



Exploring the growth potential of Australia's food manufacturing sector

A new narrative for
Australia's agrifood system

JANUARY 2021



(inside front cover: intentionally blank)

Preface

General Use Restriction

This report is prepared for the use of the Page Research Centre (PRC).

The report has been prepared for the purpose of exploring possible scenarios around the future of food manufacturing in Australia. It is not intended to be used or relied upon by anyone else and we accept no duty of care to any other person or entity. No representation or warrant (express or implied) is given as to the completeness or accuracy of the information contained in the report, and, to the extent permitted by law, the Australian Institute of Food Science and Technology (AIFST), RDS Partners, the Page Research Centre, their members, employees, or partners accept no liability, and disclaim all responsibility, for the consequences of you or anyone else acting, or refraining to act, in reliance on the information in the report or for any decision based on it. AIFST, RDS Partners and Page Research Centre have indicated within this report the sources of the information reported. We have not sought to independently verify those sources, and we are under no obligation in any circumstances to update this report in either oral or written form. The findings of this report have been formed on that basis.

Unless permission is sought and provided by both PRC and the authors, you should not refer to or use our names or the advice for any other purpose.

Terms of Use

This document is subject to copyright. You may download, display, print and reproduce this content for your personal use or for use within your business but only in an unaltered form and with the copyright acknowledged. The document is not to be used for commercial gain through reselling, rebadging or inclusion in a commercially available information or management program.

Disclaimer

AIFST and RDS Partners are apolitical organisations commissioned for their experience and expertise in the field of interest and had complete intellectual independence regarding the findings and recommendations contained within the report.

Acknowledgements

AIFST and RDS Partners were supported at all stages of this project by Page Research Centre Director Dr. Theresa Craig and Executive Director Kristian Jenkins. The authors acknowledge and thank Theresa and Kristian for their thoughts, suggestions, informed discussion, and comments on early drafts of this paper.

We particularly thank the 26 Australian food system leaders who freely gave of their time and expertise to provide the rich insights on which this paper is based. We trust we have faithfully represented their perspective.

Citation

AIFST and RDS Partners (2021). *Exploring the growth potential of Australia's food manufacturing sector: a new narrative for Australia's agrifood system*. Page Research Centre, Canberra.

Contact

Fiona Fleming, CEO

The Australian Institute of Food Science and Technology Limited

Email: fiona.fleming@aifst.com.au

Contents

Executive Summary.....	1
1. Introduction	3
1.1 Background	3
1.2 Setting the scene.....	3
1.2.1 Terminology	3
1.2.2 Scope.....	3
1.3 Methodology.....	4
1.3.1 Information gathering.....	4
1.3.2 Identification of key pressure points	4
1.3.3 Recommendations	4
2. The landscape of Australia’s food system.....	5
2.1 The Global Picture.....	5
2.1.1 Global agriculture and food outlook.....	5
2.1.2 Consumer insights and trends	7
2.1.3 Global Value Chains	9
2.2 Australia’s food system snapshot	11
2.2.1 Food security.....	11
2.2.2 Water security.....	11
2.2.3 Biosecurity.....	12
2.2.4 Agriculture.....	13
2.2.5 Food manufacturing.....	14
2.2.6 Employment.....	16
2.2.7 Cost of doing business in Australia	18
2.2.8 Food Waste	19
2.2.9 Policy Environment	20
2.2.10 Regulation	22
2.3 Trade and market access	26
2.3.1 Food sector trade.....	26
2.3.2 Free Trade Agreements (FTA’s).....	28
2.4 Asia on our doorstep.....	32
2.5 Education, research, and skills.....	34
2.5.1 Education	34
2.5.2 Research.....	34
2.5.3 Skills.....	35

2.6	COVID-19 Impact.....	37
3.	Key policy-relevant recommendations for Australia’s food system	39
3.1	A single strategic plan covering Australia’s food system.....	39
3.1.1	Recommendation.....	39
3.1.2	The literature	40
3.1.3	The interviews – what we heard.....	43
3.2	Market access and trade.....	47
3.2.1	Recommendation.....	47
3.2.2	The literature	47
3.2.3	The interviews – what we heard.....	50
3.3	Tax and regulation reform	52
3.3.1	Recommendations	52
3.3.2	The literature	52
3.3.3	The interviews – what we heard.....	59
3.4	Identifying and capturing new opportunities	62
3.4.1	Recommendations	62
3.4.2	The literature	63
3.4.3	The interviews – what we heard.....	67
3.5	Harnessing the power of collaboration	73
3.5.1	Recommendations	73
3.5.2	The literature	73
3.5.3	The interviews – what we heard.....	75
3.6	Brand Australia.....	79
3.6.1	Recommendation.....	79
3.6.2	The literature	79
3.6.3	The interviews – what we heard.....	79
3.7	Infrastructure Investment.....	83
3.7.1	Recommendation.....	83
3.7.2	The literature	83
3.7.3	The interviews – what we heard.....	83
4.	Conclusion.....	85
	References	86
	Appendix 1: Methodology	91
	Literature Review	91
	Interviews.....	91

Executive Summary

This paper provides a synthesis of much that has come before (and we commend those reports to you, as they contain much useful data, information, and analysis outside the scope of this paper), leavened, and enriched by contemporary opinion provided during one-on-one interviews with 26 industry leaders.

It is clear that Australia's food manufacturing sector has enormous growth opportunities. Recently, Food Innovation Australia Ltd (FIAL) (2020b), amongst others, have provided strong evidence to propose a potential increase of AUD\$200 billion by 2030 ... *"which would almost triple the current size of Australia's food and agri-business sector"*.

But how do we work to realise this potential?

Perhaps the most important message arising from this review was the need to reimagine the way we understand and manage food production in Australia – to think about an Australian food system, not just 'agriculture', 'production' or 'manufacturing' silos.

There has been, in recent years, a plethora of reports and papers and opinion regarding the opportunities and threats facing Australian food producers – typically focussing on either side of an artificial divide between what have become known as "pre-" and "post-" farm gate domains.

These reports all provide their own value, and – reassuringly – their narratives all seem to be pointing us in the same direction. But there is something missing – there does not appear to have been any great call to action.

This was well articulated by one of our interviewees:

"[there are] ... lots of people ... doing these reports and everyone's giving the same answers. Nothing happens and it's just another report..."

To that end, for this paper we have crafted a series of recommendations arising from our review of contemporary information and from our discussions with industry experts.

While priorities will change as the operating environment also inevitably changes, these recommendations point to some key activities that will help governments develop a clearer picture about what their food policy is and how they are going to support it.

The recommendations are as follows.

Recommendation 1: *That the Australian Government works with food system stakeholders to establish an industry-led, food system strategic advisory body, chaired at the Ministerial level, to develop a National Food Plan that:*

- i) prioritises and guides activities supporting Australia's food system*
- ii) identifies and drive programs so that Australia's food system is supported as a cohesive, nationally important whole, and*
- iii) guides government on all aspects of policy that impacts Australia's food system.*

Recommendation 2: *That the Australian Government's work on international trade negotiations and relationships actively supports, and is actively supported by, the Australian food system.*

Recommendation 3: *That the Australian Government works with food system stakeholders to identify reforms that will make the Australian tax environment more attractive, especially to those food system companies considering capital and/or R&D investments.*

Recommendation 4: *That the Australian Government works with Australian food system stakeholders to identify reforms to simplify and streamline the regulatory environment in which the food system operates.*

Recommendation 5: *That the Australian Government works with industry to identify key domestic and export growth opportunities for the national food system, alongside ways that government can support the Australian food system to capitalise on these opportunities over the longer term.*

Recommendation 6: *That the Australian Government works with industry to mitigate ways that existing Australian policies and regulations are inhibiting the Australian food system's potential to upcycle waste and participate more fully in circular economy projects.*

Recommendation 7: *That the Australian Government substantially increases its prioritisation and support for food system capability and capacity building programs across schools, VET institutions and universities.*

Recommendation 8: *That the Australian Government recognises formal industry clusters as best practice in fostering collaboration and growth and works with food system stakeholders to identify and support meaningful food system clusters.*

Recommendation 9: *That the Australian Government works with food system stakeholders to design and deliver flexible support mechanisms and packages for small, medium, and large food system companies and collaborations.*

Recommendation 10: *That the Australian Government works with Australia's food system stakeholders to promote to domestic and international consumers the 'Australian-ness', the safety, quality and provenance attributes of Australian food products (in whatever way is best for specific products) – to boost domestic sales, exports, onshoring and import replacement.*

Recommendation 11: *That the Australian Government works with Australia's food system stakeholders to identify and mitigate key logistic infrastructure bottlenecks.*

The first recommendation overarches all others in this report.

The recommended industry-led advisory body would be responsible, amongst many other things, for reviewing the recommendations in this and contemporary reports, and for developing and delivering against its own priorities.

There was a strong call for a well-coordinated and resourced national food system plan and strategy covering what, how and why we grow, harvest, store, value add, market, regulate and export our agricultural, aquacultural and wild harvest primary products and to be rid of the siloed, often piecemeal ways in which these activities are designed and delivered.

In short, we must view and integrate all these largely disparate activities under the auspices of a single, national food system. We need to decide what that system should do – what success looks like – and then design policies and effective actions to achieve that vision.

If the Australian food system is to be positioned to take advantage of the huge opportunities foreseen by our experts, and to mitigate the threats, a serious, nationally coordinated approach to food must occur.

A nationally coordinated approach to food needs to be prioritised so that it is led by industry with true commitment, collaboration and support from the highest levels of government.

We have the information. We have the expertise. We now just need to get on with it.

As one interviewee put it:

“Where is the Minister for Food?”

1. Introduction

1.1 Background

In July 2020, the Nationals Policy and Initiative Committee commissioned the Page Research Centre (PRC) to deliver a paper discussing the potential to grow Australia's food manufacturing sector and proposing focus areas to support this growth.

One driver for this project has been the ongoing COVID-19 situation, which has exposed Australia's strategic vulnerability in some areas, including a perceived over reliance on imports and international suppliers. The PRC wishes to understand what parts of Australia's food manufacturing industry are well positioned to develop and to boost Australia's self-sufficiency in an increasingly volatile global economy and to grow the Australian economy generally.

This paper has been developed using a synthesis of current key reports related to the future of Australia's agricultural and food production system obtained through a literature review and through a series of conversations with 26 industry leaders, scientists, and stakeholders deeply embedded in the sector. These experienced industry professionals are living and experiencing the current environment and have shared their insights - looking over the horizon at how this environment is changing and the potential way forward.

This paper gives a brief overview of the key themes identified from the literature review and the interviews providing a new narrative for Australia's agricultural and food production system - the key opportunities available to Australia's food manufacturing sector. Rather than prescribe solutions, it is intended to catalyse further engaged conversation, guide policy development and inform targeted and effective action. Further discussion should be had by a broad, coordinated group of food industry stakeholders, including those engaged directly with consumers and global markets.

The anticipated outcome from this paper will be that the PRC is better informed in relation to potential opportunities to support national and export growth for Australia's agricultural and food production system. This paper will be used to provide policy guidance to the Nationals Policy and Initiative Committee.

The authors trust and recommend that others, also, will use this public document to inform their own projects.

1.2 Setting the scene

1.2.1 Terminology

In the preparation of this paper, several terms to describe the whole of the food supply chain were used interchangeably in both the literature and by those interviewed. For this paper, we have chosen to use the term *"agricultural and food production system"* or *"food system"*.

Taking a lead from Bardsley *et al.* (2020), *"the use of the word 'system' as a singular unit is intentional. It conveys an approach to the food sector as an interconnected whole, encompassing agriculture, horticulture, aquaculture, and fisheries and ranging from production through distribution, marketing, selling, consumption, and disposal."*

In this report, we consider that it is vitally important to recognise a single *food system* and we therefore use this terminology throughout the report.

1.2.2 Scope

This paper focuses on Australia's food system, encompassing agriculture through to manufacture, distribution, marketing, selling, consumption, and disposal (and upcycling).

1.3 Methodology

1.3.1 Information gathering

The information gathering phase of this project, designed to suit available resources, comprised:

1. A review of relevant, contemporary public domain information and policies, and
2. Semi-structured interviews with industry, academic and research leaders.

Further detail is provided in Appendix 1.

1.3.2 Identification of key pressure points

Analysis of this information revealed a set of key pressure points, which were consistent across both information sets. These pressure points are set out and discussed in Section 3.

1.3.3 Recommendations

For each of these pressure points, one or more high-level recommendations for action have been provided, recognising that the priorities and imperatives may be reprioritised in light of the COVID-19 era.

2. The landscape of Australia's food system

In this section we provide a brief overview of some factors influencing the current Australian agricultural and food production system environment. While it was not within the scope and resources of this paper to examine the full gamut of global factors that shape this environment, the following summary has been collated to provide some context against which to consider the desktop literature review and industry, academic and research leader interviews.

2.1 The Global Picture

2.1.1 Global agriculture and food outlook

In June 2020, the Secretary-General of the United Nations, Mr Antonio Guterres called for transformation of food systems to achieve a more inclusive and sustainable world.

Mr. Guterres urged countries to build food systems which address the needs of both producers and workers, and to eradicate hunger by ensuring more people have access to healthy, nutritious food.

*"We cannot forget that food systems contribute up to 29 per cent of all greenhouse gas emissions, including 44 per cent of methane, and are having a negative impact on biodiversity."*¹

A report released by the Commission for the Human Future (2020) – *Round Table on Global Food Security* – identified several risks for the global food system as summarised in Table 1, noting that all were ultimately related to food security.

Table 1: Risks for the global food system [Commission for the Human Future (2020)]

Risk	Risk Description
Industrial food manufacture as practised today is not sustainable	According to the report: <i>There is currently a worldwide focus on renewable energy to power the human future: the focus on renewable food is negligible. This has to change. The two go hand-in-hand.</i>
Resource risks	Due to the destruction of the natural resource base – soil, water, biodiversity, and the focus on productivity and yield rather than sustainability. For example: Food production currently uses 70-75% of the world's available fresh water to grow 40% of the world's food – in most cases, unsustainably.
Climate risk due to climate change	According to the report: <i>Food production is both a victim and a cause of global climate change, through the emissions released by land clearing, cropping, intensive livestock production, use of nitrogen and the operations of the food chain. Overall, food production is responsible for around 30% of climate emissions. However, there are many opportunities to break this link.</i>
Agroecosystem failure	This relates to the impact of the use of pesticides, access to clean water for domestic and agricultural use, loss of diversity.
Hunger and poor diet	Food systems of the future need to consider not only people suffering from hunger but consumption of foods that are nutrient poor - <i>Malnutrition – including over-nutrition (2 billion people), under-nutrition (1 billion) and micronutrient deficiencies (2 billion)</i>

¹ <https://news.un.org/en/story/2020/06/1065962>

Risk	Risk Description
	– now affects more than half of the human population. It is the ‘new normal’ in nearly all countries and societies.
Food waste	Globally, approximately one billion tonnes of food produced for human consumption is wasted each year at a cost of around US\$940 billion. (Champions 12.3 2017) In Australia over 5.3 million tonnes of food that is intended for human consumption is wasted at a cost to the economy of AUD\$20 billion. (Pickin and Randall 2016)
Food chain failures	The impact of COVID-19 on food supply chains and the risk this poses to reliability of the food supply globally.
Population growth	The impact of this on unsustainable use of water, food and other resources.

The report also outlines suggested solutions and pathways aligned to the United Nations Sustainable Development Goals². The report from the Commission for the Human Future (2020) recommends re-investing in food: *“There must be stronger emphasis on developing food environments that yield good health for people, animals and the environment. This can be achieved through evidence-based R&D that employs problem-solving structures which enable us to assess and respond to interdependent risks simultaneously.”*

The FAO report, State of Agricultural Commodity Markets (FAO 2020b), noted that agriculture is essential to the achievement of the SDG’s and the importance of global value chains (GVCs) to food and agriculture trade. As GVCs can run across countries, products may cross many borders and are subject to tariffs along the way, fewer and lower trade barriers are important.

The paper on global food and water security in 2050 (Piesse 2020) observed that a larger global population with rising incomes and a global move towards a “western diet” are considered to be the drivers of an increase in demand for food and water in the years leading up to 2050. In order to feed the estimated world population of approximately 10 billion people in 2050 (United Nations 2019) the following are likely to play a role in increasing the global food supply:

- Sustainable intensification of agricultural production
- Lifting food production in underutilised regions
- Reducing food waste
- Adopting new technologies

The FAO Food Outlook biannual report on global food markets (FAO 2020a) noted that while food markets will face months of uncertainty due to the impact of COVID-19, the agri-food sector is likely to display more resilience to the crisis than other sectors.

This FAO report looks at the risk of moving from a global health crisis to a global food crisis. The International Monetary Fund’s most recent World Economic Outlook (April 2020)³ forecasts a global recession to the tune of a -3 percent annual fall in world GDP in 2020. The report concludes *“that a COVID-19-induced global food crisis is not on the horizon. Indeed, while the world food economy was ill-prepared for the shocks that characterized the global food crisis in 2007/08 and the recession that*

² <https://sdgs.un.org/goals>

³ <https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/weo-april-2020>

followed in 2009, this cannot be said of the situation in 2020.” and emphasised the following as important to ensure food systems are supported to ensure food security:

- Governments ensure that trade remains open, frictionless, and free from restrictions,
- Farm and agricultural workers are on the same footing as health workers, and
- National food systems should be regarded as important as health systems.

While these trends are global, they will impact on Australia’s food system of the future.

2.1.2 Consumer insights and trends

In 2017, CSIRO released a well-received analysis of what it saw as a possible roadmap for Australia’s food and agribusiness sector (CSIRO 2017). In this report, CSIRO noted that Australia’s food and agribusiness sector is a vital contributor to the Australian economy and a key source of growth for the nation. At its heart, the CSIRO roadmap laid out an analysis of the five mega-trends that will influence global food markets over the coming decades. These mega trends were presented as set out in Table 2.

Table 2: Mega trends influencing global food markets (CSIRO 2017)

Trend	Description
A less predictable planet	Supply of limited resources is being further constrained by more severe and unpredictable climate events and more potent microbes, pests and diseases – causing food producers to more seriously consider the environmental life cycle impact of food production activities.
Health on the mind	An ageing population, rising levels of chronic disease and increasing social awareness around health and wellbeing are creating demand for foods that provide specific and holistic health outcomes.
Choosy customers	Rising wealth, increasing choice and greater market access are driving demand for a more diverse range of foods and food service options that are tailored to individual preferences and lifestyles. [Examples of attributes required by downstream global value chain firms include traceability, free range, hormone-free, organic and carbon-neutral (Greenville 2019).]
One world	As food and beverage value chains become increasingly global, new market opportunities are created while at the same time introducing competition and supply resilience risks in a volatile world.
Smarter food chains	Increasing demand for food, the use of big data and more sophisticated e-commerce platforms are driving the creation of leaner, faster, more agile and low waste value chains.

A recent report by FIAL (2020b) identified 10 trends which will significantly shape Australia’s food system over the next 10 years. These are summarised in Table 3. The report contains much more detail and is highly recommended reading.

Table 3: Trends shaping Australia's food system (FIAL 2020b)

Trend	Description
The great urban migration	Net population growth expected to occur in urban areas creating a growing pool or consuming class with income for discretionary spending
Increasing physical connectivity	Infrastructure reshaping supply chains
Dietary shifts due to health and environmental issues	A move away from animal products for sustainability and health related reasons
Environmental constraints impacting production	Biodiversity loss, collapse of ecosystems
Technological advances	Use of technologies with potential to transform the sustainability of the food system, for example: alternative proteins.
Ageing population	Population demographics will influence the volume and types of foods needed into the future.
Government reshaping the way we produce, transport and consume food related to health and environmental concerns	Government programs and regulations directed at the food system, for example: use of plastic packaging
Food security	Concerns related to food supply chain vulnerability which have been highlighted by COVID-19 and the potential to "reshore"
Geo-strategic concerns	For example: regulatory interventions preventing or limiting market access.
Food provenance	For example: the increased focus on the implications of food fraud

Based on these trends, the FIAL report identified 19 opportunities for Australia's food system. It is beyond the scope of this report to cover this further other than to say that these opportunities represent the most comprehensive current thinking on this issue.

In a more recent report, Innova Markets Insights⁴ identified the top ten trends for 2021 as set out in Table 4.

Table 4: Top ten trends for 2021⁵

Trend	Description
Transparency triumphs	Consumers are interested in learning more about where their food comes from - technologies such as invisible bar-codes can assist to meet consumer ethical, clean label and environmental demands.
Plant-forward	The continued and accelerated demand for plant-based alternatives driven by health, diet variety, sustainability, and taste.
Tailored to fit	Personalized nutrition meeting a demand for products that meet consumer needs and beliefs.
New omnichannel eating	Restaurant delivery and branded products
In tune with immune	The impact of COVID-19 has led consumers to focus on their immune health. Immunity boosting ingredient will be key in 2021.

⁴ <https://www.foodingredientsfirst.com/news/transparency-triumphs-in-innova-market-insights-top-trends-for-2021.html>

⁵ Ibid #4

Trend	Description
Nutrition hacking	No further detail provided in the report
Mood: the next occasion	No further detail provided in the report
Product Mashups – when trends collide	No further detail provided in the report
Modern nostalgia	No further detail provided in the report
Age of the influencer	No further detail provided in the report

Research by Dupont Nutrition & Biosciences identified that demand for plant-based meat alternatives in Asia will increase over 200% in the next five years – specifically China and Thailand. The market size for plant-based meat alternatives is expected to increase by 25% to US\$1.7 billion over the next five years.⁶

A report by Frost and Sullivan (2020) for FIAL identified the following consumer shifts post COVID-19 set out in Table 5.

Table 5: Consumer trends post COVID-19 (Frost and Sullivan 2020)

Trend	Description
Increasing health and wellness awareness	For example: phytonutrients to improve metabolism; immunity boosters; one the go nutrition; healthy gut enhancers
Food safety as a priority	For example: product traceability; natural or safer preservatives, additives, and organic products; safe packaging
Increased online shopping and at-home meals	For example: ready meals, meal kits; dark or cloud kitchens

These insights are reflected by a report from White Star Capital⁷ which identified that consumers are increasingly focused on convenience, healthiness, and sustainability.

What do all these thoughts and trend insights mean? There is a wealth of information providing valuable insights for Australia's food system for 2021 and beyond. Prioritising these insights into a strategic plan for Australia's food system will provide a powerful base platform to inform the reforms needed.

2.1.3 Global Value Chains

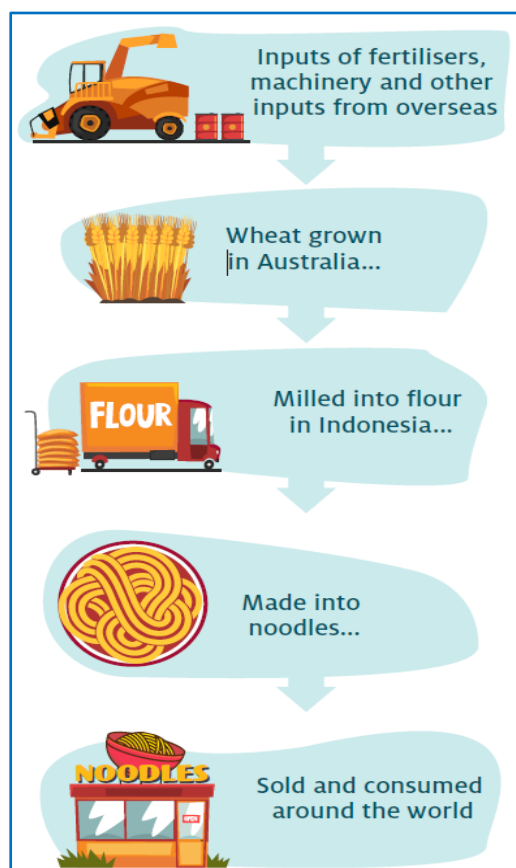
Supply chains are becoming more complex and globally integrated and as a result the food system is becoming less linear and more complex. The products that consumers purchase may often be produced in different stages in different countries around the world.

This type of supply chain is termed a Global Value Chain (GVC) - a network of interlinked stages of production in the manufacture of goods and services that cross international borders, encompassing at least two countries.

⁶ <https://www.foodingredientsfirst.com/news/plant-based-demand-in-asia-will-surge-over-200-in-next-5-years-says-dupont-nb.html>

⁷ <https://medium.com/venture-beyond/exploring-the-2020-foodtech-sector-83b3960382b9>

Typically, a GVC involves combining imported intermediate goods and domestic goods and services into products that are then exported for use as intermediates in subsequent stages of production as shown in Figure 1.



The continued increase in global population and the effect of climate change will have an impact on global food availability, increasing the needs for and value of GVC's. Greenville (2019) noted that GVC trade for agriculture and food is growing relatively fast – with GVC trade between countries in different regions accelerating faster. This has important implications and opportunities for Australia's food system – for example – between 2004 and 2014 almost 45% of growth in agriculture and food exports used as inputs to other country exports was concentrated in six countries with China the most active player. In 2014, 21% of Australian agriculture and food exports was re-exported by our trading partners with the largest being China (Greenville 2019).

Entering GVC's provide benefits such as sector growth through greater market access supporting investment and contributing to economies of scale.

However, for Australia's food system to continue to take advantages of the opportunities provided by GVC's ongoing access to foreign markets, investment and low trade barriers are important.

Figure 1: Simple global value chain flow chart (Greenville, 2019)

2.2 Australia's food system snapshot

The Australian food system plays a significant role in delivering safe, reliable, and nutritious food products to the Australian population.

The Australian food and agribusiness industry added AUD\$61.3 billion of industry gross value in 2018-19 which is equivalent to 3.1% of total GDP (FIAL 2020a).

2.2.1 Food security

The issue of food security is currently considered to be a significant issue globally and a priority concern for global food agencies such as the FAO: *"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life"* (FAO 2006).

Australia is one of the most food-secure countries in the world, alongside Canada, Germany, and France, but it also plays a part in supporting food security of other countries. Most of our food is produced in Australia with domestic production more than meeting the country's needs, even in drought years, with imports accounting for only 11% of food consumption by value (ABARES 2020).

However, Australia exports around 70% of agricultural production (ABARES 2020): playing a significant part in supporting the food security of other countries.

Food security exists on a continuum as shown in Figure 2. Food insecurity is an issue in Australia. Foodbank reported that one in five Australians (21%) experienced food insecurity in the last 12 months (Foodbank Australia 2019). In 2020, the situation has changed due to the impact of COVID-19 - in 2019, 15% of Australians experiencing food insecurity were seeking food relief at least once a week. In 2020, this has doubled to 31%.



Figure 2: The food security continuum⁸

While it is not within the scope of this review to further explore food insecurity within Australia, the food system within Australia must work towards ensuring no Australians experience food insecurity.

2.2.2 Water security

In 2018, the United Nations launched a 10-year global water action plan⁹ to bring about greater progress in achieving the Sixth Sustainable Development Goal: Ensure availability and sustainable management of water and sanitation for all¹⁰.

Water is an essential input for farm businesses. It is used for irrigating crops, as drinking water for livestock, and for managing waste in intensive livestock and processing industries. The agricultural sector accounts for around two-thirds of Australia's total water consumption (Productivity Commission 2016).

⁸ <https://aifs.gov.au/cfca/publications/food-insecurity-australia-what-it-who-experiences-it-and-how-can-child>

⁹ <https://news.un.org/en/story/2018/03/1005671>

¹⁰ <https://sdgs.un.org/goals/goal6>

Water security issues for the Australian food system largely focus on pre-farm gate production. With changing climate and rainfall patterns across much of Australia's farming regions, the need to understand and meeting water security challenges is increasingly becoming a key policy focus.

The Australian Institute of Australian Affairs provided a useful summary of this situation: *"By increasing the amount of water that can be recycled within agricultural, industrial and household use and investing in better water management strategies, water resources can be temporarily reserved. The focus of agricultural water policies should be to reuse water within a single process or use harvested water for multiple purposes without treatment. After water has been reused, it should be treated and recycled for a third future use. Similarly, investment will need to be made into more efficient ways of using, producing and storing water as well as producing food. Desalination plants provide an alternative, climate-independent source of water. Stormwater harvesting, rainwater collection and modifications to urban design treatments are other technologies that should be considered for diversifying water sources. In the long term, the Federal Government must look to significant structural adjustments within the economy and enforce adequate market mechanisms to ensure the price of water use, pollution and accessibility is accounted for.*

*Politically, the prospect of introducing stricter policies on water use and imposing economic mechanisms for water regulation may be met by hostility. As Cape Town has shown, however, and as many other nations are now realising, global water resources are dwindling and if action isn't taken soon to protect them, our current way of life is at stake. The question for the Australian Government now is not whether we need to protect our water supply, but whether the nation is prepared for our own Day Zero if significant changes are not soon made."*¹¹

2.2.3 Biosecurity

Australia's biosecurity system is vital to maintaining the competitiveness of the agricultural sector and protecting Australia's unique environment. The entry of serious exotic pests, weeds or diseases into Australia would have a major impact on Australian farmers and the food system, including loss of production and access to premium export markets. Biosecurity activities also protect the community from harmful diseases and the natural environment from exotic threats. An effective biosecurity system should be risk-based, and not used to protect local industries from international competition (Productivity Commission 2016).

The Australian food system is vulnerable to biosecurity incursions in the form of pests and diseases. Biosecurity has played a critical role in reducing risk and shaping our nation to become one of the few countries in the world to remain free from the world's most severe pests and diseases.

Australia's geographic isolation provides our food system with an added layer of protection against international biosecurity threats – protection which also conveys a competitive advantage for access to some export markets. This isolation, however, is rapidly changing as the barriers of time and distance become less relevant and international travel and trade increase.

The Australian Department of Agriculture, Water and the Environment, amongst others, is tasked with ensuring continued market access for our products and to maintain our high standards for emergency response. It is crucial for the Australian food system that these efforts – our ability to assess and manage potential biosecurity threats at Australia's airports, seaports, and international mail centres, and our ability to respond to biosecurity threats once identified – are prioritised and supported.

¹¹ <https://www.internationalaffairs.org.au/resource/the-last-drop-protecting-australias-water-supply/>

2.2.4 Agriculture

In March 2020, Australia's agricultural sector was valued at AUD\$59 billion, with beef and wheat as the key contributors (Agribusiness Australia 2020). NFF (2018) reported that Australian farms provide 93% of our domestic food supply, with 85,000 farm businesses in Australia.

Australia ranked 23rd in the world as an agricultural producer, representing just 1% of global production value in 2014–16. The top 10 commodities produced in Australia are shown in Figure 3.

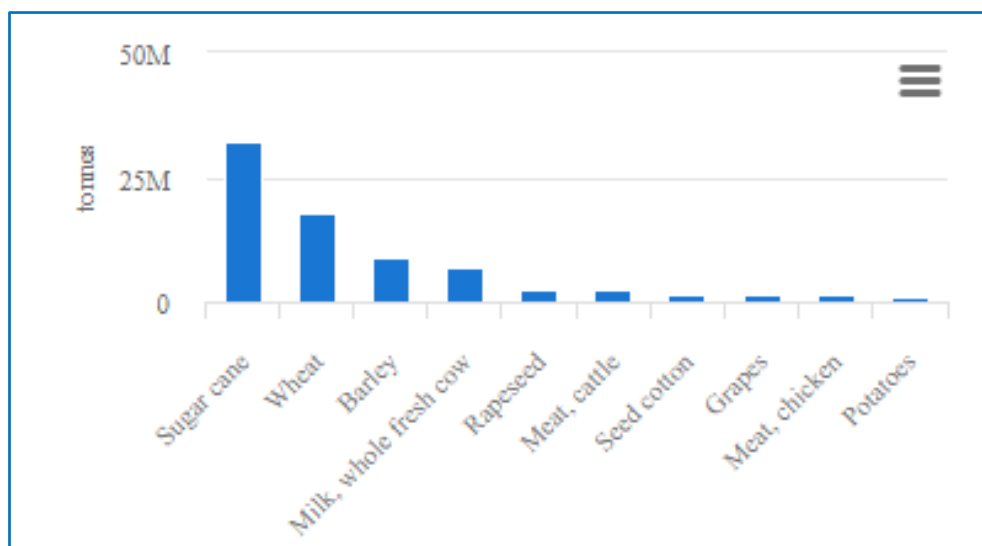


Figure 3: Top 10 commodities (by weight) produced in Australia, 2019¹²

In 2018, the National Farmers Federation (NFF 2018) published their vision of Australia exceeding AUD\$100 billion in farm gate output by 2030, based around five key pillars:

- Customers and the Value Chain
- Growing Sustainably
- Unlocking Innovation
- People and Communities
- Capital and Risk Management

Balancing this, Agribusiness Australia (2020) noted that the *Australian agricultural sector is currently in a period where it faces a unique set of challenges; a global market that is more competitive than ever and ongoing climactic challenges.*

The Agribusiness Australia report highlights several challenges and opportunities for the sector. It is beyond the scope of this report to explore the detail of these, however, some of the opportunities are applicable to the food system as a whole, for example:

- attracting new domestic and foreign investment
- optimising the use of technology
- investing in infrastructure
- harnessing global trade deals
- finding a balance between commodities and niche markets, and
- finding ways to attract high calibre workforce.

The report concludes that it is vital to bring all stakeholders together.

¹² http://www.fao.org/faostat/en/?#rankings/commodities_by_country_exports

2.2.5 Food manufacturing

According to World Bank data, manufacturing comprised 5.6% of Australia's 2019 economy, ranking Australia 175th in the world on this scale. On a relative scale, this placed Australia 51 places below New Zealand (124th, at 10%) and just above Sudan and Lebanon (both at 5.6%).¹³

Looking at OECD averages as a broader comparison, since 2009, OECD country average manufacturing was relatively stable at around 14% of GDP, while Australia's relative manufacturing output decreased from 8.4% to 5.6% (Figure 4).¹⁴

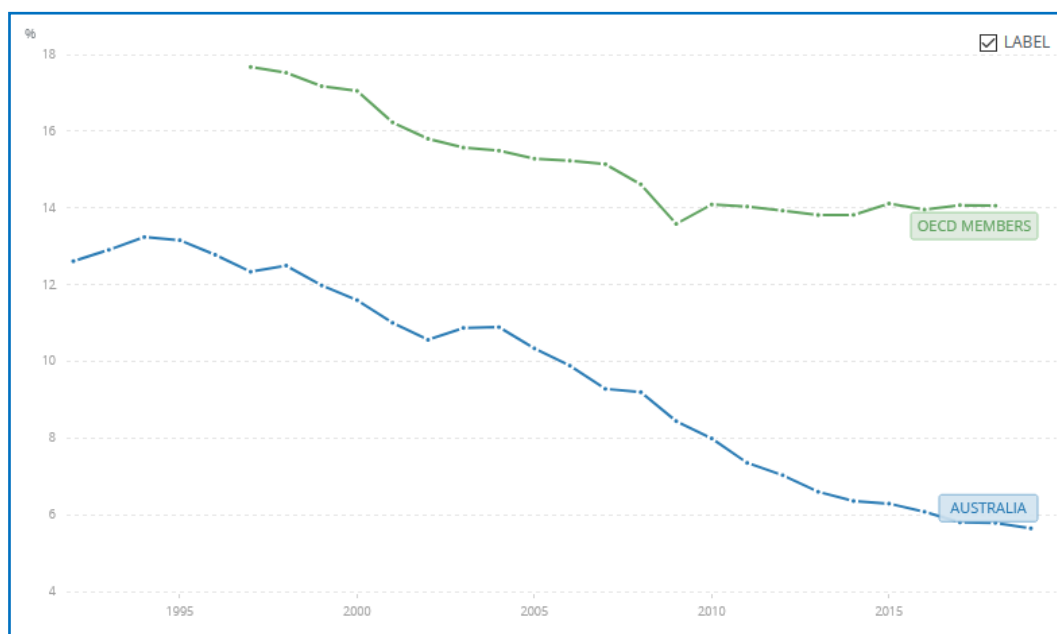


Figure 4: Comparative value of total manufacturing as % GDP: Australia and OECD (World Bank data)

The Australian food and grocery sector turnover in 2017-18 was \$122.1 billion. Food product manufacturing was the largest subsector with a turnover of \$90.1 billion, accounting for 27.9% of total manufacturing turnover. The main products were meat processing, cheese and other dairy manufacturing, and human pharmaceutical and medicinal products (AFGC 2019).

Figure 5 shows a breakdown of turnover share by industry for 2017-18.

The number of businesses in the food and grocery sector was 15,325 in 2017-18, with Queensland, NSW, and Victoria accounting for 85.3% of turnover in 2017-18 (Figure 6) (AFGC 2019).

¹³ https://data.worldbank.org/indicator/NV.IND.MANF.ZS?end=2019&most_recent_value_desc=true&start=1992&year_high_desc=false, accessed 31/12/2020.

¹⁴ https://data.worldbank.org/indicator/NV.IND.MANF.ZS?end=2019&locations=AU-OE&start=1992&year_high_desc=false, accessed 31/12/2020.

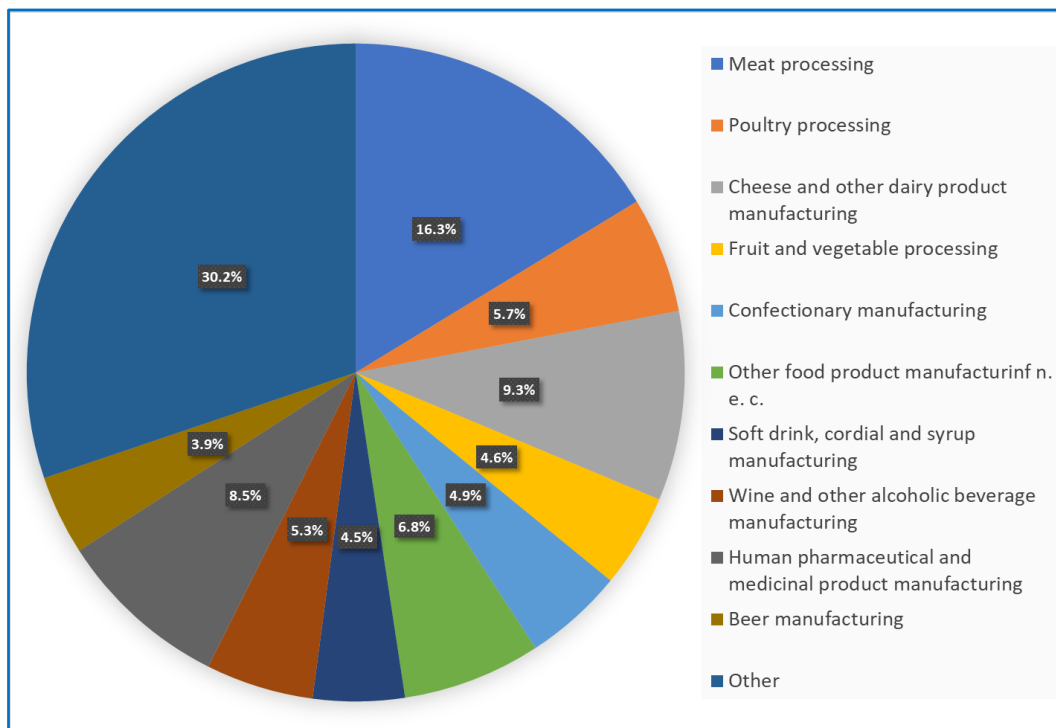


Figure 5: Australian food and grocery turnover share by industry 2017-18 (AFGC 2019)

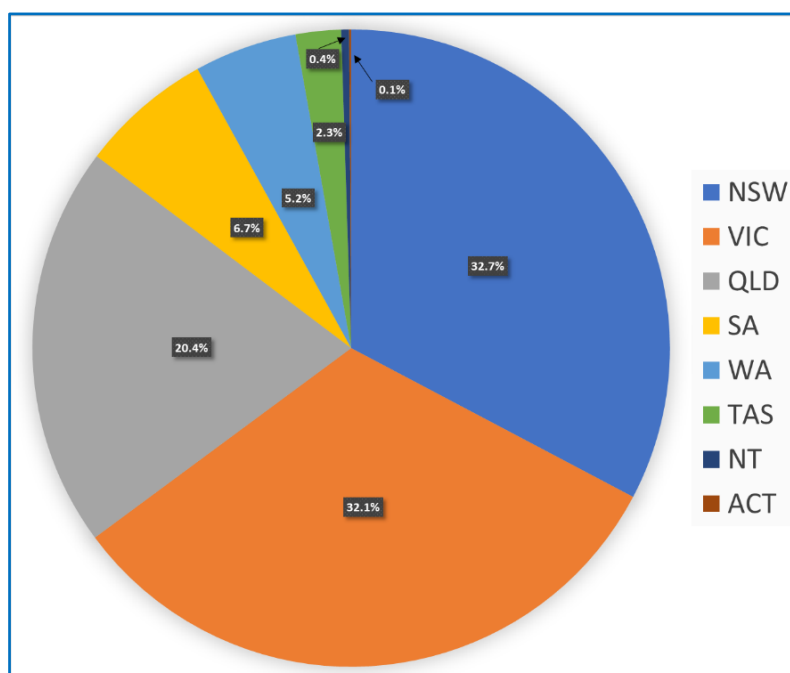


Figure 6: Australian food and grocery turnover share by State 2017-18 (AFGC 2019)

Reshoring

In the 1960s, total manufacturing accounted for almost 30% of Australia's gross domestic product. Recent data puts manufacturing at 5.6% of Australia's 2019 economy. With recent events exposing major risks in the global value chain, the notion of 'reshoring' has gained added impetus.

Reshoring as defined by the Cambridge Dictionary is: *"The practice of moving a business or part of a business that was based in a different country back to its original country. Reshoring is essentially the opposite of offshoring."*¹⁵

While our interviewees considered that international competition will mean that a return to large scale manufacturing on Australian shores is unlikely, the impact of COVID-19 on supply chains means that reshoring or near shoring cannot be ignored as a strategy for Australian food manufactures.

FIAL (2020b) have identified the following triggers for change:

- Reshoring can assist to strengthen domestic manufacturing resilience
- Creates local employment, developing new skills
- Trade tensions prompting companies to rethink supply chain models, and
- Supply chain disruptions due to COVID-19.

In that paper, FIAL also identified domestic challenges for Australia in relation to a move to reshoring:

- Lack of economies of scale
- Vocation education system decline
- High operational costs – for example – energy and labour
- Geographical distance from large export destinations.

The actions identified to make reshoring successful could also apply to the future success of the food system more generally.

2.2.6 Employment

According to FIAL (2020b), in 2019, the food and agribusiness sector employed around 538,000 people. A significantly larger number of people are employed throughout the value chain – more than 900,000 alone in food and beverage services.

Australia's food and grocery manufacturing sector (a subsector of the food and agribusiness sector) is one of the largest employers in the country, providing more than 273,000 jobs, of which 39% – just over 107,000 – were in regional and rural communities (AFGC 2019). Australian Jobs 2019 reported food product manufacturing to be the largest employing sector in manufacturing with 220,000 jobs at November 2019. Agriculture, forestry, and fishing employed 327,300 at November 2018 (DJSB 2019). Employment was spread across a range of food and beverage sectors as shown in Figure 7.

FIAL (2020b) presented a forecast of potential food industry jobs growth and distribution between 2019 and 2030 (Figure 8).

¹⁵ <https://dictionary.cambridge.org/dictionary/english/reshoring>

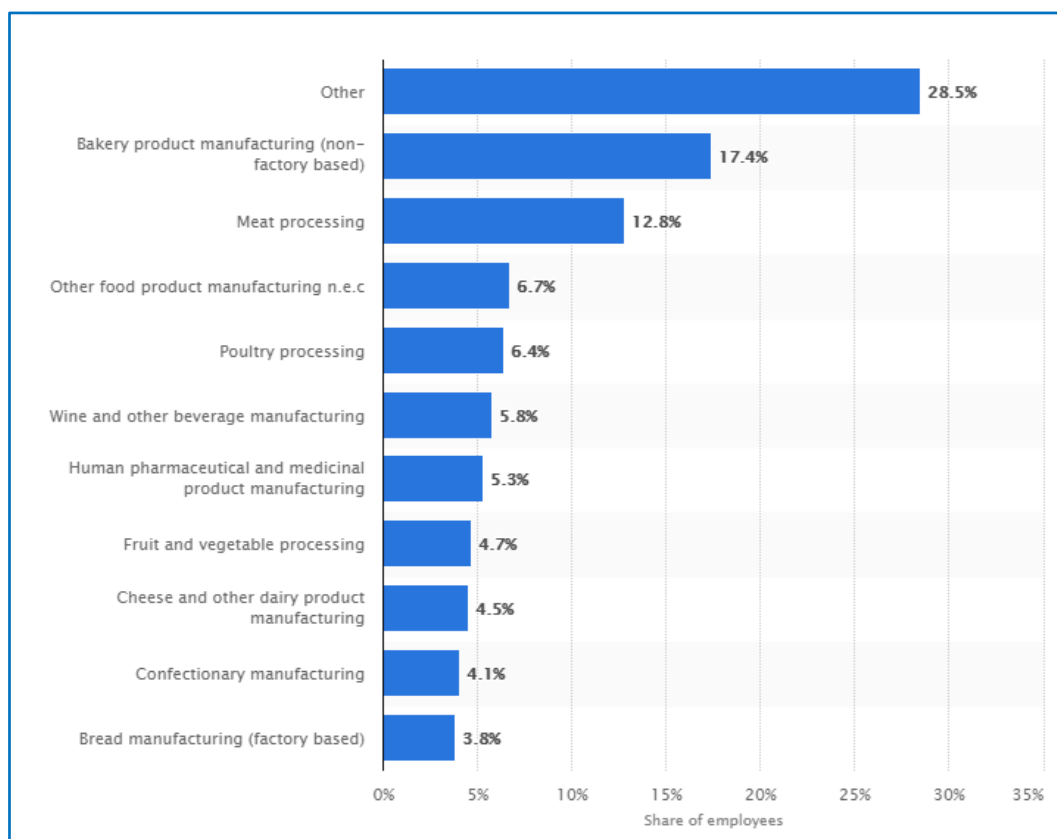


Figure 7: Distribution of employees in the food and beverage sector manufacturing in Australia in the financial year 2018 by product class (AFGC 2019)

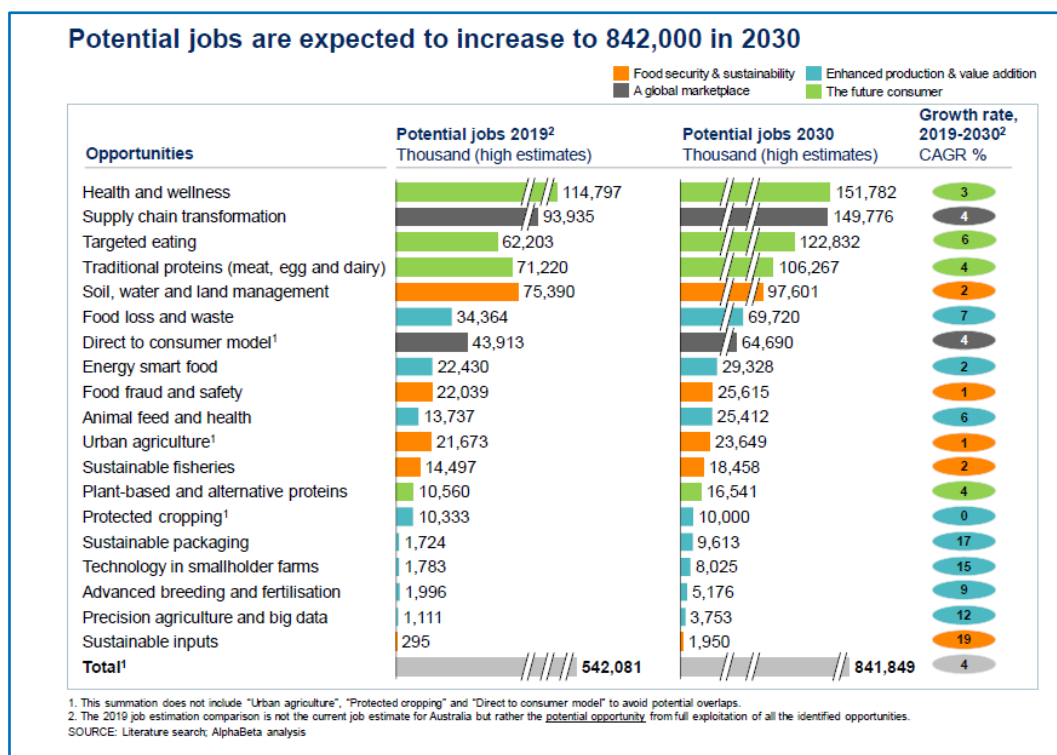


Figure 8: Potential agri-food industry jobs in 2030 (FIAL 2020b)

2.2.7 Cost of doing business in Australia

2.2.7.1 Major costs

Much has been made of the relatively high costs of manufacturing in Australia and the consequential competitive barriers this raises in the international marketplace. The Australian Food and Grocery Council's report on competitiveness and sustainable growth (AFGC 2014) reported that *"the international comparator groups' ability to outperform our local market is due to Australia's high-cost structure, which continues to increase year by year. According to KPMG's Competitive Alternatives Study 2014, the cost of doing business in the Australian agri-food manufacturing sector was higher than all comparable mature companies [sic] from North America, Europe and Asia Pacific that were part of this study. Key drivers included the relatively high cost of transportation, utilities, labour and rent, the strong AUD and the increasing regulatory burden compared to other regions in the study. In addition, the relatively small Australian domestic market provides limited opportunities for food and grocery manufacturers to generate scale efficiencies compared to other regions"*.

In the last of their "Competitive Alternatives" reports update, KPMG (2016) reported that Australia's relative competitive position had improved from a relative cost index of 99.3% of that of the USA in 2014 to 89.4% in 2016 (the most recent of these updates).

2.2.7.2 Cost of energy

Energy costs are often cited as conferring a competitive disadvantage to Australia's exporting companies. A (detailed but possibly already dated) paper by Horne and Reynolds, (2016) provides a detailed analysis of the impact of energy costs and export competitiveness in Australia. These authors attest to the difficulty of accessing robust energy cost and usage data but indicate that rising energy costs had a small detrimental impact on export competitiveness, as measured by revealed comparative advantage (RCA).

An analysis of global electricity cost data¹⁶ shows that, in absolute terms, Australia ranked fourth against OECD countries in early 2020 (Figure 9).

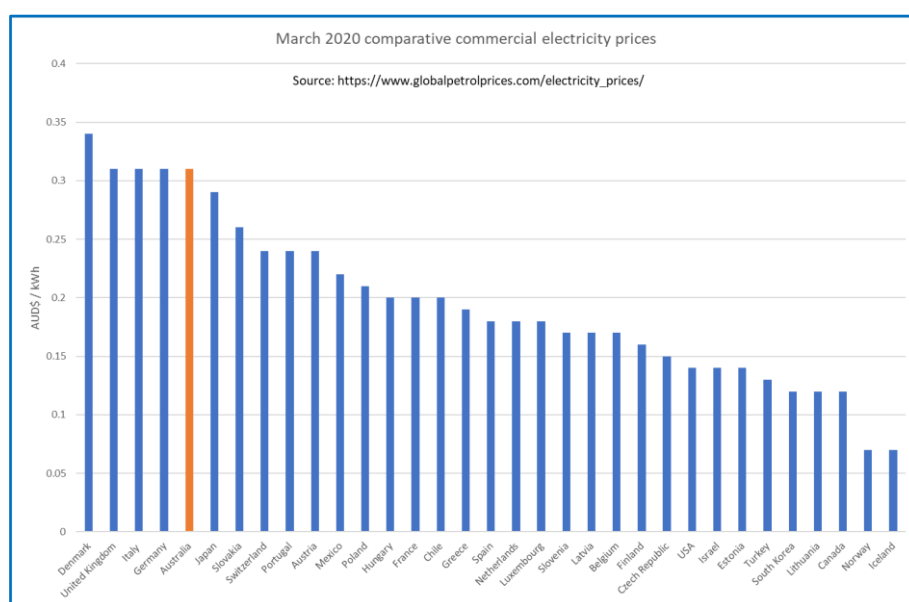


Figure 9: Comparative commercial electricity prices in the OECD

¹⁶ https://www.globalpetrolprices.com/electricity_prices/

Data provided by the Australian Beverages Council (2020) (Figure 10) show that energy costs and volatility have increased significantly in the past 5-10 years, with the authors of that paper reporting that such changes make it hard for businesses to plan and to maintain profits.

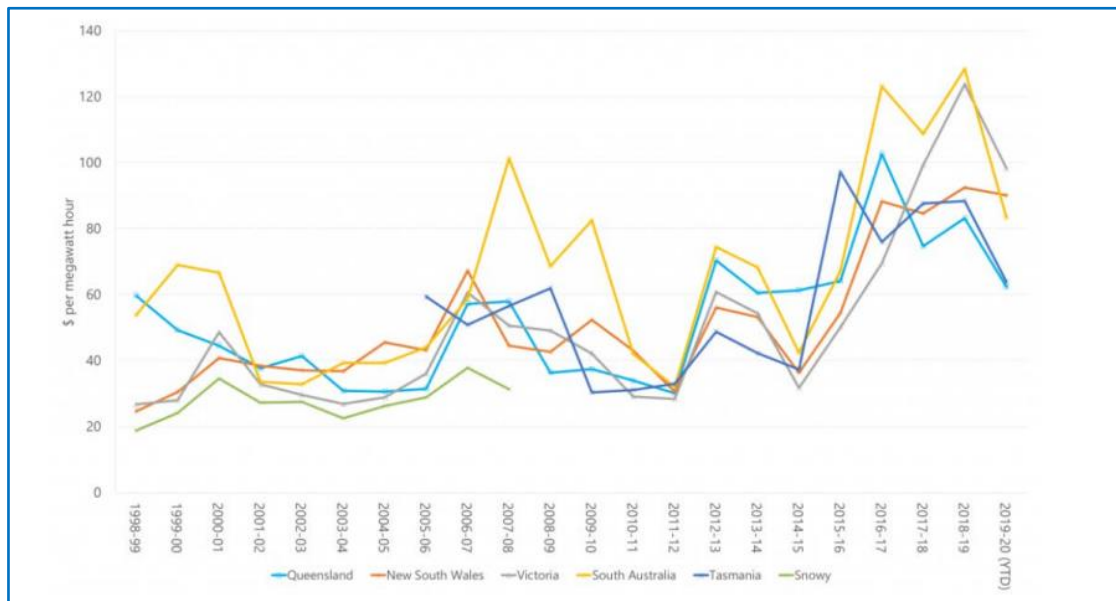


Figure 10: Electricity prices in Australia 1998-99 to 2019-20

2.2.7.3 Other costs pressures

The AFGC (2020) identified a number of cost pressures for the food and beverage manufacturing industry as follows:

- Declining investment due to weak profitability, the result of rising commodity and production costs not being passed through to final prices
- Declining productivity growth due to a lack of investment in the latest production technologies
- Declining international competitiveness due to a lack of investment in the latest production technologies. The industry is falling behind the efficient production frontier compounding the weakened competitive position
- Rising import penetration as retailers seek to put the lowest cost products in store even if those products can be made in Australia at a comparable cost.

In that report, the AFGC stated that *“Australian processors have very little capacity to pass rising production costs through in a deflationary retail environment. Consequently, given the small margins for operation, any increase to input costs such as energy significantly impact the industry.”*

2.2.8 Food Waste

Globally, approximately one billion tonnes of food produced for human consumption is wasted each year at a cost of around US\$940 billion (Champions 12.3 2017).

In Australia, over 5.3 million tonnes of food that is intended for human consumption is wasted at a cost to the economy of AUD\$20 billion (Pickin and Randall 2016).

The National Food Waste Strategy (DAWE 2017), which aims to halve Australian’s food waste by 2030, adopts a broad and inclusive definition of food waste (Figure 11) that covers:

- solid or liquid food that is intended for human consumption and is generated across the entire supply and consumption chain

- food that does not reach the consumer or reaches the consumer but is thrown away. This includes edible food, the parts of food that can be consumed but are disposed of, and inedible food, the parts of food that are not consumed because they are either unable to be consumed or are considered undesirable (such as seeds, bones, coffee grounds, skins, or peels)
- food that is imported into, and disposed of, in Australia
- food that is produced or manufactured for export but does not leave Australia.

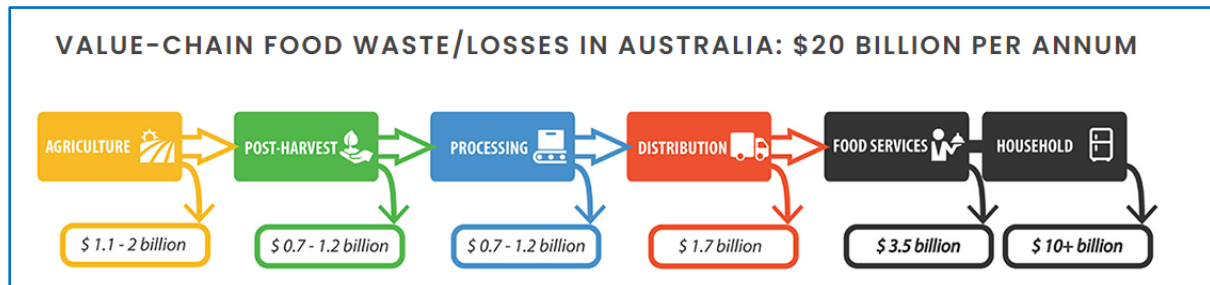


Figure 11: Food waste in the Australian food system¹⁷

A roadmap for reducing Australia's food waste by half by 2030 has been developed to provide a pathway forward for the food system (Kelton 2019). The Fight Food Waste Cooperative Research Centre¹⁸ brings together industry, research, and the community is working to reduce food waste, increase industry profitability, and improve food rescue to deliver economic, social, and environmental benefits for Australia.

2.2.9 Policy Environment

The 'manufacturing sector' is seen by many as an area presenting growth opportunities for the Australian economy, and as a key plank in efforts to build Australia's sovereign capability. The Australian Government's manufacturing strategy (DISER 2020) cites food and beverage as a national priority, noting that *"Our success is underpinned by our international reputation for premium, safe and high-quality food and beverage products, strong production capabilities, research expertise and market proximity."* While this is surely true, for it to remain so Australia needs to maintain a strategic investment focus across the entire food system.

More so than many Australian industries, and largely because of its breadth and immediate impact on human health and safety, the Australian food system is regulated by all levels of government – touching a broad range of areas, from paddock to plate: controlling, for example, which chemicals can be applied to a crop, how waste is managed, how safety and quality are assured, and how industrial relations at a factory can benefit all stakeholders.

The 2013 National Food Plan (DAFF 2013) provided the summary shown in Figure 12.

¹⁷ <https://fightfoodwastecrc.com.au/>

¹⁸ Ibid #17

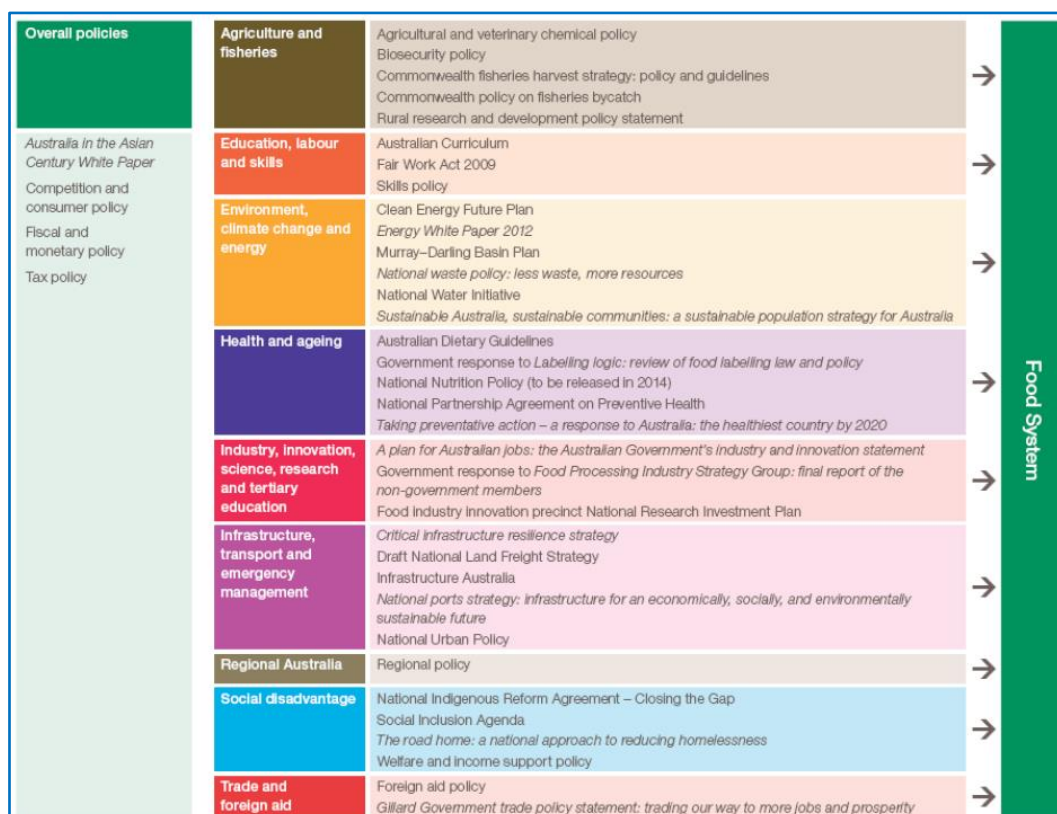


Figure 12: Map of government policy areas against the Australian food system (DAFF 2013)

This summary shows the importance of keeping the Australian food system top of mind when developing policies and highlights why those charged with developing food system-specific policies need to be cognizant of the inter-relatedness of such policies.

Specific National Party policies,¹⁹ relevant to this paper include:

- Manufacturing 2035
- Plan for regional Australia
- Plan for a stronger agriculture, fisheries, and forestry sector
- Plan to showcase agriculture
- Post-COVID-19 infrastructure plan (draft).

While these policies all can be seen to have relevance to, and bearing on, the Australian food system, there is little that specifically references food manufacture *per se*. The focus appears to be on pre-farm gate and harvesting activities.

In this context, and as noted in Section 3, policy development needs also to take into consideration issues pertaining to water security and biosecurity issues.

A key message from the FIAL (2020a) Sector Competitiveness Plan was that all levels of government need to become more effective at providing aligned services and support to build capability and competency across the food system. FIAL is a core partner for government in this regard, having a core objective of developing “a cohesive and clear voice of industry that influences and shapes

¹⁹ <https://nationals.org.au/policies/2019-election-policies/>

policy, and in partnership with government, leads to opportunities for regulatory reform that fosters industry-wide innovation and entrepreneurship”.

2.2.10 Regulation

Like many Australian industries, the food system is regulated by different levels of government and a number of different portfolios as set out in Table 6.

Australia’s food and grocery policy and regulatory system is large and complex, involving 10 Governments and at least 20 Departments developing policy and regulations as well as numerous agencies responsible for enforcement (AFGC 2012).

Regulation touches a broad range of areas across the Australian food system, from paddock to plate—from controlling which chemicals can be applied to a crop, to setting compositional and labelling requirements for foods to food safety for both local and overseas manufactured products.

Development of food policy and regulation is hampered by different jurisdictions having different expectations and institutional arrangements. Each of these agencies imposes regulatory requirements on the food system that place a burden on the ability of business to achieve and maintain sustainable growth (AFGC 2012).

Table 6: Australia’s food and grocery policy and regulatory system

AGENCY	Department	Regulations
Food Standards Australia New Zealand (FSANZ)	Australian Government Department of Health	FSANZ Act 1991 FSANZ Regulations 1994 Australia New Zealand Food Standards Code Food composition, labelling and claims
Department of Agriculture, Water and the Environment		Biosecurity Act 2015 Imported Food control Act 1992 Biosecurity Act 2015 Biosecurity Regulations 2016
Australian Industrial Chemicals Introduction Scheme (AICIS)	Australian Government Department of Health	Industrial Chemicals Act 2019 Industrial Chemicals (General) Rules 2019
Australian Pesticides and Veterinary Medicines Authority (APVMA)	Australian Government	Agricultural and Veterinary Chemicals Act 1994 Agricultural and Veterinary Chemicals (Administration) Act 1992 Agricultural and Veterinary Chemicals Products (Collection of Levy) Act 1994
Office of the Gene Technology Regulator	Australian Government Department of Health	Gene Technology Act 2000
Therapeutic Goods Administration (TGA)	Australian Government Department of Health	Complementary Medicines Therapeutic Goods Act 1989 Therapeutic Goods Regulations 1990
National Measurement Institute (NMI)	Australian Government Department of Industry, Science, Energy and Resources	National Measurement Act 1960 National Measurement Regulations 1999 National Trade Measurement Regulations 2009
The Australian Competition and Consumer Commission (ACCC)	Australian Government	Competition and Consumer Act 2010 Country of origin labelling Competition Policy Recalls

AGENCY	Department	Regulations
Safe Work Australia	Australian Government	Safe Work Australia Act 2008
Fair Work Australia	Australian Government	Fair Work Act 2009
National Transport Commission		
IP Australia	Australian Government	Intellectual property rights and legislation relating to patents, trademarks, registered designs, and plant breeder's rights in Australia
Department of Agriculture, Water and the Environment		Environment protection
Department of Home Affairs	Australian Government	Immigration Employment of overseas workers
Department of Agriculture, Water and the Environment	Australian Government	Water Act 2007 Waster Regulations 2008
Australian States and Territories	State governments	Compliance and enforcement
• ACT Health		Food Act 2001; Food Regulations 2002
• NSW Food Authority		Food Act 2003; Food Regulation 2015
• NT Department of Health & • Department of Primary Industries and Resources		Food Act
• Queensland Department of Agriculture and Fisheries; Queensland Health; Safe Food Queensland		Food Act 2006; Food Regulation 2006 Food Production (Safety) Act 2000 Food Production (Safety) Regulation 2014
• SA Health		Food Act 2001; Food Regulations 2002
• Tasmanian Department of Health and Human Services • Department of Primary Industries, Parks, Water and Environment		Food Act 2003; Food Regulations 2012
• Department of Health and Human Services Victoria • Dairy Food Safety Victoria		Food Act 1980
• Health Department of WA • WA Department of Agriculture and Food		Food Act 2008; Food Regulations 2009

Examples of the complexity of the food and agriculture regulatory systems in Australia can be seen in:

- Figure 13: Regulation across the agricultural supply Chain (Productivity Commission 2016)
- Figure 14: Australia-New Zealand food safety regulatory system (Productivity Commission 2009).

<i>Key Australian Government involvement/regulation</i>	<i>Key stages of the agricultural cycle</i>	<i>Key state/territory government involvement/regulation</i>
<ul style="list-style-type: none"> • native title • environmental protection <ul style="list-style-type: none"> – biodiversity conservation – international treaties – natural, cultural and world heritage 	Acquisition, leasing and preparation of land 	<ul style="list-style-type: none"> • land tenure and use <ul style="list-style-type: none"> – <i>land use planning</i> – <i>building regulations</i> – <i>pastoral leases</i> • environmental protection <ul style="list-style-type: none"> – <i>native vegetation</i> – <i>natural and cultural heritage</i>
<ul style="list-style-type: none"> • agricultural and veterinary chemical standards • biosecurity <ul style="list-style-type: none"> – pest surveillance • export control • environmental protection <ul style="list-style-type: none"> – biodiversity conservation – international treaties – natural, cultural and world heritage • national land transport regulatory frameworks • water access and regulation • welfare of exported animals 	Agricultural production and on-farm processing   	<ul style="list-style-type: none"> • agricultural and veterinary chemicals • animal welfare • biosecurity <ul style="list-style-type: none"> – <i>pest and disease control and response</i> • food certification for export • <i>building regulations</i> • genetically modified crops • land use planning • livestock regulation and identification • transport <ul style="list-style-type: none"> – <i>road access</i> – <i>transport and use of machinery</i> – vehicle licensing • water access and regulation
<ul style="list-style-type: none"> • biosecurity <ul style="list-style-type: none"> – pest surveillance • export control • national land transport regulatory frameworks • shipping and maritime safety laws • welfare of exported animals 	Transport and logistics 	<ul style="list-style-type: none"> • transport regulations <ul style="list-style-type: none"> – <i>road access</i> – <i>transport and use of machinery</i> – vehicle and machinery licensing • animal welfare • livestock regulation and identification
<ul style="list-style-type: none"> • biosecurity <ul style="list-style-type: none"> – pest surveillance • export control • food labelling • food standards • welfare of exported animals 	Marketing 	<ul style="list-style-type: none"> • <i>food safety</i> • food packaging • biosecurity <ul style="list-style-type: none"> – <i>pest and disease control and response</i> • food certification for export • statutory marketing
<p>^a <i>Italics</i> denote local government responsibility in at least one jurisdiction. ^b There is also a range of issues and regulations that affect all stages of the agricultural supply chain. Cross-cutting issues include investment opportunities and access to capital, as well as regulations relating to competition, foreign investment, immigration, industrial relations, work health and safety, and taxation.</p>		

Figure 13: Regulation across the agricultural supply Chain (Productivity Commission 2016)

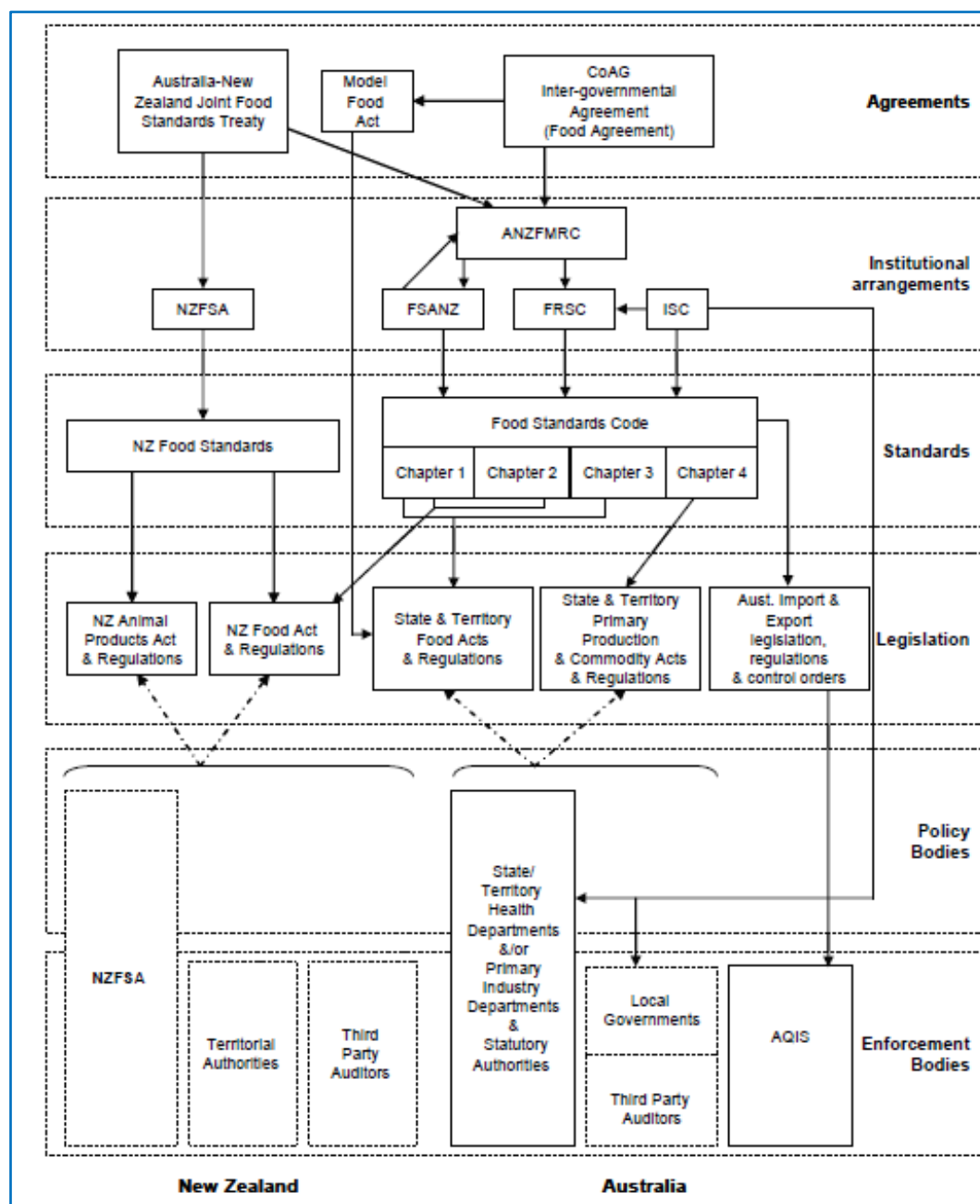


Figure 14: Australia-New Zealand food safety regulatory system (Productivity Commission 2009)

The Productivity Commission (2009) noted that Australia's regulatory and institutional structure is complex – as shown in Figure 14 for the food safety regulatory system. While this is from 2009, it is still relevant.

2.3 Trade and market access

2.3.1 Food sector trade

The agricultural and food production system traditionally has been a strong contributor to Australia's myriad regional economies. Raw product and minimally transformed (meat) exports have made up most of Australia's exports between 1988 and 2018 (Greenville *et al.* 2020). In value terms, around two-thirds of Australian agricultural production was exported and in 2017–18 represented 19% of total merchandise exports (Greenville 2019). Australian agricultural exports were worth more than AUD\$48 billion dollars in 2018–19, accounting for 13% of Australia's overall merchandise export earnings (ABARES 2020).

In dollar terms, the value of Australia's agricultural commodity exports has increased by about 20% in the last decade (Figure 15: NAB 2019). Figures 16 and 17 show the top 10 export agricultural commodities by weight and value²⁰.

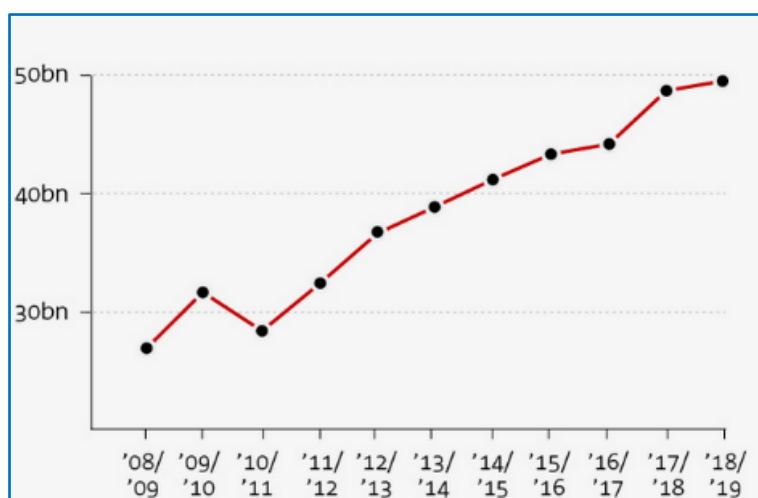


Figure 15: Total agricultural commodity exports (value in \$billions) (NAB 2019)

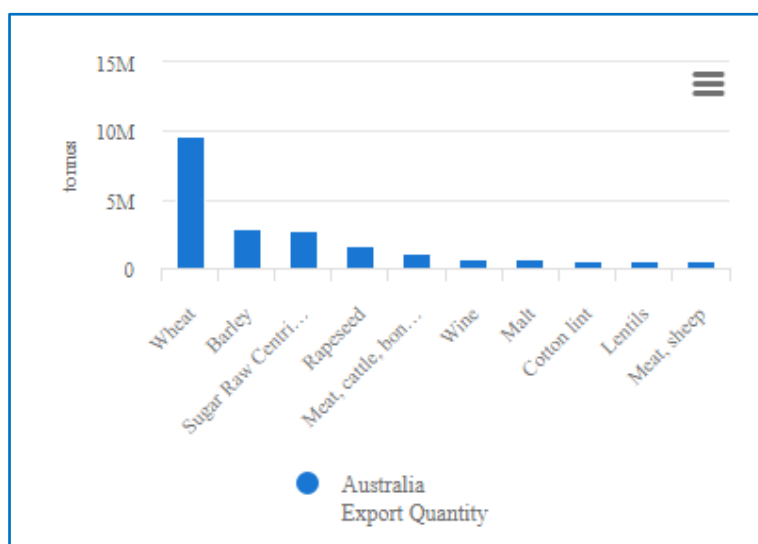


Figure 16: Top 10 commodities by weight exported from Australia in 2019 (FAO data²¹)

²⁰ http://www.fao.org/faostat/en/?#rankings/commodities_by_country_exports

²¹ Ibid #20

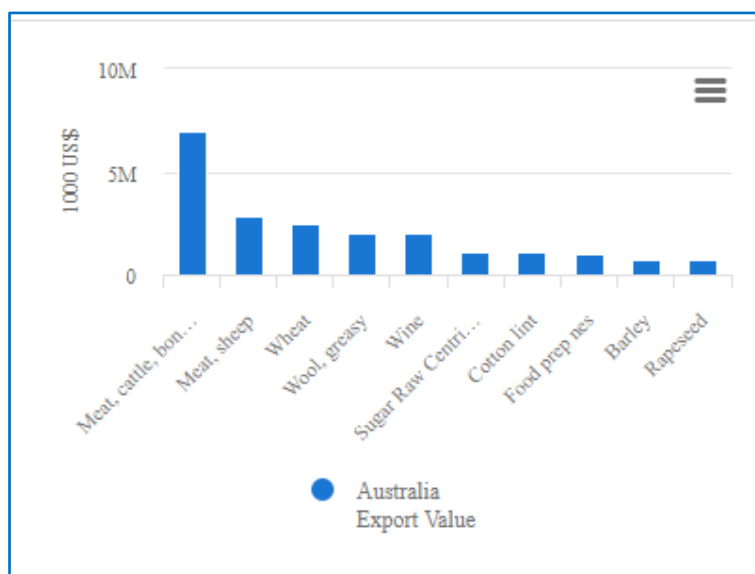


Figure 17: Top 10 commodities by value exported from Australia in 2019 (FAO data²²)

Across the same period (the last decade), Australia's food exports increased by 24% to about AUD\$37 billion.²³ This increase was slightly less than that for total global food exports across that decade of 27%, reaching about USD\$1,500 billion in 2019, and representing about 8% of total merchandise exports.²⁴

The 2019 figure representing about 10% of Australia's total merchandise exports and about 1.8% of global food exports. As can be seen in Figure 18, these data are largely weighted towards meat and meat preparation exports. Of Australia's top 20 commodity exports by sector in the period 2018-19, beef, meat (excluding beef) and wheat were the only foods (DFAT 2020).

Food exports represented around 2% of Australia's 2019 GDP, compared to 3% and 10% in Canada (chosen as a comparative market) and Viet Nam (chosen as an emerging market), respectively.²⁵

ABS data for 2019 suggested that Australian food imports were valued at about AUD\$18 billion, representing about 6% of Australia's total merchandise imports for that year.²⁶

Excluding takeaway and restaurant meals, imported products comprised just 11% of Australian households' total food and beverage expenditure (ABARES 2020).

Australia's top ten two-way trading partners by value in 2019-20 were China, United States, Japan, Republic of Korea, United Kingdom, Singapore, New Zealand, India, Germany and Malaysia.²⁷ China was Australia's largest export market and import source. Over the decade leading up to 2019, China's export value for Australian agricultural produce increased by almost 300% to A\$11.8 billion. Despite the US and Europe being Australia's third and fourth largest individual export markets more than two thirds of Australian agricultural exports go to Asia (NAB 2019).

²² Ibid #20

²³ Data extracted from <https://www.abs.gov.au/statistics/economy/international-trade/international-trade-goods-and-services-australia/latest-release>

²⁴ <https://data.wto.org/>

²⁵ <https://tradingeconomics.com/country-list/gdp>

²⁶ Ibid #20

²⁷ <https://www.dfat.gov.au/sites/default/files/australias-goods-services-by-top-15-partners-2019-20.pdf>

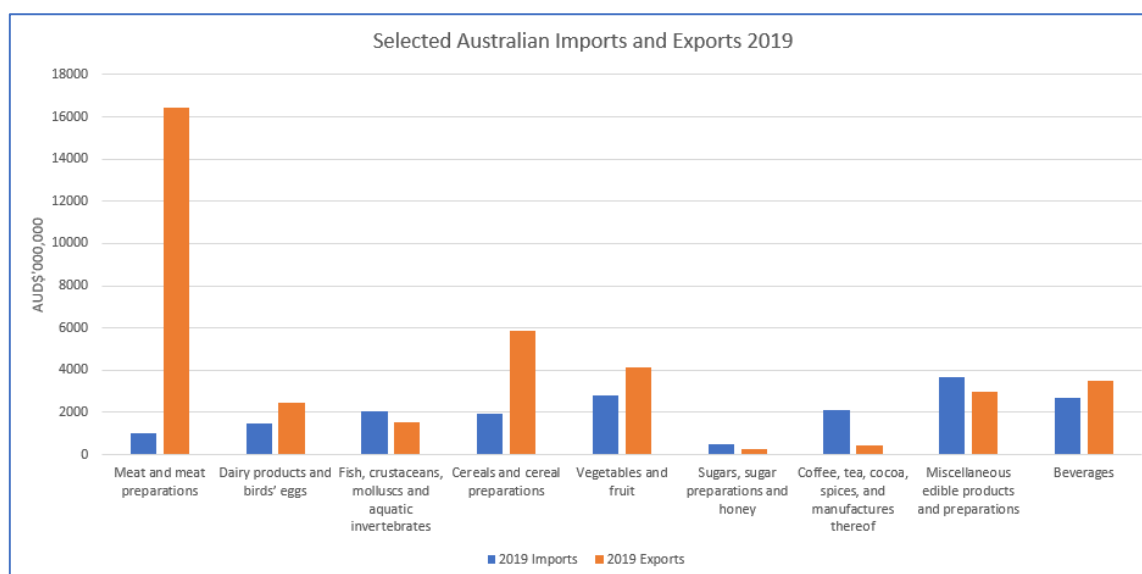


Figure 18: Selected Australian Imports and Exports 2019²⁸

2.3.2 Free Trade Agreements (FTA's)

A free trade agreement (FTA) is an international treaty between two or more economies that reduces or eliminates certain barriers to trade in goods and services, as well as investment.

Australia currently has 15 FTAs in place²⁹ (Table 7) and seven in development (Table 8), including new agreements with Hong Kong and Peru that came into force on 17 January and 11 February 2020, respectively.³⁰ The Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA) entered into force on 5 July 2020, creating a framework for Australia and Indonesia to unlock the vast potential of the bilateral economic partnership, fostering economic cooperation between businesses, communities, and individuals³¹. The Pacific Agreement on Closer Economic Relations (PACER) entered into force on 13 December 2020. PACER Plus is an important part of Australia's engagement in the Pacific and provides an avenue to help foster a secure, stable, and prosperous region. PACER Plus will provide commercial opportunities for Australian exporters.³²

The Regional Comprehensive Economic Partnership (RCEP) was signed by 15 countries in November 2020 with India indicating it had several issues preventing it from joining RCEP. India has since indicated it is not in a position to sign the Agreement.

²⁸ (data extracted from <https://www.abs.gov.au/statistics/economy/international-trade/international-trade-goods-and-services-australia/aug-2020/5368012a.xls> and <https://www.abs.gov.au/statistics/economy/international-trade/international-trade-goods-and-services-australia/aug-2020/5368013a.xls>)

²⁹ A full list of the current FTA's is available on the DFAT website:

<https://www.dfat.gov.au/trade/agreements/trade-agreements>

³⁰ <https://www.dfat.gov.au/trade/agreements/in-force/free-trade-agreements-in-force>

³¹ <https://www.dfat.gov.au/trade/agreements/in-force/iacepa/Pages/indonesia-australia-comprehensive-economic-partnership-agreement>

³² <https://www.dfat.gov.au/trade/agreements/in-force/pacer/pacific-agreement-on-closer-economic-relations-pacer-plus>

Table 7: Australian free trade agreements: current or concluded (as at January 2021)³³

Free Trade Agreements in Force	
ASEAN-Australia-New Zealand (AANZFTA)	1 January 2010: Australia, New Zealand, Brunei, Burma, Malaysia, the Philippines, Singapore and Viet Nam 12 March 2010 Thailand 1 January 2011 Laos 10 January 2012 Indonesia 4 January 2011 Cambodia
Australia-Chile (ACI-FTA)	6 March 2009
Australia-Hong Kong (A-HKFTA)	17 January 2020
Australia-New Zealand (ANZCERTA or CER)	1 January 1983
Australia-United States (AUSFTA)	1 January 2005
China-Australia (ChAFTA)	20 December 2015
Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)	30 December 2018
Indonesia- Australia Comprehensive Economic Partnership Agreement (IA-CEPA)	5 July 2020
Japan-Australia (JAEPA)	15 January 2015
Korea-Australia (KAFTA)	12 December 2014
Malaysia-Australia (MAFTA)	1 January 2013
Pacific Agreement on Closer Economic Relations (PACER) Plus	13 December 2020
Peru-Australia (PAFTA)	11 February 2020
Singapore-Australia (SAFTA)	28 July 2003
Thailand-Australia (TAFTA)	1 January 2005
The Regional Comprehensive Economic Partnership (RCEP)	(concluded but not yet active)

³³ <https://www.dfat.gov.au/trade/agreements/trade-agreements>

Table 8: Australian free trade agreements: in development (as at January 2021)³⁴

Free Trade Agreements in development
Australia-European Union Free Trade Agreement
Australia-Gulf Cooperation Council (GCC) Free Trade Agreement
Australia-India Comprehensive Economic Cooperation Agreement
Australia-United Kingdom Free Trade Agreement
Environmental Goods Agreement
Pacific Alliance Free Trade Agreement
Trade in Services Agreement

Current Trade Challenges

Market access can be challenging as global markets for food are often distorted due to protective measures such as tariffs, quotas and subsidies. Technical barriers to trade are also frequently imposed as trading partners seek to address biosecurity and quality concerns or protect their domestic industries. Sometimes these technical barriers are unjustified or are imposed in a way that is onerous and restricts trade.

The China–Australia Free Trade Agreement (ChAFTA) entered into force on 20 December 2015. Australian exports of food and agricultural products to China rose by eight per cent in value terms in the 2019/20 season, reaching the highest level in the history of the China-Australia trading relationship. But that could well prove to be the peak of Australian agriculture’s exposure to China, according to agribusiness specialist Rabobank ³⁵. This report further noted that:

“extracting one in three of our export dollars from one market” brought considerable concentration risk for the Australian food and agricultural sector.

We haven’t been this exposed to one market since the 1950s, when we were still joined at the hip to the UK,” he said. “And that was a very different political relationship.”³⁶

China has become the principal, basically indispensable, two-way trading partner of Australia. During 2020, the Chinese Government has either denied, or given indication of restricting, a range of Australian exports, including barley, meat, wine, cotton and services (education and tourism). Those sectors are significantly dependent on the Chinese market and total over \$4 billion (Hull 2020).

Hull noted that Australia’s trading history suggests that the concentration of exports into China is not unique. From the early 70’s, Japan bought more than 25% of all Australian exports. When the Japanese economy started to slow in the early 1990’s, its dominance as an export destination for Australian products were eroded. Japan’s share of Australia’s total exports fell from 23% in 1995 to below 20% in 1996. In 1997, exports to Japan accounted for 19.8% of total exports. Australia’s

³⁴ <https://www.dfat.gov.au/trade/agreements/trade-agreements>

³⁵ <https://www.rabobank.com.au/media-releases/2020/200819-australian-food-and-agriculture-may-have-just-passed-peak-china-exposure-rabobank/>

³⁶ Ibid #31

export growth to Japan slowed in 1998 and Japan's share of Australia's total export trade dipped slightly to 19.6%, falling to 19.2% in 1999.³⁷

The extent of current exposure to China and this attendant risk to the Australian economy and food system cannot be ignored and Australia need to look to growth opportunities in other markets. We need to learn from the past (experience with Japan) and move forward with greater diversification of Australia export portfolio of markets and products.

³⁷

https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Foreign_Affairs_Defence_and_Trade/Completed_inquiries/1999-02/japan/report/c06

2.4 Asia on our doorstep

While images similar to Figure 19 have been around in various guises for some time, its core message bears repeating: there is a massive, burgeoning market just to the north and north west of Australia. More people live inside the inner circle than outside it. Not only is this region home to a huge and growing population, its demographic makeup also is evolving rapidly to one of increasing affluence and discretionary spending.



Figure 19: The centre of global population: more people live inside the inner circle than outside it ³⁸

According to Deloitte (2019):

- “The face of consumers across the Asia Pacific today would have been unrecognisable 50 years ago
- The region is growing – by 2050, it’s expected that the Asia Pacific will be home to more than 10 billion people (from 4.3 billion)
- In 2015, Asia became richer than Europe for the first time in modern history
- Rising incomes mean consumers can afford to purchase better quality food, and more of it.
- Wealthier consumers are also demanding different types of food, with diets shifting towards more protein.
- It is estimated that Asia will be home to almost nine in 10 of the next billion middle-class consumers.”

The middle class is already the largest segment of demand in the global economy. What makes it more interesting for business is that it is also the most rapidly growing segment, projected to reach some 4 billion people by the end of 2020 and 5.3 billion people by 2030. Brookings³⁹ calculated that the middle-class markets in China and India in 2030 will account for \$14.1 trillion and \$12.3 trillion respectively, comparable in size to the U.S. middle-class market at that time of \$15.9 trillion.

³⁸ <https://www.diversitytomorrow.com>

³⁹ <https://www.brookings.edu/blog/future-development/2018/09/27/a-global-tipping-point-half-the-world-is-now-middle-class-or-wealthier/>

Figure 20 depicts the emerging middle-class in developing countries – noting all are regions with which Australia trades. Further, Kharas (2010) noted that India, China, Indonesia and Viet Nam were expected to pull the centre of economic gravity in the world further to the east.

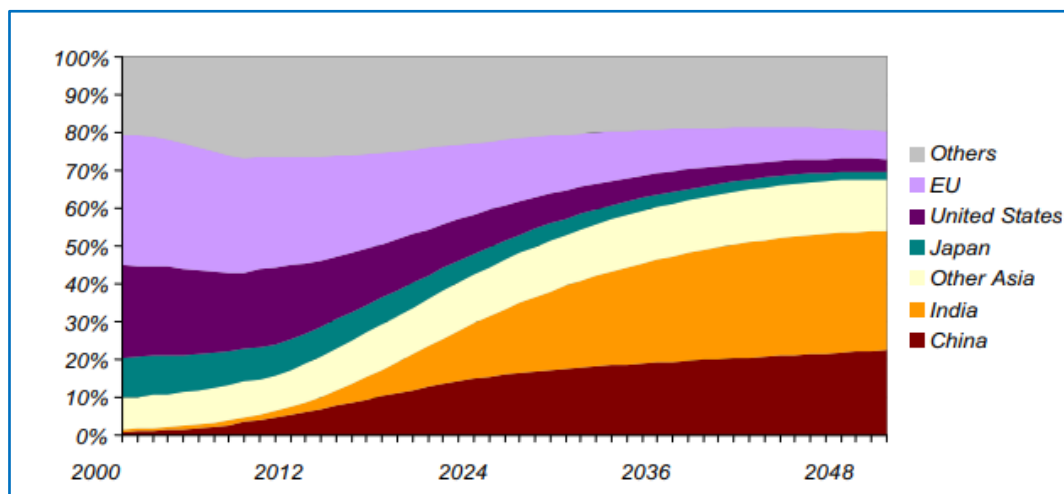


Figure 20: The emerging middle class in developing countries (Kharas, 2010)

2.5 Education, research, and skills

The food sector is regarded as a critical source of economic growth and job creation in Australia. Strategic investment in research capacity, innovation, infrastructure, and skilled workforce have been identified as crucial to strengthening the productivity and competitiveness of the food industry and capturing trade opportunities in Asia (DAFF 2013).

2.5.1 Education

In the context of this paper, the scope of education relates vocational education and training (VET), apprenticeships and traineeships and higher education from undergraduate to post graduate levels.

The majority of employment growth over the past five years has been in occupations that generally require post-school qualifications – either VET or higher education. In 2017 VET enrolments were 3.4 million and 1.08 million domestic students enrolled in higher education (DJSB 2019).

In 2016, 9.6 million Australian adults held a post-secondary qualification – 56% VET and 44% university. Just over one quarter had a Science, Technology, Engineering and Maths (STEM) qualification. The definition of STEM qualifications used by the Office of Chief Scientist encompasses the fields of:

- Natural and Physical Sciences
- Information Technology
- Engineering and Related Technologies
- Agriculture, Environment and Related Studies

Each of these areas has a critical role to play in developing the future of manufacturing in Australia and contribution to the growth of Australia's food system.

Australia's STEM Workforce report (Leigh *et al.* 2020), provides a comprehensive overview of people with STEM qualifications in Australia.

Agriculture

In 2016 there were 32,418 people with university qualifications in Agricultural studies, an increase of 4,200 since 2011.

Other Natural and Physical Sciences (Other NPS)

The 2020 report included a section on the field of Other Natural and Physical Sciences (Other NPS) which include food science and biotechnology. In 2016, there were 42,311 people in Australia with university qualifications in ONPS fields with 25% of these food science and biotechnology graduates.

2.5.2 Research

Research and development expenditure by government and business in Australia as a percentage of GDP was 1.79% (2017-18)⁴⁰ compared to the OECD average of 2.4%.⁴¹ Further, in the 2015 Global Innovation Index, Australia ranked 72nd (out of 141 countries) in "innovation efficiency" – the ratio of innovation output (e.g., commercial outcomes) to innovation input (e.g., R&D spending) (Cornell University 2015). When compared against OECD peers, Australia's innovation efficiency rank is 30 (out of 34).

⁴⁰ <https://www.abs.gov.au/statistics/industry/technology-and-innovation/research-and-experimental-development-businesses-australia/latest-release>

⁴¹ <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>

In 2018-19 total business expenditure on research and development was AUD\$797 million of which AUD\$490 million was in food and beverage manufacturing and AUD\$307 million was in agriculture (FIAL 2020b).

The Australian Government provides support for the research workforce through various mechanisms: grant funding and tax transfers to industry, paying the salaries of researchers in government agencies and departments, and providing both grant funding through research councils and block funding to universities. In 2019–20, this was budgeted to be a total of \$9.6 billion – \$2.1 billion to industry, \$2.1 billion for Australian Government research activities (including CSIRO, Australian Institute of Marine Science, Australian Nuclear Science and Technology Organisation and Defence), \$3.6 billion to universities, and \$1.8 billion to medical research institutes and other sectors like agriculture and energy.⁴²

A report from the Australian Academy of Science Rapid Research Information Forum on the impact of the pandemic on Australia's research workforce (Larkins *et al.* 2020) found that Australia's research workforce will be severely impacted by the pandemic and the effects are likely to be felt for an extended period. Industry sectors may experience a reduced capacity to innovate given that universities perform approximately 43% of all applied research in Australia. A decline in innovation may limit economic growth by slowing the development of new technology, skills, and efficiency gains in service and production processes.

2.5.3 Skills

The skills of those employed in Australia's food system are a key enabler of industry growth. Businesses need the right people to create new products and services and business models that will increase exports and productivity.

Securing enough people with the right skills will be a growing challenge to 2025. The food industry needs to expand the size and skills base of its workforce or, if this is not possible, adapt to a smaller labour pool (DAFF 2013).

Over the past two decades, there has been a shift away from medium-skill jobs towards higher-skill jobs. This is potentially due to the increasing use of technology leading to automation, creating the need for workers to develop, use or supervise new technologies – for example – use of 3D printing.⁴³

3D printing is a technique used for the manufacture of three-dimensional objects with high accuracy and quality finishing in their dimensions. The technique finds applications in industries, including aviation, automotive, packaging, construction, pharmaceuticals, and food. In the food sector, 3D printing is widely investigated across areas, such as customized food designs, personalized and digitalized nutrition, simplified supply chain, and broadened source of available food material.

⁴² <https://www.industry.gov.au/data-and-publications/science-research-and-innovation-sri-budget-tables>

⁴³ <https://www.futurebridge.com/industry/perspectives-food-nutrition/3d-printing-and-its-application-insights-in-food-industr/#:~:text=In%20the%20food%20sector%2C%203D,source%20of%20available%20food%20material.&text=Currently%2C%203D%20food%20printers%20make,%2C%20lasers%2C%20and%20robotic%20arms.>

The Australian Jobs (DJSB 2019) report listed some of the emerging skills most frequently identified by Australian companies (across multiple sectors) in a survey conducted by the World Economic Forum. These are shown in Figure 21.

EMERGING SKILLS
Creativity, originality and initiative
Analytical thinking and innovation
Active learning
Technology design and programming
Complex problem-solving
Critical thinking and analysis
Leadership and social influence
Emotional intelligence
Reasoning
Resilience, stress tolerance and flexibility

Figure 21: Emerging Skills for Australian Companies

FIAL (2020c) reported that workers will need different skill to do future jobs in food and agribusiness. Demand for people with technical, managerial and numeracy skills will grow the strongest. The research conducted by FIAL analysed how Australia's workforce would need to change in order to help the food and agribusiness sector realise the opportunities identified by FIAL. The research identified that Australia's food and agribusiness workforce will need substantially stronger technical skills (+21 per cent) by 2025 to facilitate the industry's growth and competitiveness. Managerial skills (+8 per cent) and numeracy (+7 per cent) are also becoming more important. Further, four key aspects will be important to address:

1. rebranding the sector to attract new talent,
2. building closer links with educational institutions,
3. radically scaling on-the-job training, and
4. developing flexible employment models for older workers.

2.6 COVID-19 Impact

2020 was a year like no other – the impact of COVID-19 on the Australian economy and the Australian food system was significant. Australia has been hit by COVID-19 less severely than other countries - real GDP declined by 3.8% in the year to September 2020 but is projected to grow by 3.2% in 2021 and 3.1% in 2022 (Figure 22). In addition to COVID-19, Australia was also impacted by severe bushfires early in 2020. Both these events have highlighted Australia’s vulnerability to natural disasters and require a rapid re-focus by Government on key aspects of disaster response – preparedness and recovery.

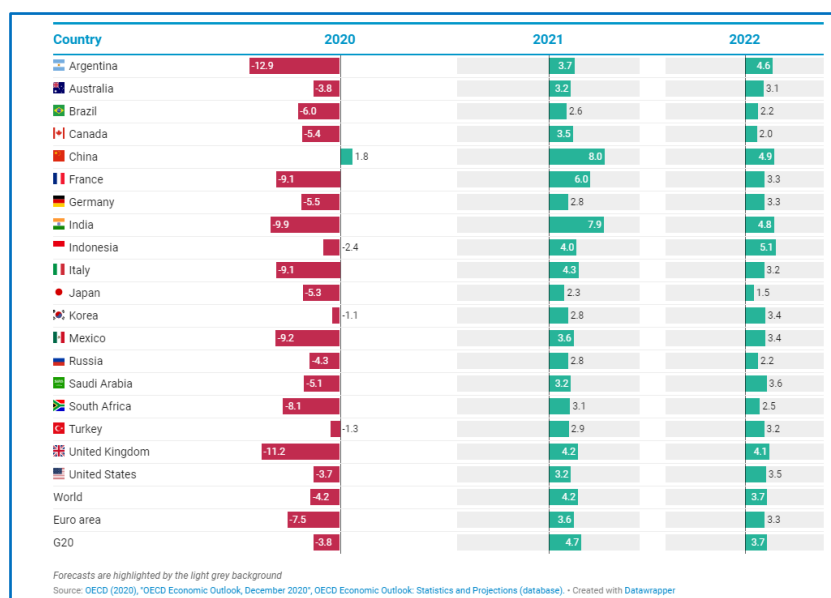


Figure 22: Real GDP growth predictions (% year on year)⁴⁴

The adage of “never waste a crisis” is very relevant to the current challenges facing Australia and the Australian food system – the bushfires and the pandemic should be the catalyst for change – to build the “next normal”.

The Government’s Modern Manufacturing Strategy will focus on the key pillars of:

- Getting the economic conditions right for business
- Making science and technology work for business
- Focusing on areas of advantage
- Building national infrastructure for a strong economy.

The Food and beverage sector is one of the national manufacturing priorities.

Key areas for support of the food system include:

- Economic reforms – for example – tax incentives for R&D and innovation, lower energy costs, red tape reduction and deregulation
- Science and technology – supporting education, training and skills development (particularly in STEM disciplines), research and innovation capabilities, collaboration
- Building resilience – supply chain support, free trade agreements.

⁴⁴ http://www.oecd.org/economic-outlook/december-2020?utm_source=twitter&utm_medium=social&utm_campaign=ecooutlookdec2020&utm_content=en&utm_term=eco#global-outlook

Annison (2021) noted that building resilience and improving competitiveness require businesses to invest and boosting onshore manufacturing (or reshoring) has the potential to increase resilience.

The “next normal” for the Australian food system will rely on a solid plan as recommended in this paper.

3. Key policy-relevant recommendations for Australia's food system

In this section we provide a summary of the key recommendations arising from our review of relevant, public domain data and information and our interviews with food industry leaders. We have chosen - where appropriate - to provide quotes (presented in italics and sometimes edited for clarity and context) from our interviewees. In this way, we provide a contemporary take on where industry leaders see the opportunities and threats for the Australian food system.

There is unavoidable overlap amongst the issues and subsequent recommendations we describe. This is inevitable given the complex and often deep inter-relationships that exist within the Australian food system. However, we have strived to present these as coherent themes or pressure points for discussion.

Appropriate policy settings aligned with these pressure points will provide key growth enablers for the Australian food system.

3.1 A single strategic plan covering Australia's food system

The authors consider that the most important message contained in this paper is the need to reimagine the way we understand and manage Australia's food system.

We need to shift the current paradigm.

We need a national strategy covering what, how and why we grow, harvest, store, value add, market, regulate and export our agricultural, aquacultural and wild harvest primary products.

And we need to be rid of the siloed, often piecemeal ways in which these activities are designed, managed and delivered.

3.1.1 Recommendation

Recommendation 1: That the Australian Government works with food system stakeholders to establish an industry-led, food system strategic advisory body, chaired at the Ministerial level, to develop a National Food Plan that:

i) prioritises and guides activities supporting Australia's food system

ii) identifies and drive programs so that Australia's food system is supported as a cohesive, nationally important whole, and

iii) guides government on all aspects of policy that impacts Australia's food system.

Suggested initial action

- Convene a working group from peak food system bodies, companies, and agencies to:
 - Develop terms of reference and key deliverables
 - Identify the support (cash and in-kind) the body will require
 - Identify and engage members, and
 - Convene the industry-led body to start work.

This first recommendation overarches all other recommendations in this paper.

The recommended industry-led advisory body would be responsible, amongst many other things, for reviewing the recommendations in this and contemporary reports and for developing and delivering against its own priorities.

While this concept currently has an increasing support base amongst Australia's food industry leaders, it is not new – aligning as it does with a similar recommendation made in the National Food

Plan (DAFF 2013) to establish “an Australian Council on Food to better engage with industry and community leaders and to guide the implementation of the ... Plan”.

And on that note, it is worth pondering why the energy behind the 2013 National Food Plan appears to have faded. Perhaps this is precisely because no dedicated, single point of accountability, responsibility and authority was prioritised and resourced to commit to the follow through: the ‘making it happen’.

3.1.2 The literature

The term “food system”, as defined by Bardsley *et al.* (2020), conveys an approach to the food sector as an interconnected whole – encompassing agriculture, horticulture, aquaculture and fisheries – ranging from production through manufacture, distribution, marketing, selling, consumption, and disposal.

Several key contemporary reports that address strategies for different areas of the food system and that contain their own recommendations that could guide the development of the food system in Australia were identified in the literature review and by our interviewees:

- AAS (2017). *Decadal plan for Australian agricultural sciences (2017–2026)*. Australian Academy of Science, Canberra
- Agribusiness Australia (2020). *State of the industry*. Agribusiness Australia, Adelaide
- CSIRO (2016). *Australia 2030. Navigating our uncertain future*. Commonwealth Scientific and Industrial Research Organisation, Sydney
- CSIRO (2017). *Food and Agribusiness: A Roadmap for unlocking value-added growth opportunities for Australia*. Commonwealth Scientific and Industrial Research Organisation, Sydney
- DAFF (2013). *National Food Plan: Our food future*. Department of Agriculture, Fisheries and Forestry, Canberra
- DAWE (2017). *National Food Waste Strategy: Halving Australia’s food waste by 2030*. Department of Agriculture Water and the Environment, Canberra
- FIAL (2020a). *Sector Competitiveness Plan*. Food Innovation Australia Ltd
- FIAL (2020b). *Capturing the prize: The A\$200 billion opportunity in 2030 for the Australian food and agribusiness sector*. Food Innovation Australia Ltd
- NFF (2018). *2030 Roadmap – Australian Agriculture’s Plan for a \$100 billion industry*. National Farmers Federation, Canberra
- OECD (2015). *Australian manufacturing in the global economy*. Organisation for Economic Co-operation and Development, Paris
- Wynn, K. and Sebastian, B. (2019). *Growth opportunities for Australian food and agribusiness – Economic analysis and market sizing*. CSIRO Futures, Canberra.

These reports and papers represent significant bodies of work, with input from many stakeholders across the Australian food system. **What seems to be lacking though, is an overarching plan to guide their implementation.**

Two papers identified in the literature review highlight the need for a whole of chain approach to Australia’s food system through the establishment of a single strategic plan.

The Commission for the Human Future (2020), identified the “sprawling governance of Australia’s food system”, noting that: *“There is no central authority, legislation, or bureaucratic structure for Australia’s food system. Food policy sits across legislation on agriculture, fisheries, water, animal welfare, environmental protection, and consumer protection. And the system sits within no single ministerial portfolio. Instead, food-related policy frameworks are scattered across at least 14 government departments and agencies and are not fully coordinated (such as the Food and Nutrition Policy, Agricultural Competitiveness White Paper, the National Food Waste Strategy, the National Aquaculture Strategy and the upcoming National Agricultural Workforce Strategy).”*

The Commission also stated that *“A new policy approach to food policy would allow Australia to better manage these interconnected, and often conflicting, interests while safeguarding the country’s most valuable assets – its people, environment and economy”*.

More recently, FIAL (2020b) noted: *“Currently, the food and agribusiness sector operate in a highly fragmented manner. This includes dealing with multiple federal government [departments] and at least a dozen state departments on a policy front; multiple support agencies (e.g., Research and Development Corporations or RDCs) and scores of industry organisations with different priorities. This current arrangement leads to costly duplication and gaps in focus, investment, and resourcing. As the food and agribusiness sector spans the whole value chain, a coordinated system is crucial. For instance, government and industry stakeholders could work together on one streamlined plan for capturing the opportunities outlined in this report.”*

In addition to FIALs comments, it is noted that the Australian government’s Modern Manufacturing Strategy (DISER 2020) has identified food and beverage as one of six national manufacturing priorities - to realise the comparative advantages and strategic opportunities of this sector it is considered that a clear plan for the food system will need to underpin it.

We consider that the 2013 National Food Plan (DAFF 2013), which appears not to have catalysed the action its authors may have anticipated, is worthy of specific attention. This plan was developed as a comprehensive guide to growing Australia’s food system – both domestically and through exports. It covers much that is discussed in many of the reports cited in this paper and it suggested a suite of policy principles by which these plans could be realised viz:

- Access to enough safe and nutritious food for all Australians
- Freedom to choose—Australians are free to make their own choices about food
- Sustainable production
- Vibrant industries
- Vibrant communities
- Free and open markets
- Good global citizenship
- Evidence-based decisions
- Consultation and transparency
- Minimal and effective regulation

While there was some criticism of the plan as being more of a food export plan⁴⁵ rather than an integrated food policy for Australia (e.g. Carey *et al.* 2015), the plan itself contained much well-

45

https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/FlagPost/2013/July/The_National_Food_Plan_food_policy_or_something_else

considered substance for growing the Australian food system and bears a thorough review by all with an interest in this area.

3.1.2.1 Food Policy in other countries

The literature review identified food policies and plans from other countries which may be used to guide the development of a Food Plan for Australia's Food System.

Food Policy for Canada

The **Food Policy for Canada** (Minister of Agriculture and Agri-Food 2019) sets a foundation for increased integration and coordination of food-related policies and programs. This will enable greater long-term planning, enhanced coordination by the Government, and improved accountability through regular reporting to Canadians on progress and achievements.

A key feature of the food policy is the Canadian Food Policy Advisory Council which will report to the Minister of Agriculture and Agri-Food and will:

Advise on new and emerging issues

Enable on-going dialogue on food related challenges and opportunities

Share information and best practices

Assess gaps in policies and data

The Advisory Council will include a diversity of members from the agriculture and food industry, health professionals, academia, non-profit organizations, and Indigenous organizations as shown in Figure 23: Area of Expertise: This table indicates the diversity of food system actors/ experience areas that could be considered for participation in the Advisory Council..

Agriculture and Food Sector	Academia	Non-Profit	Public Sector
<ul style="list-style-type: none">• Primary agricultural producers• Food processors and manufacturers• Food distributors, transporters and retailers• Food waste, disposal and recycling industry	<ul style="list-style-type: none">• Social, health/nutrition, environmental or food policy experts• Measurement and data experts• Indigenous food system experts	<ul style="list-style-type: none">• Social justice, environmental or food security advocates• Food-provision services• Community-based organizations or private foundations	<ul style="list-style-type: none">• Healthcare and/or nutrition practitioners• Municipal/regional governments and/ or isolated/remote communities• Public health, school board, or other representatives of public institutions

Figure 23: Area of Expertise: This table indicates the diversity of food system actors/ experience areas that could be considered for participation in the Advisory Council.⁴⁶

The six priority outcomes have been identified as follows:

1. Vibrant communities
2. Increased connections within the food system
3. Improved food-related health outcomes

⁴⁶ <https://www.agr.gc.ca/eng/about-our-department/key-departmental-initiatives/food-policy/the-canadian-food-policy-advisory-council/?id=1597863853544>

4. Strong indigenous food systems
5. Sustainable food practices
6. Inclusive economic growth.

To support the implementation a cross-government reporting framework will measure and track progress towards priority long-term outcomes, holding the government accountable for results and ensuring transparent reporting to Canadians. It will also support decision-making that is based on evidence of effective approaches to tackling food system issues.

The features of this structure vision could provide a sound basis for developing a National Food Plan for the Australian Food System.

Developing a national food strategy - UK

The UK Department for Environment, Food & Rural Affairs has commissioned an Independent report: Developing a national food strategy.

The terms of reference⁴⁷ state that: *“The National Food Strategy will build on the work underway in the Agriculture Bill, the Environment Bill, the Fisheries Bill, the Industrial Strategy, and the Childhood Obesity Plan. It is intended to be an overarching strategy for government, designed to ensure that our food system:*

- *delivers safe, healthy, affordable food; regardless of where people live or how much they earn*
- *is robust in the face of future shocks*
- *restores and enhances the natural environment for the next generation in this country*
- *is built upon a resilient, sustainable, and humane agriculture sector*
- *is a thriving contributor to our urban and rural economies, delivering well paid jobs and supporting innovative producers and manufacturers across the country*
- *delivers all this in an efficient and cost-effective way.*

The scope of the review is England, but the strategy will consider relationships with the devolved administrations, the European Union, and other trading partners.

The UK strategy will cover the entire food chain, from field to fork: the production, manufacture, marketing, processing, sale, and purchase of food (for consumption in the home and out of it), and the consumer practices, resources and institutions involved in these processes.

The strategy will consider the role of the central government departments, arms-length-bodies, local councils, and city authorities. In doing so it will also consider the roles that individuals, the private sector and social enterprises should play.

No further information was available on this strategy at the time of writing this report.

3.1.3 The interviews – what we heard

Our interviewees were strongly of the opinion that Australia needs a framework within which to develop and manage a national strategy covering what, how and why we grow, harvest, store, value add, market, regulate and export our agricultural, aquacultural and wild harvest primary products.

⁴⁷ <https://www.gov.uk/government/publications/developing-a-national-food-strategy-independent-review-2019/developing-a-national-food-strategy-independent-review-2019-terms-of-reference>

In short, we need to view and integrate all these largely disparate activities under the auspices of a national food system. We need to decide what that system should do – what success looks like – and then design policies to achieve that vision.

“There [exists in Australia] a very a dangerous mental construction that food processing or food manufacturing has two elements – one is the farm (that ends at something called ‘the farm gate’) and then you have value added manufacturers (which start at something called a ‘commodity’ which is the thing that goes through the farm gate to the manufacturer). It’s a total fiction and a dangerous fiction, because you lose all value through your value chain when you look at your system in that way. For a ‘food system’, you have to join the two together to get the ... value.”

This construct has been repeated at the highest levels, including in the Australian Government’s current national manufacturing policy (DISER 2020): *“Our food manufacturers are helping farmers achieve more value from their produce by enhancing efficiency through better food processing techniques that extend nutritional value and shelf life of goods.”*

Interviewees saw this perceived dichotomy as a core problem, underlying many of the pressure points identified in this and related papers.

“We once had ‘A Food Plan’ – we seem to have gone back to just discussing agriculture. We need a clear policy direction from the Federal Government around food.”

“[We] need a clearer picture from government about what their food policy is and how they are going to support it.”

“... compare us to The Netherlands – they have a smaller production than us, but they have massive value add and trade capability with food – they have done a better job of alignment of government policy to critical infrastructure and R&D. There is good alignment between, government, academia, and industry. There is one plan.”

“A critical growth opportunity is around agri-food ... based on 2 things 1) a much more strategic approach to agriculture and 2) looking to much more closely align agriculture with food manufacturing.”

“We need a much more design-led food and food manufacturing strategy. Start with what market needs – both domestic and international. Look at both ag and manufacturing to how best to have future growth to achieve targets.”

“As always in Australia, we have more opportunity than capability, and more opportunity than we have a cohesive strategy to achieve.”

The fact that this paper was commissioned is testament to this situation – as one interviewee put it:

“[there are] ... lots of people ... doing these reports and everyone’s giving the same answers. Nothing happens and it’s just another report...”

This highlights a critical point.

It suggests that the number of recent studies and reports have not catalysed meaningful action at a national level and points to a key gap and, therefore, a key opportunity: the need for a meaningful, coordinated investment in Australia's food system.

And it was made clear that policy makers must consider the whole system – from production, through value-adding to sale.

"If the government continues to talk about food manufacturing, without factoring in food production, then we've missed the boat."

Our interview data provided a clear call for a well-resourced, nationally coordinated approach to prioritising and supporting a sustainable and strategic national food system.

In this context, the term 'system' has been used intentionally: it was made clear that Australia must consider the whole supply chain: not agriculture and food manufacturing separately; not animal protein and plant protein separately. It was noted that there have been several Senate inquiries around the food processing sector, and that there is still no overall plan – magnifying the feeling of internal competition, rather than collaboration, across the sector:

"[we need to] ... stop the patch fighting ... see how NZ is doing it."

In saying this, it was recognised and acknowledged that organisations such as CSIRO, universities, FIAL, the ARC, RDCs, CRCs etc are all doing good work and are helping where they can. But, equally, it was noted that these and similar organisations can only operate within their scope and funding limitations – with most of the RDC's focussing on existing commodity production and not value-addition – and have not had sufficient opportunity or mandate to work as a coordinated 'whole'.

"We need to be smashing down the silos!"

"Is there an ... organisation that could set itself up and run this? – we could call for industry participation, including CEOs of large companies."

FIAL's recent report (FIAL 2020b), drawing on a substantial amount of data, points to 19 opportunities and 15 markets which, it says, could lead to AUD\$200 billion in growth for Australia's agri-food sector. While noting that *"The appropriate policy and business response to these challenges is outside the scope of this research ..."* the FIAL report suggests that resultant activities should focus on:

- "(1) Driving greater policy, programme and investment coordination and alignment across government and industry to grow Australia's food and agribusiness sector;*
- (2) Rebranding the sector to attract new talent;*
- (3) Building closer links with educational institutions to ensure future workers have the appropriate skill sets;*
- (4) Rethinking educational models for existing workers; and*
- (5) Developing flexible employment models for older workers."*

When considering these foci, it is worth noting the observation by Greenville *et al.* (2020), that *"value creation can come from several sources. It can occur when there is a change in the form of a product, for example, changing grain into flour. It can also occur through the addition of an attribute to a product, for example, creating a traceable supply of animals. Both types of activities generate additional returns to domestic land, labour and/or capital. The returns from the addition of attributes accrue to producers and other sectors of the economy involved in the supply chain"*.

Our interview data called for a renewed, reinvigorated focus on the value of Australia's food system to the economy and, importantly, to the community. A clear vision is needed – on which to base a clear national food system strategy.

In other words, the policy positions of those seeking to stimulate innovation and growth within Australia's food system need to be set with a clear understanding as to what success will look like. And then these policies need to be supported:

“Where is the Minister for Food?”

3.2 Market access and trade

Another clear and consistent message from interviewees was that Australia's food system will not grow in any meaningful way without continued and broadening international market access and freedom to trade.

3.2.1 Recommendation

Recommendation 2: That the Australian Government's work on international trade negotiations and relationships actively supports, and is actively supported by, the Australian food system.

Suggested initial action

- Consult with Australian food system leaders before and during all relevant negotiations to ensure growth opportunities are maximised and negative outcomes are minimised.

The Australian food system strategic advisory body established under Recommendation 1 would be an ideal vehicle for these consultations.

3.2.2 The literature

The Department of Foreign Affairs and Trade (DFAT) and the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) publish a range of reports and insights related to trade and market access – it is not the intention in this paper to review these reports in depth. The reports provide a wealth of information and insights to the Australian food sector.

The following highlights some key insights which are relevant to this paper.

The *Trade and Investment at a Glance 2020* report published by DFAT (2020) provides a summary of Australia's engagement with the global economy in the period 2018-2019 and noted that Australian businesses will still rely on strong levels of trade and foreign investment for their future success.

Greenville (2019) noted the following: *"International trade is crucial to global food security, as well as to Australia's national income and economic performance. Trade lowers food prices for consumers in importing countries. Participation in global agricultural markets also reduces price volatility and the potential for food price spikes (particularly in droughts or other periods of low-domestic production) because weather and other supply risks are shared across global production and exports, resulting in more stable prices and supply volumes"*.

Future challenges

Free Trade Agreements (FTA's)

Greenville (2019) noted that with many (FTA's) now in place the Australian governments trade strategy includes reviewing existing FTA's and upgrading them where possible to ensure they continue to support our competitiveness.

Levantis & Fell (2019) noted some emerging issues in trade forums, including technical trade issues and Non-tariff measures.

Greenville (2019) noted that the priorities continue to be access to export markets and being competitive in those markets and ensuring Australia has access to imports to support the competitiveness of our domestic industries.

The Complexity of FTA's can add cost to companies in understanding the requirements and meeting them – this is another matter that needs to be addressed to support Australia's food sector.

Trade Barriers

The Trade Barriers Register has been created by the Industry Growth Centres, led by FIAL and the Export Council of Australia. Its purpose is to give visibility to trade barriers affecting Australian businesses, enabling them to be more prepared and to support the government in trade negotiations and policies.

Asia at our doorstep

There is considerable opportunity for Australia to expand its trade, investment and economic cooperation relationship with Indonesia, which is the largest economy in South-east Asia and is among the 20 largest economies in the world. Indonesia is among Australia's top 15 trading partners.

Australia and Indonesia have also signed a trade agreement called the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA). IA-CEPA will open new markets and opportunities for businesses, primary producers, service providers and investors. Indonesia and Australia are also both participating in Regional Comprehensive Economic Partnership (RCEP) negotiations with ASEAN, China, Japan, India, South Korea and New Zealand.⁴⁸

Other markets of relevance include Japan, Korea, Singapore, India, Malaysia and Thailand – all who are in Australia's top 10 two-way trading partners 2018-19 (DFAT 2020). Viet Nam is another opportunity for Australia's food system. Viet Nam's food sector accounts for a substantial and growing part of the country's gross domestic product (GDP). Total food sales are forecast to increase at a compound annual average rate of 11.3 per cent over 2017-2021. Per capital food sales will experience the growth of 10.3 per cent per annum during 2017-2021, along with strong population growth. The rapid growth of the fast food sector has increased the activity of businesses that service the industry including baked goods, dairy, meat and poultry establishments. Fast food revenue in Viet Nam in 2016 was VND 17.9 trillion, an increase of 9 per cent over 2015. Many foreign fast-food chains are active in Viet Nam's food and beverage market.

Growth in the tourism industry has also resulted in a growing demand for beef, cheese, seafood, wine and seasonings which are used in western-style, Japanese and other international food outlets.⁴⁹

The way forward

The report "Trade transformation supporting Australia's export and investment opportunities" (JSCTIG 2020) presented a list of recommendations relevant to Australia's food system, as set out in Table 9.

⁴⁸ <https://ftaportal.dfat.gov.au/countries/IDN>

⁴⁹ [https://www.austrade.gov.au/Australian/Export/Export-markets/Countries/Viet Nam/Industries/food-and-beverage](https://www.austrade.gov.au/Australian/Export/Export-markets/Countries/Viet%20Nam/Industries/food-and-beverage)

Table 9: Recommendations relevant to Australia's food system (JSCTIG 2020)

1	The Committee recommends that the Australian Government identify new and emerging trade opportunities and seek to apply the lessons learned from the Biomedical Translation Fund to help attract industry investment to those opportunities, as part of an updated trade and investment strategy.
2	The Committee recommends that the Australian Government continue to progress its tax reform agenda, particularly by reducing the company tax rate, as a priority.
4	The Committee recommends that the Australian Government investigate improvements that could be made to the Research and Development Tax Incentive, particularly to meet the needs of small and innovative businesses.
8	The Committee recommends that the Australian Government consider further options to support small and medium enterprises to enter (and remain) in export markets, including: <ul style="list-style-type: none"> • Greater support targeting start-ups and entrepreneurs • Consideration of current government support for small businesses in the defence export industry, and whether this support could be replicated in more broadly to other industries, and • Greater education and communication (including via digital means), particularly for new exporters, on how to enter and succeed in specific export markets.
10	The Committee recommends that the Australian Government permanently increase funding for the Export Market Development Grants scheme by \$60 million per year, or alternatively by an amount which will meet the expected demand and reflects the needs of business following the post COVID-19 resumption of economic activity.
11	The Committee recommends that the Australian Government continue to push for new export market opportunities, including by: <ul style="list-style-type: none"> • the signing of new trade agreements, with a preference for multilateral and regional agreements where possible • considering options to harmonise or streamline regulations where Australia has overlapping trade agreements with the same country, and • prioritising the needs of small and medium sized businesses in the context of trade negotiations.
12	The Committee recommends that the Department of Foreign Affairs and Trade develop and release a plan for boosting Australia's exports and investment once the vast majority of Australia's trade is covered by FTAs (in line with the government's goal of achieving this by 2022).
13	The Committee recommends that the Australian Government conduct an assessment of Australian export industries that are over-exposed to a single market and work with industry towards diversification.
14	The Committee recommends the Department of Agriculture, Water and the Environment, in collaboration with state and territory governments, conduct an audit of the regulatory arrangements for agricultural exports (including seafood) and identify and implement actions in order to: <ul style="list-style-type: none"> • Harmonise export regulation across local, state and federal jurisdictions, with an aim of achieving a best practice outcome • Increase competitiveness for the agricultural industry, including assessing whether cost-recovery arrangements and export registration costs are deterring exports, and a comparison between Australia and its international competitors, and • assess the impact of red and green tape (at the state and federal levels) on the ability of the sector to reach its goal of growing Australian agriculture to \$100 billion by 2030.

3.2.3 The interviews – what we heard

“We have to export - if we only look at Australia, we will never grow.”

There was a near universal recognition that the ability of Australian governments to negotiate, maintain and grow international market access, be that through formal or informal agreements, is pivotal.

“We will get back to China loving Australian food – it’s a blip. We will get back to China wanting Australian food and loving our quality as long as we don’t stuff it up politically.”

“Trade is of paramount importance. We need to focus on great trade relationships.”

While current trade tensions are top of mind for many exporters in the food system, there was also a clear understanding that increasing our diversity of markets would help mitigate this exposure.

“[We] ... need to continue to do a good job of having good trading relationships with our neighbours so we have freedom to operate.”

“[We need to] ... focus on South East and Southern Asia, United Arab Emirates, Middle East, and [get] back in with Britain after Brexit - there are huge opportunities.”

“There are certainly other markets out there in the world that need good products.”

“There are 3.5 billion Asians that don’t live in China.”

“These areas have sufficient opportunity to replace and grow the current China markets.”

“We don’t have an issue with market availability, we just have to get off our butts and do something.”

“We have a very open market position, but our trading partners don’t - they provide local protection with tariffs. This is why FTA’s are important. It is a big risk for us for export.”

The importance of Australia’s diplomatic efforts to the Australian food system goes further than our direct relationships with potential market partners. Australia’s trade interests will also be supported if our trading partners get along with each other. As noted by Greenville (2019), *“For Australian agriculture, and agricultural trade policy, . . . it is not only bilateral trading relationships that are an important driver of export demand. Rather, the demand for exports is influenced by the relationships our trading partners have with other nations.”*

In setting strategic plans for building international relationships and accessing new export markets, it also will be vital that exporters are supported in their efforts to sell into those markets.

“... looking at other markets that are growing – India, Mexico, South America, South Africa – there is also a demand for fantastic food. How do we make those countries more accessible for Australian manufacturing and help Australian businesses understand what is needed to trade in those countries safely [while staying] commercially viable?”

“We don’t have harmonised food regulations across the region. Harmony across key trading partners in Asia would be beneficial and would support export markets – it’s challenging for manufacturers to meet all standards across the region.”

In this regard, several interviewees suggested taking a leaf out of New Zealand’s play book:

“[Look at] NZ Trade Enterprises, how they help NZ business access new markets. This is the global leader - this is what good looks like.”

Setting trade and international relationship parameters obviously is a matter of national importance and impacts on myriad other areas beyond the purview of this paper. While acknowledging this, interviewees were keen to point out that much thought needs to go towards potentially unintended consequences of these negotiations.

“[With regard to] ... imported goods into Australia – international compliance and labelling sometimes don’t meet our regulations. Yet many [such] products are freely allowed into Australia. This is a massive miss from government in protecting our industry here. Making it easier to import has made it easier for distributors – but to the detriment of local manufacturers.”

3.3 Tax and regulation reform

Tax reform was highlighted as an area that could stimulate investment and growth in the Australian food system, especially when this system was viewed through a ‘manufacturing’ lens. With this in mind, the authors acknowledge that the issue of tax reform is large and is not new, and we are not economists. Information provided here is to highlight, once again, that Australia’s food system leaders see this as an ongoing matter worthy of high-level policy attention.

In addition to tax reform, regulatory reform has also been identified to support Australia’s food system to innovate and grow. As for tax reform, this is also not a new issue, but it has also been highlighted through our interviews and in the literature.

3.3.1 Recommendations

Recommendation 3: That the Australian Government works with food system stakeholders to identify reforms that will make the Australian tax environment more attractive, especially to those food system companies considering capital and/or R&D investments.

Suggested initial action

- Consult with Australian food system leaders on taxation reforms that will support growth opportunities, R&D investment and onshoring manufacturing capacity and capability.

The Australian food system strategic advisory body recommended elsewhere in this paper would be an ideal vehicle for these consultations.

Recommendation 4: That the Australian Government works with Australian food system stakeholders to identify reforms to simplify and streamline the regulatory environment in which the food system operates.

Suggested initial action

- Consult with Australian food system leaders on regulatory reforms that will reduce complexity and duplication and increase international harmonisation, thereby supporting food system growth in domestic and export markets.

The Australian food system strategic advisory body recommended elsewhere in this paper would be an ideal vehicle for these consultations.

3.3.2 The literature

There is a need to recognise “pressure points” for Australia’s food sector and implement strategies to minimise hurdles and support growth.

A report prepared by The Australia Institute Centre for Future Work – *A Fair Share for Australian Manufacturing: Manufacturing renewal for the post COVID economy* (Stanford 2020) highlighted the need to revitalise Australian manufacturing of which the food system is a part. The report identified several principles for modern manufacturing industry policy:

- Sector strategies
- Domestic content in public procurement
- Networks, Eco-Systems, and Clusters
- Innovation
- Targeted Fiscal Supports for Investment
- Industrial Infrastructure
- Mobilising capital
- Leveraging energy
- Skills and Capacities
- Trade that Goes Both Ways.

These could all be considered enablers for further action in relation to Australia's food system – manufacturing is a major source of innovation.

Manufacturing is believed to determine countries' abilities to develop new technologies, as well as countries' absorptive capacities to assimilate foreign knowledge. Most investments in Research and Development (R&D) are undertaken in manufacturing: 60% or more of business R&D investments are made by manufacturing firms in several OECD countries (Stanford 2020).

"Manufacturing is the most innovation-intensive sector in the whole economy. No country can be an innovation leader without manufacturing." (Stanford 2020). These words are at the heart of Stanford's argument for a focus on sovereign manufacturing capacity and capability in a post-COVID economy.

Governments have a key role to play in reviewing and setting necessary regulations, for example, ensuring food safety and address in market failures. In some instances, government regulation, such as research and development tax incentives, can encourage innovation, R&D, and business operations. Excessive regulation brings greater costs to business, discourages investment, stifles innovation, and reduces productivity. The cumulative effect of these impacts threatens the competitiveness of the Australian food system.

The overall approach should be an international best practice approach to regulation and harmonisation, recognising the relative size of the market in Australia. Regulation needs to be commensurate with risk and consistent with COAG principles of 'minimum effective regulation' to ensure public health and safety.

Tax reform

An analysis of tax reforms that could support growth within the Australian food system is large, complex and beyond the scope of this paper.

For the purposes of this paper, one area of tax reform identified as being of keen interest to the industry was considered worthy of specific mention: the research and development (R&D) tax incentive scheme⁵⁰. This scheme provides a tax offset for eligible R&D activities to:

- encourage industry to conduct R&D that may not otherwise have been conducted
- improve the incentive for smaller firms to undertake R&D.
- provide business with more predictable, less complex support.

⁵⁰ <https://www.ato.gov.au/Business/Research-and-development-tax-incentive/>

In a 2020 review of the Treasury Laws Amendment (Research and Development Tax Incentive) Bill 2019⁵¹, a Senate Standing Committee on Economics heard that:

- R&D tax incentives can be complex to navigate and the costs associated with doing so are prohibitive for smaller projects
- Larger businesses and multinational companies are more likely to have the resources to be able to take advantage of the R&D incentives
- A broader definition for all R&D and expansion of scope could deliver benefits.

In its submission to the Senate Standing committee, one major food manufacturer based in Australia noted that: *“The R&D Tax Incentive has supported our R&D effort for an extended period and has allowed us to pursue projects that we may not have otherwise pursued due to inherent technical risks. Technological flexibility and innovation are key to maintaining our competitive position in the food processing industry, which is increasingly being subject to the pressures of globalisation through competition from imports. Foreign competition is intensified with Australian major supermarkets increasingly source processed goods from overseas and encourage private label sales to boost margins. The R&D Tax Incentive has been of significant benefit to us, assisting us to be able to respond quickly in addressing consumer trends while identifying new products and/or product variants to address these trends. It has also enabled us to introduce cutting-edge technologies to our plants and at the same time, continuing to aim for increased quality at lower prices to remain competitive.”*

Regulation Reform

Compliance with regulation is always costly; compliance with ineffective, inefficient, or unnecessary regulation is wasteful in the extreme. It reduces business profitability directly, undermines investment attractiveness and diverts funds from innovative activities necessary for continued competitiveness and productivity growth.

The Council of Australian Governments has agreed that all governments will ensure that regulatory processes in their jurisdiction are consistent with the following principles:

1. establishing a case for action before addressing a problem
2. a range of feasible policy options must be considered, including self-regulatory, co-regulatory and non-regulatory approaches, and their benefits and costs assessed
3. adopting the option that generates the greatest net benefit for the community
4. in accordance with the Competition Principles Agreement, legislation should not restrict competition unless it can be demonstrated that:-
 - a. the benefits of the restrictions to the community as a whole outweigh the costs, and
 - b. the objectives of the regulation can only be achieved by restricting competition
5. providing effective guidance to relevant regulators and regulated parties in order to ensure that the policy intent and expected compliance requirements of the regulation are clear
6. ensuring that regulation remains relevant and effective over time
7. consulting effectively with affected key stakeholders at all stages of the regulatory cycle, and
8. government action should be effective and proportional to the issue being addressed.⁵²

⁵¹ https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/TLABRDTI/Report

⁵² <https://www.pmc.gov.au/ria-mooc/coag/principles-best-practice-regulation>

The Business Council of Australia (BCA 2010) provided four key benchmarks as a basis for a good regulation-making process:

1. **principles of regulation-making** – a comprehensive framework for regulation-making that includes: the need to consider alternatives to regulation, articulation of clear policy objectives, cost–benefit analysis, consultation with business, effective and proportional responses, and review
2. **accountability** – mechanisms to ensure that the principles are implemented properly and that regulators are held to account for their performance
3. **transparency** – mechanisms to ensure that decisions are made and policies developed in a transparent manner and that those potentially affected have an input into the process
4. **review** – mechanisms so that regulations are subject to review to ensure they remain relevant and efficient over time.

In addition to these COAG principles, regulations should harmonise with requirements of overseas regulators and markets of equivalent standards.

Food is traded in a global environment in which Australia is an exporter to the tune of almost 2:1 compared to food imports. Domestic regulation of food cannot be divorced from this wider context, especially in relation to trade in primary production products including meat, dairy and grains.

The National Food Plan (DAFF 2013) identified the importance of a well-regulated industry. The report noted that poorly designed regulation can act like a tax on business – raising costs and inhibiting innovation. The plan identified the goal for 2025: *“Australia will be among the top five most efficiently regulated countries in the world, reducing business costs.”* (DAFF 2013).

The National Food Plan also highlighted that other countries are improving regulation and reducing barriers, adding to competition. To address this, the report noted that there will be an ongoing need to continue reviewing regulations to identify further opportunities for reform. Ensuring food safety is important but the impact of poorly targeted regulations need to be addressed.

A review of regulation of Australian Agriculture by the Productivity Commission (2016) made the following key points:

- Farm businesses are subject to a vast and complex array of regulations. Regulations are in place at every stage of the supply chain — from land acquisition to marketing — and are applied by all levels of government. The number and complexity of regulations affecting farm businesses means that the cumulative burden of regulation on farmers is substantial.
- Some regulations lack a sound policy justification and should be removed. Examples include restrictions on the use of land held under pastoral lease arrangements, state bans on cultivating genetically modified crops, barriers to entry for foreign shipping providers, mandatory labelling of genetically modified foods, and the regulated marketing of rice in New South Wales and sugar in Queensland.
- In other cases, regulation is the wrong policy tool. Regulatory changes to address community concerns about foreign investment in agriculture, for example, are costly and likely to be ineffective. A better-informed conversation about foreign investment is needed.
- Other regulations and regulatory systems need to be reformed so they can more fully achieve their objectives.
- Inconsistent regulatory requirements across and within jurisdictions make it difficult for farmers to understand their obligations and add to the cost of doing Business. A more consistent approach would improve outcomes in the areas of heavy vehicle regulation and road access, and the use of agvet chemicals.

- Governments could also reduce the regulatory burden on farm businesses by:
 - improving their consultation and engagement practices. There is scope to better support landholders to understand environmental regulations, and to reduce duplicative and unnecessary information gathering regarding water management by farm businesses
 - doing more to coordinate their actions, both between agencies and between governments
 - ensuring that good regulatory impact assessment processes are used as an analytical tool to support quality regulation making, not as a legitimising tool or compliance exercise.

The Productivity Commission (2016) made a number of recommendations in relation to the regulation of Australian Agriculture in the following areas:

- Land use regulation
- Environmental regulation
- On-farm regulation of water
- Regulation of animal welfare
- Regulation of technologies
- Agricultural and veterinary chemicals
- Transport
- Food Regulation
- Competition regulation
- Foreign investment in agriculture

Regulatory reform can be approached on two broad fronts:

1. general business regulation, and
2. regulation specific to the food system – as identified in Section 2.2.

FIAL (2020a) identifies regulatory reform as an intermediate output in their vision for the industry in 2025. Figure 24 shows how regulatory reform fits into the overall vision to ensure industry is working together to grow the share of Australian food in the global marketplace.

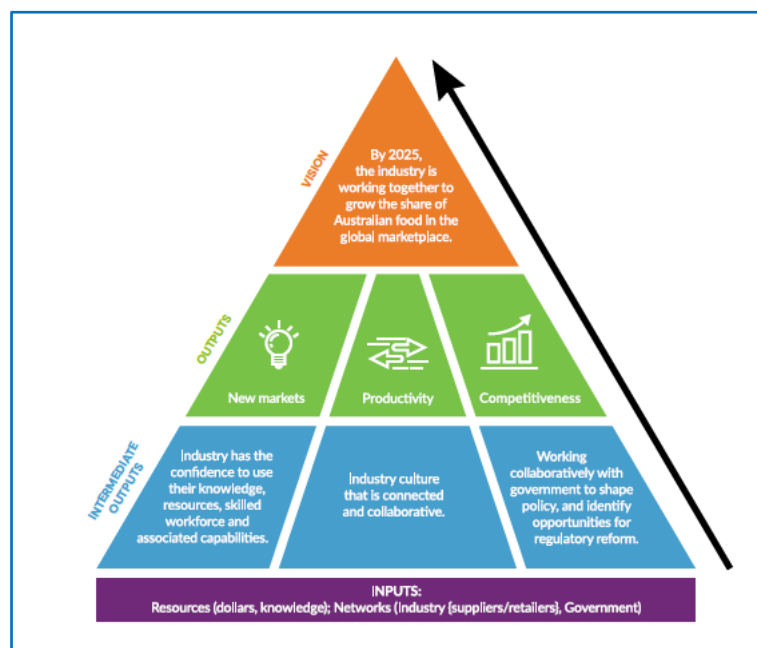


Figure 24: FIAL vision and the place for regulatory reform (FIAL 2020a)

FIAL (2020a) identified three key areas for regulatory reform:

1. Cross jurisdictional regulatory issues
2. Business interactions with government
3. Market entry requirements for industry to industry and industry to government interactions

Table 10 sets out the items identified for consideration under each of these three key areas.

Table 10: Key areas for regulatory reform (FIAL 2020a)

Key Area	
Cross jurisdictional regulatory issues	<p>Cost of duplicating in market and other activities across federal, state, and local government</p> <p>Misalignment of domestic regulation requirements — food safety, labelling, ratings systems.</p>
Business interactions with government	<p>Preparing and reporting on grant applications for research and business-related projects</p> <p>Cost versus the benefit of meeting requirements for mandatory routine product testing, food labelling, safety, funding grants, and R&D Tax Incentive</p> <p>Complex business registration processes</p> <p>Cost of addressing labour, workforce and environmental regulations</p> <p>Regulation must be evidence-based with adequate consultation with industry to ensure its real impact to industry is understood and minimised. Governments often engage in regulatory reform too quickly without a holistic view of the situation. They react to social media or TV programs that raise awareness around certain issues, such as country of origin labelling, or live exports.</p>
Market entry requirements for industry to industry and industry to government interactions	<p>Business-to-business and business-to-government compliance, such as food safety auditing, or expensive insurance premiums when using expanded polystyrene sandwich in manufacturing.</p> <p>Accessing researchers and specialist equipment from research organisations and universities.</p> <p>Packaging compliance including labelling, country of origin, certification for organic and third parties.</p> <p>Accessing market information, understanding import regulations (tariffs, behind the border trade barriers).</p> <p>Export requirements (quotas, export documentation)</p>

Current reform of the food regulatory system⁵³

In March 2020, the Australian New Zealand Ministerial Forum on Food Regulation (the Forum) endorsed an implementation plan for an ambitious reform agenda for the food regulatory system aimed at ensuring the system remains strong, robust, and agile into the future. The reform agenda is being progressed through a number of interconnected projects as shown in Figure 25.

- With respect to the current reform the AFGC (2020) have made a series of recommendations for major reforms of the food regulatory system in the following areas:
 - Inconsistencies in the food regulatory system due to the complex arrangements with multiple bureaucracies which comprise the bi-national, 10 jurisdictional system
 - Confirm the importance of consistency for efficient and effective food policy and regulation
 - Alignment with the Australian governments deregulation agenda and the role it expects the food industry to play in the economic recovery of the Australian economy
 - Recognition that greater consistency of outcomes reducing the regulatory burden.⁵⁴

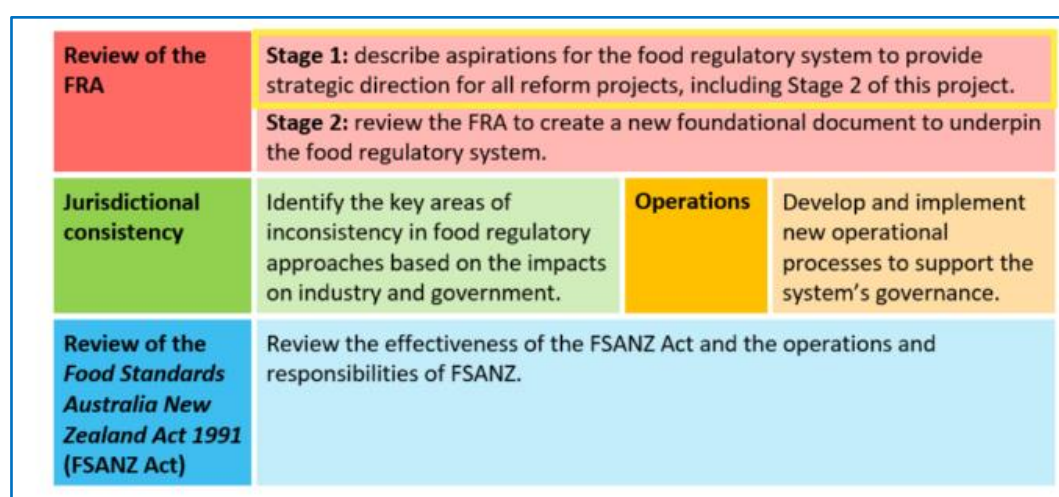


Figure 25: Reform of the Australian food regulatory system

The key areas identified by FIAL and the current reform need to be taken forward and included as part of the recommended National Food Plan to ensure Australia remains competitive and innovative and regulation does not become a barrier to trade and commerce for the Australian food system.

To ensure Australia continues to have a vibrant and robust food and grocery manufacturing sector producing safe, affordable, nutritious foods, manufacturers urgently need a low-cost regulatory environment and seamless regulation to maintain competitiveness, create jobs and boost innovation (AFGC 2012).

⁵³ https://consultations.health.gov.au/preventive-health-policy-branch/aspirations_for_the_food_regulatory_system/

⁵⁴ Note: this is not the complete list of recommendations from the AFGC.

3.3.3 The interviews – what we heard

Interviewees called for increased flexibility and targeted support for food system companies. Some interviewees focussed on the need to entice multinational food manufacturers to bring their R&D and innovation centres to Australia. In this way, more, and increasingly diverse, career paths would become available to build the domestic talent, and associated growth potential, within Australia's food system.

"... large multinationals have their R&D in other countries. We've not incentivised our R&D tax to get them to stay here. Multinationals are playing here - but not their major innovation and R&D centres."

"We see a reduction in food manufacturing R&D in last 10 years. [There is] only 1 multi-national with R&D in Australia, they have all fled back to the EU or Asia. This has seen a major reduction in innovation capacity – and this is saddening to observe."

In its recent manufacturing-focussed policy paper the Australian National Party outlined a 6-point plan to increase Australian manufacturing jobs and output. This paper did not, however, mention the food system as one of its foci. On the other hand, the Australian Government's manufacturing strategy (DISER 2020) specifically mentioned the 'food and beverage' sector as being a key focus.

It was noted by some interviewees that not all food manufacturing fits the current push to support 'advanced manufacturing':

"[There is a lot of] ... talk around advanced manufacturing ... it is a big broad topic – but it's not aligned with food manufacturing, which in a lot of cases is not high tech."

For many companies within Australia's food system, the best support was suggested to be in terms of operational cost savings.

"[We need] CapEx ... write off for bigger companies. ... It's how we can [entice companies to] invest more."

"[We need to review]... payroll tax. It's a deterrent to putting more people on. It's a big one but we [should be able to] deal with this quite easily."

"We need to do a lot more for people to find it attractive to manufacture here – we could do simple things like incentives to make it easier to employ people, reduce payroll tax, ... [we could] ... tax food businesses differently to other businesses."

The R&D tax incentive scheme was a topic that was raised by a number of interviewees, with thoughts regarding this scheme being mixed.

"R&D tax incentives for a start-up are useful ... [but] ... are very unhelpful for large multinationals because of the quanta of money that is given back as a tax rebate. Getting a tax rebate doesn't make anyone particularly happy. The money never goes back into R&D. The tax rebate has to go back into the R&D to be effective."

"Continuing the R&D tax rebate is good. It sends strong positive message – We should keep this."

“[There are] significant opportunities to look at R&D incentives in Australia to make it more attractive in the value-added space.”

“[The Netherlands’] R&D tax scheme is no more generous than in Australia, but the money has to go back into R&D! They just ask the question; demonstrate you have put the money we gave you for R&D last year into R&D this year. One decision, and suddenly all research institutions are well supported with projects that big companies are interested in.”

“It’s worth looking at the ‘Patent box’ in the UK⁵⁵ – it’s policy setting tool to promote the use of patented technology. Reducing tax rates on profits generated from patented technology. ... provides an incentive to use these technologies.”

These mixed reactions to the current R&D tax incentive scheme suggest that the scheme is not supporting food system investment as well as it could. Interviewees demonstrated an appetite for a review of this scheme, with a view to making it both simpler and more responsive to the needs of companies across the size spectrum – not a ‘one size fits all’ program.

It should be noted that issues relating to the GST were mentioned by some interviewees. This is another area of potential reform that is of interest to those in Australia’s food system.

Similarly, there were consistent calls for a more coordinated regulatory framework for Australia’s food system.

“Certain State governments seem to put policy and procedures in place without consulting with industry or associations as to what is happening in real world.”

While the need for robust and effective regulation was clearly acknowledged, ...

“...I absolutely support fundamental principles of food safety regulation. We are out to produce safe food.”

...there also were calls for Australia to get smarter about safety and quality assurance to customers, whether domestic or overseas, to showcase Australia’s fundamental commitment to safety and quality and to reduce the burden caused by inadequate regulatory coordination.

“Where we get tied up and where inefficiencies occur is how those [messages] are delivered and how regulatory systems are delivered.”

“One of the biggest problems is duplication. We are a small country, but every State and territory seems to have ... different policies and regulations.”

“[There is an] opportunity for the Commonwealth to accelerate how we get more consistency...[This] is critical for the agri-food industry, to get the leverage they need. It’s not just domestic reputation – government to government exchanges are critical keeping markets open. Policy of regulatory space always has to underpin what strategic objectives there are for food and agribusiness sectors.”

⁵⁵ [<https://www.myriadassociates.com/news/2020/a-guide-to-the-uk-patent-box/>]

To this end, FSANZ⁵⁶ currently is reviewing chapters 3 and 4 of the Australia New Zealand Food Standards Code (the Code) to ensure a consistent and current approach to through-chain food safety management in Australia.

Interviewees similarly expressed the need for review/s of export-related regulations and bureaucracies. Comments reflected on the often-long lead times required for export certification, as well as the sometimes confusing and conflicting advice received from those charged with assisting Australian companies access export markets.

⁵⁶ <https://www.foodstandards.gov.au/foodsafety/standards/review/Pages/default.aspx>

3.4 Identifying and capturing new opportunities

The core driver for growth within the Australian food system will be development of new products and markets. Government and industry stakeholders must work together to understand and prioritise actions that will support sustainable, growth-focussed initiatives.

3.4.1 Recommendations

Recommendation 5: That the Australian Government works with industry to identify key domestic and export growth opportunities for the national food system, alongside ways that government can support the Australian food system to capitalise on these opportunities over the longer term.

Suggested initial action

- Consult with Australian food system leaders on how best to support the identification and exploitation of new product and service opportunities.

The Australian food system strategic advisory body established under Recommendation 1 would be an ideal vehicle for these consultations.

Recommendation 6: That the Australian Government works with industry to mitigate ways that existing Australian policies and regulations are inhibiting the Australian food system's potential to upcycle waste and participate more fully in circular economy projects.

Suggested initial action

- Engage with the Fight Food Waste CRC and other Australian food system leaders, to determine the preferred strategy, stakeholders, and resourcing for this work.

Recommendation 7: That the Australian Government substantially increases its prioritisation and support for food system capability and capacity building programs across schools, VET institutions and universities.

Suggested initial action

- Engage with Australian food system stakeholders to determine the near-term and likely future capability requirements and how these are to be met.

The Australian food system strategic advisory body established under Recommendation 1 would be an ideal vehicle for these consultations.

3.4.2 The literature

A first step in easing the pressure points surrounding the identification and capture of new opportunities within the Australian food system must be to boost Australia's capability and capacity to innovate.

The government's Science and Research Priorities identify areas of immediate and critical importance to the nation. Food research has been identified as one of nine priorities areas as set out in Table 11. Other food system related priorities include soil and water, advanced manufacturing, and environmental change.⁵⁷

Research will aim to optimise food and fibre production and processing, enhance food safety and minimise waste. Research will also be critical to preserve our hard-won reputation for clean, safe and sustainable production.

Departments and agencies should give priority to research that will lead to:

1. knowledge of global and domestic demand, supply chains and the identification of country specific preferences for food Australia can produce
2. knowledge of the social, economic and other barriers to achieving access to healthy Australian foods
3. enhanced food production through:
 - a. novel technologies, such as sensors, robotics, real-time data systems and traceability, all integrated into the full production chain
 - b. better management and use of waste and water; increased food quality, safety, stability and shelf life
 - c. protection of food sources through enhanced biosecurity
 - d. genetic composition of food sources appropriate for present and emerging Australian conditions.

*Table 11: Australia's research priorities – food (2015)*⁵⁸

Australian R&D is world leading in a number of pre-farm gate fields including animal production, plant biology and environmental management (see Figure 25). Furthermore, in the 2016 global innovation rankings conducted by Cornell University, INSEAD and WIPO, Australia ranked 11th for innovation input. The status of research post farm gate is not as high.

⁵⁷ https://www.industry.gov.au/sites/default/files/2018-10/science_and_research_priorities_2015.pdf?acsf_files_redirect

⁵⁸ Ibid#51

SUBJECT AREA	RANKING	PRE OR POST FARM GATE
Agriculture, land and farm management	3rd	Pre-farm gate
Environmental science and management	3rd	Pre-farm gate
Soil Sciences	4th	Pre-farm gate
Animal production	6th	Pre-farm gate
Horticultural production	6th	Pre-farm gate
Fisheries sciences	6th	Pre-farm gate
Crop and pasture production	7th	Pre-farm gate
Agriculture biotechnology	12th	Pre-farm gate
Food sciences	12th	Post-farm gate
Physical chemistry	12th	Post-farm gate
Analytical chemistry	13th	Post-farm gate
Organic chemistry	15th	Post-farm gate
Nanotechnology	19th	Post-farm gate

Figure 26: Australia's global rankings for a selection of food and agriculture research fields⁵⁹ (2016)

Agricultural research

To this end, the National Farmers Federation (2018) presented a clear summary of how they considered this could be achieved (Figure 27) in the context of their members. While this has a pre-farm gate bias, the key points remain valid for the entire food system.

INSIGHT	ASPIRATION	ACTIONS	IMPACTS	METRIC
Australia ranks 76th globally for innovation efficiency, and last in the OECD for research collaboration. <i>Global Innovation Index</i>	3.1 Public and private R&D efforts work seamlessly to translate world-class research into tools and services which give Australian agriculture a competitive edge.	3.1.1 Renew and extend existing cross-sectoral R&D strategies to grow the size and impact of both public and private R&D.	<ul style="list-style-type: none"> Frameworks for beneficial collaboration Reduced duplication and improved efficiency Increased private R&D investment Better monitoring and evaluation frameworks Greater return on public investment 	Australia becomes a Top 20 nation for innovation efficiency.
		3.1.2 Foster an R&D investment environment that quickly turns research into commercial tools and services.	<ul style="list-style-type: none"> Higher innovation efficiency Innovation export opportunities Accelerated productivity gains 	
		3.1.3 Invest in the capacity of digital and human networks to share and promote new practices and tools.	<ul style="list-style-type: none"> Strong local grower groups Easy online information access Improved access to new science 	
		3.1.4 A fit-for-purpose regulatory environment that manages risk without hindering access to safe technologies.	<ul style="list-style-type: none"> Science based regulation World class access to technology 	

Figure 27: Unlocking Innovation: an excerpt from NFF (2018)

⁵⁹ Source: Custom analysis from InCites Analytics by Thomson Reuters (2016), published in CSIRO (2017)

The Australian Academy of Science has developed the Decadal Plan for Agricultural Sciences 2017-26 (Australian Academy of Science 2017). The purpose of this plan is to identify and define actions that will position Australia's agricultural sector to take advantage of major scientific and technological advances occurring over the coming decade. It aims to:

- provide strategic direction to Australia's future investment in agricultural sciences by identifying relative strengths and shortfalls in scientific capacity that need to be developed or maintained to ensure Australia is strong, prosperous, healthy and food secure
- enhance the value of Australia's research investment to ensure future economic prosperity and wellbeing by providing a strategic framework with which researchers can align and coordinate their efforts to leverage greater impacts.

Industry sectors may experience a reduced capacity to innovate given that universities perform approximately 43% of all applied research in Australia.

A decline in innovation may limit economic growth by slowing the development of new technology, skills, and efficiency gains in service and production processes (Larkins *et al.* 2020).

Food research

In 2013 the *National food and nutrition research and development and technology transfer strategy* was published. It was noted that this strategy was possibly the first endeavour to develop a coherent national research strategy for the entire food and nutrition sector. While there were a number of organisations representing important parts of this sector, (for example the Australian Food and Grocery Council and the Australian Institute of Food Science and Technology), there was no one organisation that represents this huge portion of the economy in its entirety.

National Food and Nutrition RD&TT Strategy represented important opportunities to create a vision for the entire industry to foster growth in the food and nutrition sector through focussed collaborative research, and establish the representation needed to guide it into the future.

The National Food and Nutrition RD&TT Strategy identified six priority research areas to realise the Vision:

- Future markets and industry competitiveness
- The intersect between food, nutrition and health
- Climate change and resource efficiency - sustainability
- Food safety – integrity and traceability
- Technology translation and adoption – barriers and mechanisms
- Skills and training.

Figure 28 shows the mapping of these priorities against global food mega trends.

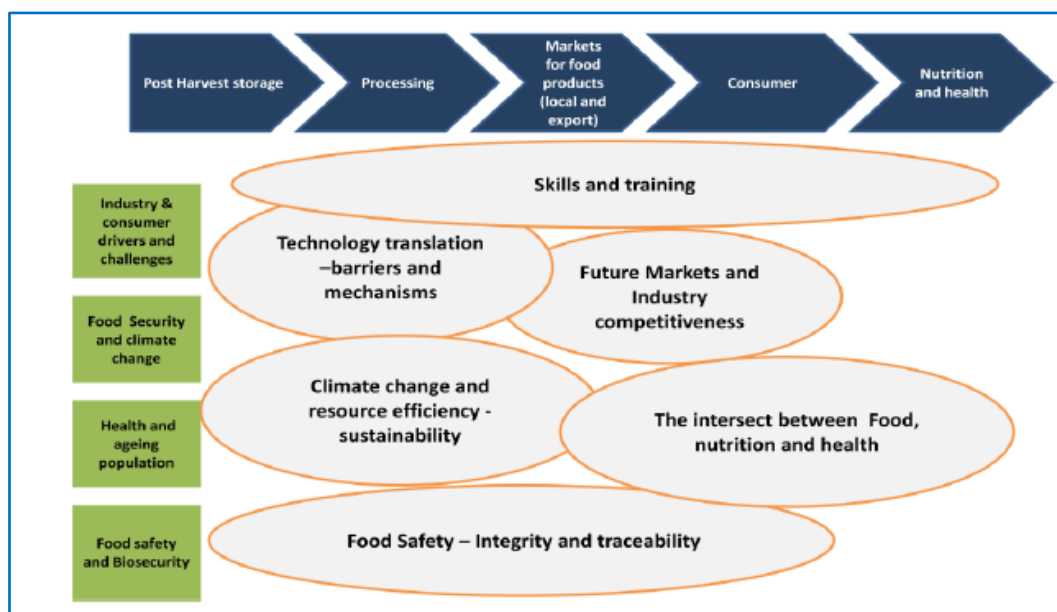


Figure 28: Mapping of the cross-cutting priorities against the global food mega trends and the food supply chain (NFNR&R and TT Strategy 2013)

This Strategy aims to promote a more coherent approach to research and innovation in Australia to support and meet the emerging needs of the region (Asia-Pacific) and the world through:

1. Increased value-added high-protein, healthier foods available for a growingly affluent Asian population (given Australia's strong comparative advantage, achieving export demand growth greater than 4% is a credible possibility)
2. A well-developed knowledge provenance, governance integrity, and regulatory framework
3. Food processing adapted to climate change – security of food supply
4. Exported R&D expertise from Australia to support capacity building in Australia and the Asia-Pacific region.

This strategy is comprehensive and covers the food system – it should be revisited and potentially updated to support industry moving forward.

FIAL (2020b) identified a disconnect between Australia's research community and industry, resulting in poorly defined business solutions and commercialisation outcomes that are inferior in number and quality when compared with other developed nations.

FIAL (2020a) have identified four research and development priorities from the Australian research sector:

- Food security and sustainability
- Enhanced production and value addition
- A global marketplace, and
- Future consumers

In order to support food system research, FIAL (2020a) notes a "triple helix approach involving government, industry and researchers is integral.

This research has identified plans/roadmaps for both pre- and post- farm gate food research – these should be reviewed as part of developing a National Food Plan (Recommendation 1).

Education

Attracting and retaining people into the fields of food and agriculture remains a challenge. Replacement and succession planning are of concern. Participation in science, technology, engineering, and mathematics (STEM) subjects in Australian schools is declining, with enrolments in these subjects at the lowest level in 20 years (Kennedy *et al.* 2014). Australia's performance in STEM subjects is also slipping.

3.4.3 The interviews – what we heard

It was widely acknowledged amongst interviewees that opportunities for developing and selling new products and new ways of operating abound. And it was clearly no secret that the path to success in this area lies in selecting which new product or service to deliver and how to deliver it.

Interviewees saw government's role in innovation as setting the scene, the strategy against which Australian food producers should be working.

"Government are market makers. They can play a terrific role in doing that – [putting in place the policy and regulations] that say [we want you] to move this way and we will make it easier for you to do that."

From our interviewees' perspective, for Australian food system companies to grow, they need to understand, and know how to meet, the key drivers behind these opportunities – namely developing consumer awareness and agency.

From the 'awareness' angle, a focus from interviewees was on the 'wellness' megatrend.

"[The] mega-trend of wellness is clear – [consumers want] clean, green healthy products. A lot of our marketing is based around clean air, proximity to the Southern Ocean, etc."

"Look at what is driving consumer growth at the moment. Internationally it's across health and wellbeing and convenience... [whether it's] a retail product for a market or a food service product."

"Plant based food is a huge global opportunity [and] Australia can play a meaningful part. Australia is one of the few countries with a large surplus in terms of exported agricultural product – we make many times more food than we consume, but in simple form, we grow it but we add little value to it exiting Australia."

"Australia has no plant protein industry, we farm soybeans but they go overseas. We have to buy in protein isolate and textured vegetable protein. How do we get involved in making our own high value ingredients?"

"Upcycled food, nutraceuticals – very much an export opportunity. [We] ... can talk about clean green environment that ingredients are being derived from – there is a huge export opportunity into Asian countries, and increasingly into Indian markets."

"... [we need to] take a commodity stream of grain, which is playing in commodity market, and segregate and differentiate that to high value traits based on health and wellness trends."

Alongside the wellness push, interviewees reported an increase in consumers connecting biodiversity in nutrition and sustainability.

“...there is a wakeup call going on with regard to nutrition and the environment.”

“We source from a narrow range of foods compared to historic cultures – Indigenous Australia sourced thousands of different foods. That biodiversity and its unique nutrients have an impact on your health and that is becoming increasingly understood ... the short story is that there are opportunities in new and emerging food ... from plants, from the biodiversity of our habitat.”

Similarly, interviewees considered that consumer awareness of product ‘life cycle’ sustainability is of increasing importance.

“Food is changing globally. Consumers are more aware, and these are the stories (‘what are you doing around sustainability or as part of a carbon neutral economy’?) that people want to buy when we export into new markets.”

“[There is increasing] consumer demand for greater traceability, provenance assurance.”

From the ‘consumer agency’ angle, interviewee focus was on the need to understand and meet consumer drivers, because consumers across the globe are becoming much more able, and therefore much more likely, to buy what they want – and increasingly from a values-based perspective.

“Consumers are sophisticated with technology, and research for themselves where products are coming from.”

With this in mind, our interviewees saw value-adding as one of ‘the’ opportunities for the Australian food system. They saw investment in value-addition as providing a better long-term return than investment in increasing (or just maintaining) primary production yield.

“[We have an enormous]...opportunity and responsibility to step change what we do in food production. We are famous for making commodities and shipping them overseas. I would like to see some big objectives for Australia to become a global powerhouse of food production, not just boutique scale, but large-scale player in food production that has been created with science (e.g. plant based meat, cellular meats, fermented ingredients, microalgae etc). It will happen somewhere, and I would like Australia to be it.”

“Our yield of wheat hasn’t changed in 25 years. Work we have done to increase yield has meant we have managed to stay on top of other issues – climate, water, etc. ... To grow yield is tough ... we need to focus on value adding.”

“When you regard your crop as a commodity, you don’t try to do things to make it more valuable. Farmers should be focusing on developing amazing products and valuable products from a quality perspective: trait, nutrition, provenance. The things that consumers value is all lost because it is commoditised.”

“[The] main opportunity, that we have a long way to go on, is value adding. Taking premium raw ingredients that we produce and producing something of higher value as a manufactured food product.”

“COVID [has been an] extraordinary time, a time of reflection. Because of vulnerability in export market, a lot of producers are looking to value add, there is a lot of new product development [happening now].”

“Here in Australia, an issue is that most money that supports R&D is funded by levy systems on producers’ side. Value is further up the chain in value adding and processing.”

Interviewees identified, in particular, opportunities in plant-based protein, insect-based protein, cellular agriculture, seaweed and data management (digital economy; informed consumers). The challenge is to scale these new products and systems in a way that adds substantial return to the economy.

“In terms of “mega trends” and specific consumers opportunities – the obvious one is alternative protein to grow. [There is a] whole range of alternative approaches to deliver that, including increases in value of nuts, pulses, grains into diets. [We should be] really looking at those industries to value add, rather than churn out their commodities.”

“There is a broader opportunity at the other end of the supply chain for plant-based ‘meat’ products – none are currently using Australian grown agricultural products. There aren’t facilities (other than a very new facility) to fractionate and isolate the product to get the plant protein isolate in Australia. There is an opportunity at the agricultural end to grow for the plant protein isolate and extraction – to feed the plant-based meat sector, both domestically and for export.”

“... at the moment we are exporting the value add.”

“[We will need to identify and grow] new products - not what we grow now”.

“New smaller emerging industries are starting to grow.”

“A specific example is world of fermentation. We struggle to make milk at the price market demands in Australia. If we make milk as well by fermentation technology, for example, using sugar cane as feedstock, we could double the milk supply out of Australia. Australia can be a mass scale producer of high value products.”

On the flip side of these opportunities, interviewees recognised the impediments to investment in technology in Australia – be this new technology for new products, or replacements for aging equipment.

“... our biggest impediment is the age of the asset base. Because of challenging geography, it is hard to consolidate assets. We are at a point where these assets need refreshing, but assets are very expensive to refresh (2 to 3 times the cost of doing it anywhere else). We are not seeing the investment going in – we have rapidly depreciating facilities, and no one is putting the money in to drive the next level of efficiency. And with retail

margins so low it is hard to see how you would get a return on asset upgrading.”

“Being a big country - we can do better with our infrastructure and supply chain to make it more efficient. Do you centralise/decentralise in your manufacturing landscape? We must have a broad open discussion and then bring it down to what will we actually execute – what products are relevant to our food supply chain, what does the production network look like, how are communities secured from supply chain perspective.”

Some interviewees considered that investment in technology itself (e.g. new ways of producing and marketing new and existing products) was of crucial importance to the scaling question: For example, protected cropping, vertical farming, intensive agriculture, offshore mariculture (amongst others), all need high-end technology to scale to significant levels

“... to be competitive with other countries in our region we need to improve equipment, modernise facilities, more robotic-type work, with skilled jobs to manage the robots.”

And they suggested that increased focus and investment was needed to scale the roll-out of this technology, to underpin the scaling of new and emerging food products and services themselves. These views echo those in (FIAL 2020b) and (CSIRO 2017) that opportunities exist not only in producing new and different food products to align with the identified mega-trends, but also in the way that food is produced, moved and sold. A valuable part of the food system is data – and the value is in how it is collected, analysed and presented to provide information to all value chain stakeholders: from growers, to manufacturers, to retailers and, critically, to consumers.

“[We need] traceability system increases ... technology to allow transparency to see through the whole value chain – [so when people] buy the product they know it is the product they want to buy.”

“... how can we connect with other organisations that are all looking at digital technology [in the same way] and really sharing that type of knowledge?”

New opportunities not only exist in the form of new food products and services. Australia also has opportunities to grow support industries such as those involved in packaging, waste minimisation, waste valorisation.

“[There is an] opportunity in waste utilisation – at the moment, there is a vast amount of fresh agricultural produce that is wasted. There is a huge potential to utilise that and turn it into some sort of value-added form. This extends into waste from animal products, parts of animals that there isn’t a market for or are low value – there’s potential to value add those.”

“[There is an] opportunity to take food waste, upcycle, and turn it into something of value – this is a massive growing area around the world that Australia is doing very little about.”

“[There is a] huge opportunity for export of upcycled food [that aligns with] our clean production systems.”

Innovation – truly competitive product development – can only happen in Australia if we have appropriately trained and skilled people. Interviewees considered that Australia has under-resourced its investment in this regard, and that Australia needs to work hard to reverse this trend.

“[because we are reducing our R&D spend] we’ve become a destination market for products developed and made elsewhere. [We’re losing the] ability to generate our own innovation and products – this is a death spiral – you can’t get this back. We are already in the death spiral - you see rows and rows of empty labs in Australia where there should be R&D scientists.”

“Competition is getting harder and we have got to think smarter. Just thinking and doing the same things and thinking we will be successful because we’ve always been successful won’t do it.”

“To boost manufacturing in Australia, you’ve got to have the right talent program in [the right] place – [including] local education to address skill shortages in the short term.”

“There is a need for further investment in food technology education in this country – many courses no longer exist.”

“Education of manufacturing personnel is important to back up claims of quality. In Germany, for example, there is a prerequisite for education and training where people would not be allowed to operate in a particular role without that qualification.”

“There is a huge disconnect as to what motivates Universities ...[there are not sufficient] links with industry and real manufacturing outcomes.”

In terms of growing Australia’s food system talent pool, interviewees saw potential in providing targeted support for large national and multinational food system companies. Suggestions were focussed on attracting multinationals to bring their R&D and innovation centres to Australia. In this way more, and increasingly diverse, career paths would become available to build the domestic talent within Australia’s food system.

“... large multinationals have their R&D on other countries. We’ve not incentivised our R&D tax to get them to stay here. Multinationals are playing here - but not their major innovation and R&D centres.”

“We see a reduction in food manufacturing R&D in last 10 years. [There is] only 1 multi-national with R&D in Australia, they have all fled back to the EU or Asia. This has seen a major reduction in innovation capacity – and this is saddening to observe.”

An example of a specific area seen as critical for growth within Australia’s food system was the need to build capability to capitalise on the booming digital economy and its influence on data acquisition and management, production, logistics, marketing and sales.

“It’s a very different way to how Australian’s shop – we’ve seen it this year with the boom in online shopping (it was already there last year in 2019). For supermarkets, all growth coming through their digital platforms.”

Those interviewees with experience in the digital economy and the looming consequences for the Australian food system expressed some concern.

“[The] expectation ... is that a true digital supply chain will be here in the next 5-10 years, and if you can’t play digitally, then basically you can’t play. ... and SMEs ... don’t have the capacity to absorb a digital future or capacity to afford a digital future.”

“[We need] SMEs to go digital: going digital in manufacturing and support; going digital for traceability – for public health and allow for recall capability, to keep food and the public safe.”

“Digital technologies are rapidly transforming all stages of the value chain from the farm to the table. Their adoption is improving efficiency, creating new jobs, generating new income streams and saving resources. However, digital technologies can be disruptive – modifying or displacing value chain activities and products.”

Interviewees clearly were calling for increased support for skills development within Australia’s food system. If Australia’s food system is to grow, increased sovereign capability and capacity is needed. A clear Government policy addressing the need for human resource capability and capacity building across all facets of the food system – including production, manufacturing, R&D and support sectors – was seen to be an imperative.

3.5 Harnessing the power of collaboration

There is strong and clear evidence that investment of time and money into collaboration, framed carefully and allowing room for some competitive tension, provides worthwhile returns. For the Australian food system to grow, focussed governmental support for collaboration along the value chain and with peripheral sectors is needed. And in saying this, our understanding of successful collaborative ventures from overseas shows that the way in which specific collaborations are formed and delivered must be industry-led.

3.5.1 Recommendations

Recommendation 8: That the Australian Government recognises formal industry clusters as best practice in fostering collaboration and growth and works with food system stakeholders to identify and support meaningful food system clusters.

Suggested initial action

- Engage with FIAL and, through them, other Australian food system stakeholders to review current cluster support activities with a view to enhancing and expanding this initiative across the Australian food system.

Recommendation 9: That the Australian Government works with food system stakeholders to design and deliver flexible support mechanisms and packages for small, medium, and large food system companies and collaborations.

Suggested initial action

- Engage with Australian food system stakeholders to review current grant program structures with a view to increasing their effectiveness in supporting collaboration and growth, especially targeting food system SMEs.

The Australian food system strategic advisory body established under Recommendation 1 would be an ideal vehicle for these consultations.

3.5.2 The literature

With specific reference to Australia's food system, Deloitte (2019) stated: *"It is difficult to predict exactly how future trends will impact this ecosystem, and the food industry ... Ultimately, innovative businesses that are supported by partnerships in the ecosystem will flourish."*

There are myriad papers and reports regarding the benefits of collaboration and ways in which this can be supported. The Australian food industry growth centre, FIAL, has spent considerable effort in researching how the food system can garner the best return on investments to support true and worthwhile collaboration. In its review of best practice methodology for supporting food industry innovation and growth, FIAL (2020a) concluded that the formal industry cluster⁶⁰ model offered an ideal mechanism for supporting the partnerships that Australian food system will need to develop to thrive: *"An approach accelerating innovation and growth across regions in Australia is 'clustering'*

⁶⁰ <https://www.tci-network.org/>

[which] is also providing the platforms and economies of scale for industry, researchers and government to work on common challenges and opportunities.”

One of the key attributes of the cluster collaboration model is that it is designed to bring together the vital ‘triple helix’⁶¹ of industry, academia and government, under the auspices of an industry-led advisory group. In this way, all necessary components of true innovation are brought together under a structured framework.

According to Dr Ifor Ffowkes-Williams, a world-leading cluster development practitioner, *“The focus for economic development is moving from the national level, from support to industries to individual firms. Today the emphasis is on the development of cities, regions and their eco-systems. This bottom-up approach reflects that while companies may come and go, strong and evolving clusters provide economic stability to a region.”*

*“Though clusters are a natural occurrence, the development of clusters does not need to be left to chance. Over the last decade cluster development has become a mainstream framework for innovation and regional development, especially in Europe. The animation of clusters provides a centre stage strategy that addresses innovation, productivity and competitiveness. The European Commission is now actively encouraging the development of world-class clusters. The logic is to support the internationalisation of small firms, industrial transformation and the development of regional specialisations.”*⁶²

FIAL’s advocacy of the cluster model provides strong evidence that this approach should be adopted within the Australian food system.

Another model which has been developed with recent success in Australia is a new venture science model, as described in Augustin *et al.* (2021). This model brings together a research organisation, industry, and venture capital, to facilitate rapid innovation. This model replaces pitches to investors and narrowly focussed industry relationships, with a collaborative opportunity-directed construction process. The model calls for innovation to be driven through a new, purpose-driven company, facilitating innovation built on market insights, deep science, product technology depth, venture capital and the understanding of complex value chains, as shown in Figure 29. The authors conclude that *“Change in the innovation system needs to be driven by public and private investment, quality science and society. ... The venture science model provides a framework for rapid innovation. There are organisational challenges and partners need to adapt and be agile and willing to push traditional boundaries, accepting there could be risks which need to be taken for a new company to capture market-led opportunities at speed.”*

⁶¹ <https://www.tci-network.org/on-cluster/>

⁶² <https://www.clusternavigators.com/>

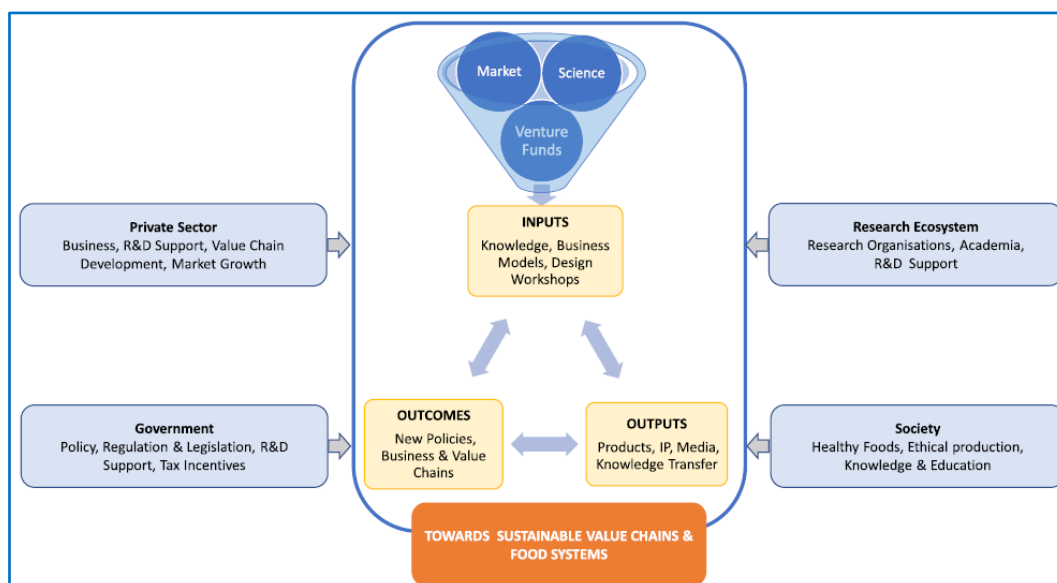


Figure 29: Integrated approach for transitioning towards sustainable food systems (Augustin et al. 2021)

These examples illustrate two new and proven ways of collaborating and innovating, and that these new ways can work well if there is appetite for moving away from old, and possibly outdated, collaboration models.

3.5.3 The interviews – what we heard

*“Collaboration provides tangible returns.
Collaboration is hard.
More collaboration is needed.”*

These were clear messages from interviewees. They saw that while there is strong evidence for the power of focussed collaborative projects, Australia was lagging behind other countries in this regard.

“In Australia we have no-one pulling that together. If you were going to have a compelling ‘Australian’ proposition across the whole food industry, it needs to be organised by somebody.”

“NZ does it really well. [I] wouldn’t take the New Zealand food industry on head on.”

“[The] Australian agri-food industry is not as cohesive as New Zealand. New Zealand has the benefit of small scale.”

“[We need a process for] connecting the whole of the supply chain to build opportunity for “Australia Inc” to enhance its capability, its intelligence and knowledge capability.”

“[We need to be] looking at more of a market-based plan, promote collaboration and policies that support whole of value chain partnering for value adding.”

“Competition is getting harder and we have got to think smarter. Just thinking and doing the same and thinking we will be successful because we’ve always been successful won’t do it.”

And while arguing for a national coordination of the myriad government-run support programs, interviewees said that ...

"[We] need to make sure that we continue to consolidate, rather than create another layer of organisations over an already complex infrastructure."

One way of providing this consolidation, researched and championed by FIAL, is the use of 'industry clusters'⁶³ to advance innovation and competitiveness amongst groups of 'like' businesses. The evidence for the return generated by properly initiated and run industry clusters is strong, noting that proponents advocate that clusters must be industry lead and that clusters appear to work best when their processes and commercial activities are backed by government policy. There are several formal and informal industry clusters in Australia, and these were generally viewed favourably by interviewees:

"... clusters of companies that share employees, share R&D, attract R&D dollars. We need to be working with groups of 100 companies, not 1 - sharing equipment and product ideas. That is the way to grow our industry."

While the advent of government-supported, industry-lead clusters was seen in a positive light, several interviewees expressed concern regarding the apparent duplication of focus, and therefore less-than-optimal use of resources.

"How do we get even more opportunities for true cooperation in CRCs and start reducing duplication in the CRC programs?"

And while acknowledging the current stress on Australia's food system as we negotiate the impact of COVID-19 and ongoing trade tensions, some interviewees considered that now would be an ideal time to break current moulds and look to...

"... the next normal".

"COVID may have given us the impetus to change how we do things".

"[We need to be] ... incentivising and encouraging collaboration – [helping people who work] ... in the same space to justify the investment to collaborate. [Australia] is a small manufacturing country, spread across a large space. Industry groups could do this (manufacturers wouldn't do it themselves) and [to be] supported by government would be a strong signal. We need to have ... the government supporting and incentivising collaboration."

There was a strong call for targeted and effective support to increase domestic manufacturing capability and capacity – and subsequent value-addition – within Australia's agricultural and food production system.

"... Federal and State governments are realising [with COVID] ... the need to do something to develop capability, to fund innovation."

⁶³ <https://www.fial.com.au/blogs/post/Strategic-Clusters-for-Sustainable-Growth>

The governments are really starting to understand that we need to value add to be more self-sufficient."

A key plank in this support was considered by interviewees to include new ways of fostering public-private partnerships.

"I regret the lack of co-ordinated R&D. Other countries have government-industry partnerships to create clusters and hubs to turn research into product. There are some State-led initiatives – but they tend to be piecemeal. Let's get clusters and partnerships together to get a co-ordinated effort in the key areas which have already been quite well defined."

While this call was being made, there was also commentary around the need to re-examine how government programs inadvertently shape the structures of such partnerships.

"This is a problem for your innovation ecosystems – when you try to mandate large corporations working with SMEs or start-ups or Unis you can lose the momentum in your innovation."

While ABARES, (2020) reported that Australia is one of the most food secure countries in the world, and that disruptions to international supply chains by COVID-19 (or other causes) are unlikely, interviewees reported that they felt that the COVID pandemic has highlighted the Australian food system's vulnerability to external shocks, including access to imported goods and services.

Interviewees expressed the view that innovative practices were more common within the SME sector and that, with such a large proportion of Australia's agri-food system comprising SMEs, there would be attractive returns from well designed and targeted support of this sector.

It was felt that while food system growth, especially export growth, will come largely from the SME sector, smaller companies – including start-ups and scale-ups – generally are too small and capital-constrained to do this on their own.

Some interviewees were keen to see more support for SMEs accessing export markets.

"Historically, Australian companies have looked to export when they were stagnant, rather than it being their prime strategy. There are companies starting now with a focus on export, not domestic markets."

This opinion is supported by FIAL (2020b), which estimated that only about 5% of the ca 57,000 employing food system businesses in Australia could be classified as "'businesses of tomorrow': i.e. ones that are actively pursuing new markets, are more inclined to take risks, are more connected to their end markets and continually invest in building both their capability and knowledge of these markets."

Interviewees pointed to the need to build capability and capacity within Australia's food system and noted that the best potential return on investment in this regard would be in the SME sector. While the SME sector employs the majority of the food system workforce, individual SMEs were considered less able to find the time or money required to build their skill base.

"... 90% of the food industry is [companies of] 1 to 19 people."

On the point of fostering greater collaboration food sector, interviewees considered that current industry-based programs were worthy of analysis and support.

“[We should] work with retailers who have money put aside to help SMEs, we want to tap into that. e.g. Coles ‘Nurture Fund’ ... [We need policies to] help access that money and help SMEs scale up”

“[I] would like to see federally funded innovation projects that support small start-ups ... [Governments] have had a go at it a couple of times, but it’s never really got legs. There is good innovation coming out of food and beverage but there is no money to scale it up – this is an opportunity. The SME sector is where the greatest innovation occurs.”

“[Current] policies are causing challenges in that there is no support for SMEs to gain grants to scale up. The current approach is limited for small companies that are outside of the guidelines – current grant requirements are typically for 20-100 people or \$1.5m and \$100m: small organisations fall outside these requirements. The policy doesn’t help them scale up – they have no capacity or capital and very little support. That doesn’t help to build businesses easily.”

“[We need ways to] encourage SMEs to invest in skills, innovation and R&D”

3.6 Brand Australia

Australia has a well-deserved and hard-won reputation as a producer and manufacturer of safe, high quality food. We need to maintain that focus to maximise our position within both domestic and export markets.

3.6.1 Recommendation

Recommendation 10: That the Australian Government works with Australia's food system stakeholders to promote to domestic and international consumers the 'Australian-ness', the safety, quality and provenance attributes of Australian food products (in whatever way is best for specific products) – to boost domestic sales, exports, onshoring and import replacement.

Suggested initial action

- Engage with Australian food system stakeholders to review current promotional strategies and activities with a view to increasing domestic and export market share for Australian food products.

The Australian food system strategic advisory body recommended elsewhere in this paper would be an ideal vehicle for these consultations.

3.6.2 The literature

Australia's reputation as a provider of clean, green, safe, and high-quality produce stands our agricultural exporters in good stead. Around two-thirds of Australia's agricultural products are exported, contributing to food security in Australia and many other nations (DFAT 2020).

Competitive advantages over the long term will depend on how Australian producers deliver better food safety and quality, nutrition and functional benefits, superior taste and freshness, and convenience relative to international competitors (CSIRO 2017).

3.6.3 The interviews – what we heard

Australian food system stakeholders are justifiably both proud and protective of the safety and quality reputation of our products.

"[The] purity of [our] produce is a compelling case for the huge population on our doorstep."

"Australian produce is well respected, and we [produce] high-quality foods."

"In Australia, we have local pride in what we manufacture (not just food) and our willingness to support local businesses – we need to export that pride. We need to promote the quality of our manufacturing."

"[We have an] enormous opportunity especially with how we present our reputation for producing safe food."

"[Our markets] expect high quality and a consistent supply chain."

However, the increasing globalisation of value chains (e.g. Greenville *et al.* 2020), while acknowledged as providing efficient and cost effective value-addition, was of concern to some interviewees.

“[We] don’t want to have adulteration issues [with imported product and ingredients] and want to see right through the value chain to the grower, producer and manufacturers and [many consumers want to] know that they are Australian – [and that they are] supporting regional communities and the other elements.”

“Consumers are sophisticated with technology, and research themselves where product is coming from – from paddock to plate.”

“[There is some] doubt about imported food into Australia. [Some people have] concerns about fake foods.”

The positioning of Australian agri-food product as a whole was of interest to interviewees. Some were of the opinion that Australian product needs to be positioned to align with the mega-trends as discussed by (CSIRO 2017) and others. Others went further, pushing for a more nationally coordinated approach to market intelligence gathering to allow for matched development and marketing of products specifically produced for new export markets.

“How do we know what to have as a value proposition? We need to know what the key global drivers are – the marketers will tell us this. Then we need to make a decision of where we want to be and then make a move to be first. And have plan to continue to be ahead of the wave – as others will follow [where-ever] we are successful.”

“How do we position Australia? New Zealand marketing has positioned NZ as ‘100% Pure.’”

“[We are] not looking at what markets to develop, not looking at what products to develop, and therefore we are not looking at what foods we are growing.”

“Some commodities are doing this with tiered branding and tiered positioning, but it needs to accelerate as competition is coming fast.”

“[We need] ... to produce more with less – to reduce chemical input, to enhance our reputation as a producer of safe food product.”

An interesting point was raised by one interviewee, who suggested that products with a domestic profile can do well in specific international markets:

“[The] first question international buyers will ask is ‘Where can I buy your product locally?’ They want to find a product that has a presence here in Australia.”

Interviewees were of the view that the principal path to growth within Australia’s food system is through increased exports and/or import replacement.

“Historically, Australian companies have looked to export when they are stagnant, rather than being the prime strategy of the business – which is what companies should be doing. That is the distinction I would make.”

“Companies need to think about global markets rather than Australia ... to grow I need to export. There are companies starting now with a focus on export, not domestic markets.”

Promoting Australian products can also be effective on the domestic front. Some interviewees considered that now is perhaps a good opportunity for an import-replacement drive, with the current COVID situation amplifying an already growing consumer trend to buy more Australian-made product.

“[The] opportunity is that Australian’s are increasingly seeking local produce from local ingredients. [The] time is right to start pushing Australian food [to domestic consumers].”

“[There has been a] COVID-epiphany... people are really anchored in local Australian product.”

“[Now is a perfect] ...opportunity for consumers to be made more aware of the range and availability of product across Australia in supermarkets – pushing the Australian made...[to the Australian consumer].”

While estimates of food imports vary depending on data granularity and selection, ABS data shows that Australia imported around AUD\$18 billion worth of food products in 2019 (Figure 18). These data suggest there are substantial opportunities for some parts of the Australian food system through import replacement.

Interviewees saw import replacement as a real opportunity to build on the COVID-driven move of Australian consumers to seek high quality Australian products.

“Look at the Australian industry as a whole – what base agricultural products that have gone offshore can we bring back to Australia (e.g. tomatoes, citrus, tropical fruits, etc.)?”

“The last 12 months have taught us a lot regarding the value of ‘Australian grown’, and the value that consumers are putting on quality and ‘Australianness’. A whole raft of ingredients have [become] imports over the last 20 years where we could be more competitive with a regenerated Australian industry. What imports can we offset with local grown produce?”

“...post -COVID, small and large businesses and producers are reporting that Australian consumers are seeking out domestic product. This is affecting business decision making and businesses are looking at pivoting their business models to address local consumers – whereas previously [they were] looking at export markets.”

“You see an increase of international products coming in because we are not innovating [and providing] what local customers want or what local retailers want– [we] are not looking after customers that are really looking for Australian made and Australian grown.”

“A policy should be to raise greater understanding by consumers of the impact of imports and imported ingredients on our use of local ingredients – even if it is Australian-made, how does [using imported ingredients] impact the [local economy]?”

And alongside import replacement, came a renewed interest in reshoring:

“[We need to] ... look hard at opportunities to reshore food manufacturing capability.”

“Unless we make significant changes there will be [ever decreasing] incentive for food manufacturing in Australia – it is really quite challenging to food manufacturers here. We need to do a lot to help Australian manufacturing – I’m passionate about this!”

3.7 Infrastructure Investment

Australia is a big country; its export markets are a long way away and its transport and manufacturing infrastructure is aging. Care needs to be taken to ensure Australia can maintain its food system competitiveness.

3.7.1 Recommendation

Recommendation 11: That the Australian Government works with Australia's food system stakeholders to identify and mitigate key logistic infrastructure bottlenecks.

Suggested initial action

- Engage with Australian food system stakeholders to prioritise infrastructure investment strategies aimed at supporting the Australian food system.

The Australian food system strategic advisory body established under Recommendation 1 would be an ideal vehicle for these consultations.

3.7.2 The literature

Australia's national productivity and global competitiveness rely on efficient infrastructure networks; however, we are falling behind international competitors. Australia currently ranks 18th in the world for ease of doing business, having dropped over the past decade from 9th in 2008 (Infrastructure Australia 2019). The audit report is very detailed (over 600 pages) and identifies issues, gaps and untapped potential as challenges and opportunities.

Freight transport

Australia's freight task is growing rapidly. In the ten years to 2016, the domestic freight task grew by 50%. This task is expected to continue to grow, by another 26% between 2016 and 2026.

Agricultural supply chains also suffer from constraints. Local infrastructure is often poorly maintained and lacks capacity. Infrastructure constraints are coupled with inefficient regulation in our regions, where freight operators often cross-jurisdictional boundaries and have to deal with a myriad of access permits.

3.7.3 The interviews – what we heard

A core message from our interviewees was that the quality of national infrastructure was limiting the growth potential of the Australian food system and that upgrades would help remove this bottleneck.

“... such as having our ports upgraded, transport system and logistics better interlinked and coordinated.”

“We are always going to be a trading country ... we need to make sure infrastructure around ports, clusters, is done in the right way – make sure we can compete with [the likes of] Singapore, Holland, Canada, etc.”

“We have a food manufacturing sector that is underinvested. There is an opportunity to bring up to global standard, in capacity, food safety, automation, and efficiency. This is a first step – but we need to get ‘fit to play’, we need to get up to standard. We can then take advantage of some of the great food entrepreneurs that Australia has produced”.

The need for strong and coordinated freight logistic chains (frozen, chilled, ambient) was highlighted by interviewees as an area needing strong government investment. Australia's size, and relatively sparse population, make it expensive to move (primary, ingredient and finished) products to where they are needed. Without efficient logistics, product cost and quality suffer.

"Cost of production is high because logistically it's a big space with not many people here."

Logistic matters were seen throughout the food system, from the big picture of adequate uplift facilities...

"One of our biggest threats is the time takes to get to markets, a lot of that is due to our lack of development in logistics enablement – ports, airports."

"[We need] ... the infrastructure to properly support agribusiness and food manufacturing - such as having our ports upgraded, [and our] transport systems and logistics better interlinked and coordinated."

"[Product] ... can sit on the tarmac for hours."

... to issues regarding moving product around the country.

"Domestically there is a truck driver crisis – my latest figure is that 320 trucks normally in operation are parked up."

"[Australia has a] massive shortage of refrigerated transport ... there are not enough refrigerated trucks in Australia."

"Rail presents a good opportunity. Roads aren't designed for what we do with them with heavy transport."

"... enabling export is a government responsibility – though improved logistic networks."

These issues are not new. But they continue to be identified as a major burden on the sustainability and growth of Australia's food system.

"Security and resilience of the supply chain is a threat ... logistics goes with that ... for both import and export. We could not get product in and out with COVID disruption. ... We all need to be agile in what we do, need to ensure our supply chains have availability and resilience to allow us to continue to produce."

"[Australia's] ... export potential is good if you can manage supply chain to keep product quality. Our current product is a premium and priced accordingly. But there is not a not a lot of difference between the top and middle of the market in quality – it would not take much [of a quality decrease] to drop down a few [price] rungs. Constant attention to quality is crucial – we need to be getting it there quicker than our competitors."

"[Our] ASEAN [neighbours] – Viet Nam, Malaysia, Philippines, Indonesia, Korea, Japan - are the real opportunities and threats – they all have good airports, wharfs, and logistics arrangements."

One final issue in this section, which could equally be placed under market access, was that of a call to upgrade Customs infrastructure and systems. Interviewees mentioned a number of times that

more streamlined Customs clearances, including product-specific pre-approval within Australia for importing countries, could save hours in transit time.

“Customs procedures ... can we approve products here? There should be an office here to approve products before they [leave for] the [importing] country. Prior approval has occurred in other countries ... not with every product but based on the type of product.”

4. Conclusion

This paper provides a synthesis of much that has come before, leavened and enriched by contemporary opinion provided during our one-on-one interviews with 26 industry leaders.

While the project’s scope and budget did not permit an exhaustive analysis of all information pertaining to the topic, the authors saw a strong degree of alignment – data saturation (Saunders *et al.* 2018) – among the literature reviewed and what we heard from our interviewees.

As such, this paper provides a snapshot (January 2021) of current thinking regarding the growth opportunities for Australia’s food system, be they from product innovation, new domestic markets, increased exports, import replacement or reshoring⁶⁴ of manufacturing capability.

Perhaps the most important message arising from this study was the call to action for a new narrative for how Australia’s food system is understood and managed.

To this end, we have crafted a series of recommendations pointing to key activities that – with appropriate adaptive input as the operating environment inevitably changes over time – we trust will help governments develop a clearer picture about what their food policy is and how they are going to enable and support Australia’s food system to realise its potential for the future.

Of our 11 key recommendations, the first and main one is:

Recommendation 1: That the Australian Government works with food system stakeholders to establish an industry-led, food system strategic advisory body, chaired at the Ministerial level, to develop a National Food Plan that:

- i) prioritises and guides activities supporting Australia’s food system*
- ii) identifies and drive programs so that Australia’s food system is supported as a cohesive, nationally important whole, and*
- iii) guides government on all aspects of policy that impacts Australia’s **food system**.*

⁶⁴ <https://www.investopedia.com/terms/r/reshoring.asp>

References

- AAS (2017). *Decadal plan for Australian agricultural sciences (2017–2026)*. Australian Academy of Science, Canberra.
<https://www.science.org.au/support/analysis/decadal-plans-science/decadal-plan-agricultural-sciences-2017-2026>
- ABARES (2020). *Australian food security and the Covid-19 pandemic*. Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
<https://doi.org/10.25814/5e953830cb003>.
- AFGC (2012). *Submission to the Federal coalition deregulation taskforce in response to reducing red tape and unnecessary regulation*. Australian Food and Grocery Council, Canberra.
- AFGC (2014). *Competitiveness & sustainable growth*. Australian Food and Grocery Council, Canberra.
<https://www.afgc.org.au/download/afgc-competitiveness-sustainable-growth-2014-final-pdf>
- AFGC (2019). *State of the industry*. Australian Food and Grocery Council. Canberra.
<https://www.afgc.org.au/download/afgc-2019-state-of-the-industry>
- AFGC (2020). *2020-2021 pre-budget submission*. Australian Food and Grocery Council. Canberra.
<https://treasury.gov.au/sites/default/files/2019-03/360985-Australian-Food-and-Grocery-Council.pdf>
- Agribusiness Australia (2020). *State of the industry*. Agribusiness Australia, Adelaide.
<https://www.agribusiness.asn.au/agri-information/2020-state-of-the-industry>
- Annisson, G. (2021). *Bushfires to pandemics -how the industry responded*. food australia. Volume 73, Issue 1. January – March 2021.
- Augustin, M.A., Cole, M.B., Ferguson, D., Hazell, N.J.G. and Morle, P. (2021). *Perspective article: Towards a new venture science model for transforming food systems*. Global Food Security, (28), 1-6.
<https://doi.org/10.1016/j.gfs.2020.100481>
- Australian Beverages Council (2020). *A Refreshing Recovery: A Post-Coronavirus Recovery Blueprint for the Australian Drinks Industry*. Australian Beverages Council, Waterloo.
<https://www.australianbeverages.org/a-refreshing-recovery-a-post-coronavirus-recovery-blueprint-for-the-australian-drinks-industry/>
- Bardsley, A., Coates, B., Goldson, S., Gluckman, P and Kaiser, M. (2020). *The future of food & the primary sector: the journey to sustainability*. University of Auckland, New Zealand.
<https://informedfutures.org/wp-content/uploads/The-Future-of-Food-The-Primary-Sector.pdf>
- BCA (2010). 2010 scorecard of red tape reform. Business Council of Australia.
https://d3n8a8pro7vnm.cloudfront.net/bca/pages/3122/attachments/original/1531358095/2010_scorecard_of_red_tape_reform_final_18-11-2010_%281%29.pdf?1531358095
- Carey, R., Caraher, M., Lawrence, M. and Friel, S. (2015). *Opportunities and challenges in developing a whole-of-government national food and nutrition policy: lessons from Australia's National Food Plan*. Public Health Nutrition, 19(1), 3-14.
<https://www.cambridge.org/core/journals/public-health-nutrition/article/opportunities-and-challenges-in-developing-a-wholeofgovernment-national-food-and-nutrition-policy-lessons-from-australias-national-food-plan/79B8BAB741E18B71F1097B18A30FC874>

Champions 12.3 (2017). *SDG target 12.3 on food loss and waste: 2017 progress report*.
<http://www.champions123.org>

Commission for the Human Future. (2020). *Round Table on Global Food Security June 2020*.
<https://humanfuture.net/sites/default/files/Final%20Report%20on%20Food%20Security.pdf>

CSIRO (2016). *Australia 2030. Navigating our uncertain future*. Commonwealth Scientific and Industrial Research Organisation, Sydney
https://www.csiro.au/~media/Do-Business/Files/Futures/FUTURES_Australia2030_Report_web.pdf?la=en&hash=9612D5EC9C7998DC660269E1BDCE4F52B512C9E7

CSIRO (2017). *Food and Agribusiness: A Roadmap for unlocking value-added growth opportunities for Australia*. Commonwealth Scientific and Industrial Research Organisation, Sydney.
<https://www.csiro.au/en/Do-business/Futures/Reports/Ag-and-Food/Food-and-Agribusiness-Roadmap>

DAFF (2013). *National Food Plan: Our food future*. Department of Agriculture, Fisheries and Forestry, Canberra.
<http://www.ftaau.com.au/wp-content/uploads/2013/06/JUNE-national-food-plan-white-paper1.pdf>

DAWE (2017). *National Food Waste Strategy: Halving Australia's food waste by 2030*. Department of Agriculture Water and the Environment, Canberra.
<https://www.environment.gov.au/protection/waste/publications/national-food-waste-strategy>

Deloitte (2019). *Future of food: how technology and global trends are transforming the food industry*. Deloitte Touche Tomatsu, Asia Pacific.
<https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-future-food-uber-eats-100719.pdf>

DFAT (2020). *Trade and investment at a glance 2020*. Department of Foreign Affairs and Trade, Canberra.
<https://www.dfat.gov.au/about-us/publications/trade-investment/trade-at-a-glance/Pages/trade-at-a-glance>

DISER (2020). *Make It Happen, The Australian Government's Modern Manufacturing Strategy*. Department of Industry, Science, Energy and Resources, Canberra.
<https://www.industry.gov.au/data-and-publications/make-it-happen-the-australian-governments-modern-manufacturing-strategy>

DJSB (2019). *Australian jobs 2019*. Department of Jobs and Small Business. Canberra.
<https://docs.employment.gov.au/system/files/doc/other/australianjobs2019.pdf>

FAO (2006). *Food security policy brief*. Food and Agriculture Organization of the United Nations. Rome.
http://www.fao.org/fileadmin/templates/faoitaly/documents/pdf/pdf_Food_Security_Coept_Note.pdf

FAO (2020a). *Food Outlook - Biannual Report on Global Food Markets*. Food and Agriculture Organization of the United Nations. Rome.
<https://doi.org/10.4060/ca9509en>

- FAO (2020b). *The State of Agricultural Commodity Markets 2020*. Food and Agriculture Organization of the United Nations. Rome.
<https://doi.org/10.4060/cb0665en>
- FIAL (2020a). *Sector Competitiveness Plan*. Food Innovation Australia Ltd.
<https://www.fial.com.au/about/Sector-Competitiveness-Plan-2020>
- FIAL (2020b). *Capturing the prize: The A\$200 billion opportunity in 2030 for the Australian food and agribusiness sector*. Food Innovation Australia Ltd.
<https://www.fial.com.au/sharing-knowledge/capturing-the-prize>
- FIAL (2020c). *Changing job and skill implications in Australia's food & agribusiness sector*. Food Innovation Australia Ltd.
<https://www.fial.com.au/blogs/post/changing-job-and-skill-implications-in-australia-s-food-agribusiness-sector>
- Foodbank Australia (2019). *Hunger Report 2019*. Foodbank Australia, North Ryde.
<https://www.foodbank.org.au/wp-content/uploads/2019/10/Foodbank-Hunger-Report-2019.pdf?state=vic>
- Frost and Sullivan (2020). *Consumer shifts post COVID-19: implications for the F&B industry*.
<https://workdrive.zohopublic.com.au/external/4xHhCwS7Sj-7DLi0N>
- Greenville, J. (2019). *Australia's place in global agriculture and food value chains*. Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
<https://doi.org/10.25814/5d799a58db665>
- Greenville, J., Duver, A. and Bruce, M. (2020). *Analysis of value creation in Australia through agricultural exports: Playing to advantages*. Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1031181/0
- Horne, M. and Reynolds, C. (2016). *Energy costs and export competitiveness: evidence from Australian industries*. Department of Industry, Innovation and Science, Canberra.
<https://www.industry.gov.au/data-and-publications/staff-research-papers/energy-costs-and-export-competitiveness-evidence-from-australian-industries>
- Hull, G. (2020). *Too many eggs in the dragon's basket? Part one: Australia's reliance on Exports to China*. Future Directions International.
<https://www.futuredirections.org.au/publication/too-many-eggs-in-the-dragons-basket-part-one-australias-reliance-on-exports-to-china/>
- Infrastructure Australia (2019). *An Assessment of Australia's Future Infrastructure Needs. The Australian Infrastructure Audit 2019*. Infrastructure Australia, Canberra.
<https://www.infrastructureaustralia.gov.au/publications/australian-infrastructure-audit-2019>
- JSCTIG (2020). *Trade transformation: supporting Australia's export and investment opportunities*. Joint Standing Committee on Trade and Investment Growth, Canberra.
<https://apo.org.au/node/306467>
- Kelton, N. (2019). *National food waste strategy: halve food waste in Australia by 2030*. Food Australia, Jan-Mar 2019, 30-31.
<https://search.informit.org/doi/10.3316/IELAPA.215440118503895>

Kharas, H. (2010). *The emerging middle class in developing countries*. OECD Development Centre.
https://www.oecd-ilibrary.org/development/the-emerging-middle-class-in-developing-countries_5kmmp8lncrns-en

KPMG (2016). *Competitive alternatives: guide to international business locations costs*.
<https://assets.kpmg/content/dam/kpmg/pdf/2016/04/competitive-alternatives-2016-summary-report.pdf>.

Larkins, F. et al. (2020). *Rapid Research Information Forum: Impact of the pandemic on Australia's research workforce*. Office of the Chief Scientist, Canberra.
<https://www.science.org.au/sites/default/files/rrif-covid19-research-workforce.pdf>

Leigh, K. et al. (2020). *Australia's STEM workforce*. Office of the Chief Scientist, Canberra.
https://www.chiefscientist.gov.au/sites/default/files/2020-07/australias_stem_workforce_-_final.pdf

Levantis, G. and Fell, J. (2019). *Non-tariff measures affecting Australian agriculture*. Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
<https://www.agriculture.gov.au/abares/research-topics/trade/non-tariff-measures>

NAB (2019). *Australian agricultural exports 2019: State of play*. National Australia Bank, Sydney.
<https://business.nab.com.au/australian-agricultural-exports-2019-state-of-play-34607/>

NFF (2018). *2030 Roadmap – Australian Agriculture's Plan for a \$100 billion industry*. National Farmers Federation, Canberra.
<https://nff.org.au/policies/roadmap/>

OECD (2015). *Australian manufacturing in the global economy*. Organisation for Economic Co-operation and Development, Paris.
[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/IND\(2012\)20/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/IND(2012)20/FINAL&docLanguage=En)

Minister of Agriculture and Agri-Food (2019). *Food Policy for Canada*. Government of Canada, Ottawa
<https://www.agr.gc.ca/eng/about-our-department/key-departmental-initiatives/food-policy/the-food-policy-for-canada/?id=1597863791042>

Pickin, J. and Randall, P. (2016). *Australian National Waste Report 2016*. Australian Government Department of the Environment and Energy, Canberra.
<http://www.environment.gov.au/system/files/resources/d075c9bc-45b3-4ac0-a8f2-6494c7d1fa0d/files/national-waste-report-2016.pdf>

Piesse, M. (2020). *Global Food and Water Security in 2050: Demographic Change and Increased Demand*. Strategic Analysis Paper. Future Directions International.
<https://www.futuredirections.org.au/publication/global-food-and-water-security-in-2050-demographic-change-and-increased-demand/>

Productivity Commission (2009). *Performance Benchmarking of Australian and New Zealand Business Regulation: Food Safety*. Productivity Commission, Canberra.
<https://www.pc.gov.au/inquiries/completed/regulation-benchmarking-food-safety/report/food-safety-report.pdf>

Productivity Commission (2016). *Regulation of Australian Agriculture*. Productivity Commission, Canberra.
<https://www.pc.gov.au/inquiries/completed/agriculture/report/agriculture.pdf>

Saunders, B., Sim, J., Kingstone, T. *et al.* (2018). *Saturation in qualitative research: exploring its conceptualization and operationalization*. Qual Quant 52, 1893–1907
<https://doi.org/10.1007/s11135-017-0574-8>

Stanford, J. (2020). *A fair share for Australian manufacturing: manufacturing renewal for the post-COVID economy*. Centre for Future Work, The Australia Institute, Canberra.
<https://apo.org.au/node/307132>

United Nations (2019). World population prospects 2019: Highlights
https://population.un.org/wpp/Publications/Files/WPP2019_10KeyFindings.pdf

Wynn, K. and Sebastian, B. (2019). *Growth opportunities for Australian food and agribusiness – Economic analysis and market sizing*. CSIRO Futures, Canberra.
<https://www.csiro.au/en/Do-business/Futures/Reports/Ag-and-Food/Opportunities-for-Food-and-Agribusiness>

Appendix 1: Methodology

The project was carried out using the following approach:

Literature Review

A structured literature review of the Australian food manufacturing industry and policies relevant to the food industry and this research topic was conducted.

This involved:

- Scoping of search strategy. Key search terms and concepts were confirmed and prioritised.
- Key search terms reflected the agreed priority topics, and where necessary, were searched in combination with our 'framework' topics: e.g.
 - "food (manufacturing OR processing OR industry OR sector)"
 - Australia OR Canada OR Viet Nam
 - food policy
- A range of topic alerts were created on Google to assist in identifying relevant sources/content
- Online searching was conducted using a combination of tools - search engines, university and State/National library catalogues, and domain specific searching.
 - Specific organisation's websites were targeted for focussed searching
 - Google Advanced search function was used to search key terms/concepts on specific top-level domains e.g. .gov and .edu
- Results were assessed with respect to how well aligned to priority topics, the subjective authority of the author/publisher, currency, and whether they provided a new insight (i.e., were not duplicating insights already identified in other sources).

In addition to the online searching, we asked our interviewees for recommendations regarding reports they valued. These were added to the literature database if they had not already been identified.

Interviews

A series of semi-structured interviews was carried out with 26 Australian food system leaders, scientists, and stakeholders.

This methodology provided a structured and agreed set of question areas for use by the interviewer, while allowing flexibility for deeper exploration of key issues when the opportunity arises.

This component provided fresh and insightful perspectives from current leaders regarding the opportunities and threats facing the Australian food system.

While recognising that the overlap within stakeholder categories, our engagement and consultation approach – designed to elicit a rich data set – included discussion with experienced individuals from the following food system sectors.

- Large national and multi-national food manufacturers
- Small and medium food manufacturers
- Raw Material suppliers and importers
- Key Food Industry Regulators, and
- National and international industry thought leaders.

Interviewees have not been identified within this report. This confidentiality provision was a key factor underpinning the open and frank opinions provided.