capacity within industry, particularly small to medium sized enterprises (SMEs)
- the results of research to industry and encourage uptake

How does a CRC work?

All CRCs must be established and governed as an incorporated company, limited by guarantee. The CRC is governed by a board which must include a Chairperson who is independent of the participants and who has the necessary skills and experience to lead an organisation with diverse Participant needs and outcomes.

The composition of the CRC Board includes senior figures with general industry experience and must reflect skills, experience and expertise relevant to managing the CRC. The majority of Board members are independent to the CRC.

What can you get from the CRC?

INDUSTRY:

- Leading edge solutions to commercial challenges and opportunities
- Identification of new business opportunities and collaborators
- Access to world leading researchers and capabilities
- Future leaders and technologies able to support new business
- Generation and access to new IP
- Eligibility for R&D tax credits

RESEARCH:

- Leveraged investment from industry and government partnerships
- Creating new knowledge for future research opportunities
- Financial support and development of higher degree students with industry understanding

GOVERNMENT:

- Planning and design solutions for sustainable urban agrifood
- Innovative systems and business models to better utilise Australia's freight capacity
- New systems for better coordination at intermodal interchanges to reduce delays and costs with focus on export of fresh food
- Systems, methods and technologies to better monitor and control the cold chain management of perishable goods

Intellectual Property Management

- Projects will each be governed by a separate project agreement which specifies how IP will be managed for that project including ownership, access, licensing and utilisation
- All background IP will be documented in the Project Agreement before any project starts
- Ownership of background IP stays with the party that contributes it
- Commercialisation arrangements for Project IP (including filing of patents) will be specified in the Project Agreement



Links to Other Programs and CRCs

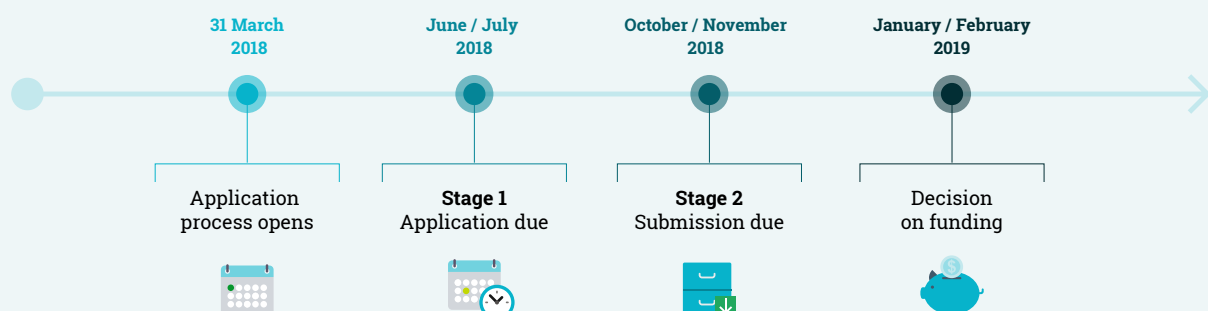
1. The CRC will have links to the Food Agility CRC regarding consumer insights and traceability capabilities and with the iMove CRC to coordinate activities in transport connection solutions
2. The Future Food System CRC programs will be aligned with Food and Agribusiness and Advanced Manufacturing Growth Centre priorities and with the City Deal program

Participant Contributions

The CRC will operate for 10 years. Individual company contributions and length of participation depend on expectation of benefits from the CRC research. Contributions can be cash and/or in-kind with higher total cash commitments helping make the bid more successful. Participant cash and in kind contributions will be vested through specific CRC research projects to which the participant is a party.

Participants are expected to contribute to the bid process. The CRC bid team will manage expenses against the bid budget and report that to the Bid Committee. Any surplus funds at the end of the bid process will be returned to the contributing partners, or at the partner's discretion, be made part of their first year's committed contribution to the CRC.

Indicative time line



CHAIR



Fiona Simson

Fiona is the President of National Farmers Federation and is a Board member of NRMA (NSW), the Australian Made Campaign Ltd, and AgStewardship Australia. As a leader in the sector, her focus has been on creating opportunities. "I believe we need to work smarter and beyond our traditional alliances, and include other stakeholders and the community in our conversation in ways that are engaging and effective. Investment in high-tech, sustainable urban agrifood, co-located with regional and city airports and precincts to enable rapid freight, is central to reaping the rewards presented by domestic and Asian markets for value-added, provenance-protected healthy foods."

BID LEAD

David Eyre

GM Research and Innovation, NSW Farmers

T + 61 403 199 966

E eyred@nswfarmers.org.au

RESEARCH DIRECTOR

Professor Ian Gibson

Associate Dean (Industry and Innovation), UNSW Engineering

T +61 411 864 871

E ian.gibson@unsw.edu.au

FIAL CONTACT

Barry McGookin

GM Innovation, Food Innovation Australia Ltd

T +61 448 059 051

E barry.mcGookin@fial.com.au

