

07 February 2023

Transforming Australian Food Systems  
CSIRO

Submitted via email: [Futures@csiro.au](mailto:Futures@csiro.au)

**RE: Submission – Transforming Australian Food Systems: Discussion Paper**

The Australian Institute of Food Science and Technology (AIFST) is a not-for-profit organisation representing food industry professionals working in all facets of the food industry including food science, food technology, engineering, sensory, new product development, innovation, regulatory, QA, nutrition, microbiology, and food safety, as well as those in leadership positions within the academic, industry, public and private sectors.

AIFST's mission is to advance and inspire all food sector professionals through education, collaboration, and recognition, to champion a robust, innovative, science-based Australian food industry to meet future food needs.

The AIFST welcomes the opportunity to provide this submission on the [Transforming Australian Food Systems: Discussion Paper](#).

Our feedback and comments are set out in the document provided with this covering letter.

Thank you for the opportunity to provide this input to the consultation. If you require any further information, please do not hesitate to contact me.

Sincerely

**Fiona Fleming**

CEO

Australian Institute of Food Science and Technology Limited (AIFST)



## Executive Summary

The Australian Institute of Food Science and Technology (AIFST) welcomes the opportunity to contribute to the CSIRO *Transforming Australian Food Systems: Discussion Paper*. Historically, Australia has enjoyed a high level of food security with most Australians having access to an affordable, safe, nutritious food supply catering to the diverse multicultural and lifestyle needs of the community.

In October 2020, the AIFST was commissioned by 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.

AIFST worked with RDS Partners to deliver a report which synthesised current key reports related to the future of Australia's agricultural and food production system with a series of conversations with 26 industry leaders, scientists, and stakeholders deeply embedded in the sector.

The resulting report, *Exploring the growth potential of Australia's food manufacturing sector: a new narrative for Australia's agrifood system*, published in January 2021, provides the basis for the AIFST submission to this consultation.

The report presented 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 main recommendation coming out of the report was:

**The AIFST calls upon the Government urgently to *work 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.***



## Recommendations

**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 drives 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.



## 1. Introduction

Australia's food manufacturing sector has enormous growth opportunities. Food Innovation Australia Ltd (FIAL), 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*".

In October 2020, the AIFST was commissioned by 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.

AIFST worked with RDS Partners to deliver a report which synthesised current key reports related to the future of Australia's agricultural and food production system with a series of conversations with 26 industry leaders, scientists, and stakeholders deeply embedded in the sector.

The resulting report, *Exploring the growth potential of Australia's food manufacturing sector: a new narrative for Australia's agrifood system*, published in January 2021, provides the basis for the AIFST submission to this consultation.

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.

To that end, the report presented 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 main recommendation coming out of the report was:

***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.***

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.

## 2. AIFST General Comments

### 2.1 Representation & Prior Work

#### **Recommendations:**

1. Ensure all sectors of the agrifood system are represented.
2. Ensure due regard is given to work that has been done prior.

AIFST appreciates the opportunity to provide input via both an interview with the paper's authors and this formal response.

We note the establishment of a Steering Committee however there was no obvious direct food industry (private sector; pre- or post-farm gate) representation on the committee. To ensure the best outcome for the development of the 'Australian Food Systems Roadmap' it will be important to ensure that all sectors of the agrifood system are represented.

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.

The discussion paper appears to pay little heed to the myriad earlier reports regarding, among other things, the need to establish a national food plan, and ways to achieve this.



## 2.2 Scope

The paper appeared to be weighted towards the pre-farm gate segments of the Australian agrifood system.

The Australian food system needs to be viewed holistically. Post-farm gate aspects, including manufacture and food technology expertise are critical to the result.

## 2.3 Science and STEM

**Recommendation:** The Australian Food Systems Roadmap developed from this discussion paper recognise the necessity of investment in higher education to ensure learning and training is reflective of these critical knowledge areas.

AIFST's mission is to advance and inspire all food sector professionals through education, collaboration, and recognition, to champion a robust, innovative, science-based Australian agrifood industry to meet future food needs.

The CSIRO Discussion Paper addresses five areas to enable transformation of Australia's food systems:

1. Enabling equitable access to healthy diets
2. Reducing waste and improving circularity
3. Reducing greenhouse gas emissions
4. Improving environmental and economic resilience
5. Improving value and productivity

We note that both CSIRO Futures and CSIRO Agriculture and Food both refer to 'science':

*'Bringing together science, technology and economics...'*

*'Solving the greatest challenges through innovative science and technology...'*

Yet the discussion paper does not consider the role of science as a foundation for transforming the food system. The word 'science' is mentioned only 10 times in the 26-page document and STEM is not mentioned at all.

The role of STEM and food science and technology will be critical to transforming Australia's agrifood system.



## 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 a 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).

### Education

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

The majority of Food Science and the associated science disciplines in the Australian Food System encompass elements spanning many of these fields. 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 STEM Workforce 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.





## Research

Research and development expenditure by government and business in Australia as a percentage of GDP was 1.79% (2017-18)<sup>1</sup> compared to the OECD average of 2.4%.<sup>2</sup> 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.

In 2018-19 total business expenditure on research and development in the Food System 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 including 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.<sup>3</sup>

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 including food 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.

## Skills

The skills of those employed in Australia’s food system are a key enabler of industry growth. Businesses need the right people with the right skills 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, must adapt to a smaller labour pool (DAFF 2013).

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<sup>1</sup> <https://www.abs.gov.au/statistics/industry/technology-and-innovation/research-and-experimental-development-businesses-australia/latest-release>

<sup>2</sup> <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>

<sup>3</sup> <https://www.industry.gov.au/data-and-publications/science-research-and-innovation-sri-budget-tables>



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.<sup>4</sup>

**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.

Section 2.5 of the AIFST/RDS report addresses this further.

#### Food Science skills requirements

AIFST conducted an industry survey in July 2022 to gain an understanding of the core competencies the food industry values in new food science and technology graduates from Australian universities and TAFE. The survey was based on the graduate criteria identified by the Institute of Food Technologists. A summary of the findings is provided in Figure 3.

The full report is available on the [AIFST website](#).

The Australian Food Systems Roadmap developed from this discussion paper will need to recognise the necessity of investment in higher education to ensure learning and training is reflective of these critical knowledge areas.

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<sup>4</sup> <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.>



## Food Science Graduate – Industry Survey results



**Knowledge of the principles  
that make a food product safe  
for consumption**  
86% essential 13% desirable



**Applied food science skills**  
78% essential 21% desirable



**Strong knowledge of  
food chemistry**  
58% essential 38% desirable



**Ability to identify  
pathogenic and spoilage  
microorganisms**  
74% essential 24% desirable



**Training in food law  
and regulations**  
74% essential 25% desirable



**Ability to understand the  
conditions affecting the  
growth and control of  
pathogenic and spoilage  
microorganisms:**  
81% essential 16% desirable

Figure 1: Food Science Graduate - Industry survey results



### 3. AIFST Specific Comments

In this section of our submission, we address the ‘have your say’ questions. Please note, we have not provided responses to all the questions.

#### Focus area 1: Enabling equitable access to healthy diets

##### **The Australian Regulatory Environment**

**Recommendation:** 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.

Like many Australian industries, the food system is regulated by different levels of government and several different portfolios as set out in Table 1.

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 1: 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
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
<b>Australian States and Territories</b>	<b>State governments</b>	<b>Compliance and enforcement</b>
• ACT Health		Food Act 2001; Food Regulations 2002
• NSW Food Authority		Food Act 2003; Food Regulation 2015



AGENCY	Department	Regulations
<ul style="list-style-type: none"> <li>• NT Department of Health &amp;</li> <li>• Department of Primary Industries and Resources</li> </ul>		Food Act
<ul style="list-style-type: none"> <li>• Queensland Department of Agriculture and Fisheries; Queensland Health; Safe Food Queensland</li> </ul>		Food Act 2006; Food Regulation 2006 Food Production (Safety) Act 2000 Food Production (Safety) Regulation 2014
<ul style="list-style-type: none"> <li>• SA Health</li> </ul>		Food Act 2001; Food Regulations 2002
<ul style="list-style-type: none"> <li>• Tasmanian Department of Health and Human Services</li> <li>• Department of Primary Industries, Parks, Water and Environment</li> </ul>		Food Act 2003; Food Regulations 2012
<ul style="list-style-type: none"> <li>• Department of Health and Human Services Victoria</li> <li>• Dairy Food Safety Victoria</li> </ul>		Food Act 1980
<ul style="list-style-type: none"> <li>• Health Department of WA</li> <li>• WA Department of Agriculture and Food</li> </ul>		Food Act 2008; Food Regulations 2009

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

- Figure 1: Regulation across the agricultural supply Chain (Productivity Commission 2016)
- Figure 2: Australia-New Zealand food safety regulatory system (Productivity Commission 2009).



Figure 2: Regulation across the agricultural supply Chain (Productivity Commission 2016)

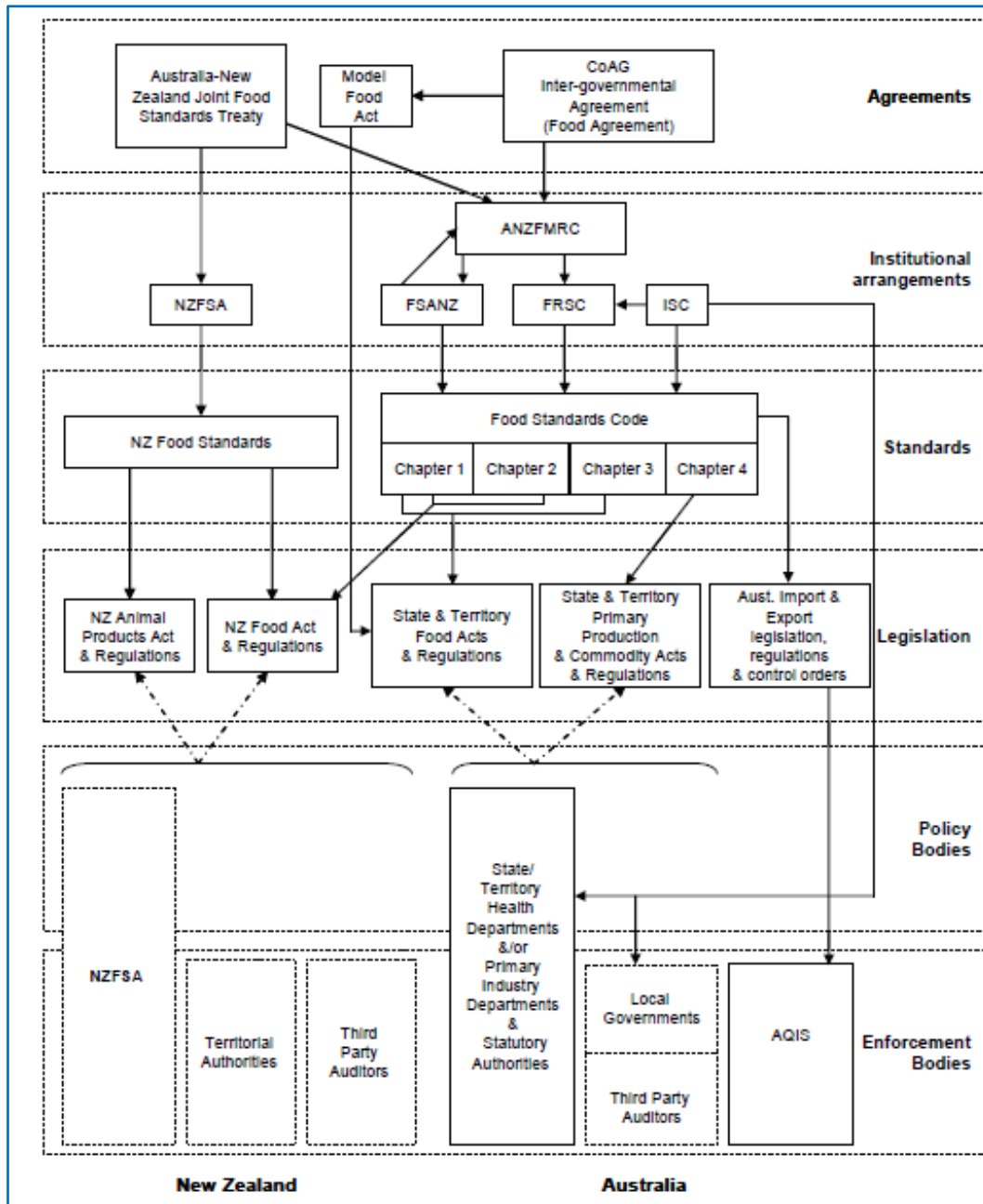


Figure 3: Australia-New Zealand food safety regulatory system (Productivity Commission 2009)

The Productivity Commission (2009) noted that Australia’s regulatory and institutional structure is complex – as shown in Figure 3 for the food safety regulatory system. While this information is from 2009, it is still relevant.





## Focus area 2: Reducing waste and improving circularity

*Which organisations are best placed to lead and/or support implementation of the suggested recommendations?*

A roadmap for reducing Australia's food waste by half by 2030 has been developed to provide a pathway forward for the food system. The Fight Food Waste Cooperative Research Centre<sup>5</sup> 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.

## Focus area 3: Reducing greenhouse gas emissions

AIFST has no comments on the focus area.

## Focus area 4: Improving environmental and economic resilience

***How can cross-sector data sharing be encouraged across all levels of the system? And what kind of data would producers, manufacturers, retailers, consumers, and the logistics industry find most useful for improving resilience?***

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 agrifood 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.

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.

Recommendation 8 of the AIFST/RDS report states:

*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.*

***What do you think are the most important features of a resilient food system?***

A resilient agrifood system must consider all steps in the supply chain and not just the end consumer.

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<sup>5</sup> <https://fightfoodwastecrc.com.au/>



### ***Do you agree with the definition outlined?***

AIFST does not agree with the definition outlined in the discussion paper, which states:

*Defining food system resilience: In recognising that a food system is not sustainable unless it is resilient, this report considers a resilient food system to be one that is robust in its ability to withstand pressures, yet agile and adaptive in responding to them; towards the goal of having the capacity to continually provide people with access to sufficient and healthy food, even when facing disruption.*

The definition needs to cover the 'agrifood system' in its entirety, recognising all sectors contributing to the food supply. The end goal should encompass enabling all parts of the agrifood system to be agile and adaptive.

### Focus area 5: Improving value and productivity

The 2030 target and 2050 vision statements have no reference or consideration of food science and education to support these aspirations.

The R&D priorities presented will also need to be supported by scientists with new skills. Attention to building a pipeline of up-and-coming scientists with new skill sets must be incorporated into the vision going forward.

### Indicator shortlist

***Is the current shortlist appropriate? Are there any indicators listed that should be removed?***

***Are there any currently existing indicators with Australian data that should be included?***

In the current draft, there are no indicators for science and STEM as enabling foundations to support the Food System Roadmap. This must be rectified.



## References

AFGC (2012). *Submission to the Federal coalition deregulation taskforce in response to reducing red tape and unnecessary regulation*. Australian Food and Grocery Council, Canberra.

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