Australian Government

Department of Agriculture, Fisheries and Forestry

House of Representatives Standing Committee on Agriculture

Inquiry into Food Security in Australia

Submission from the Australian Government Department of Agriculture, Fisheries and Forestry

December 2022

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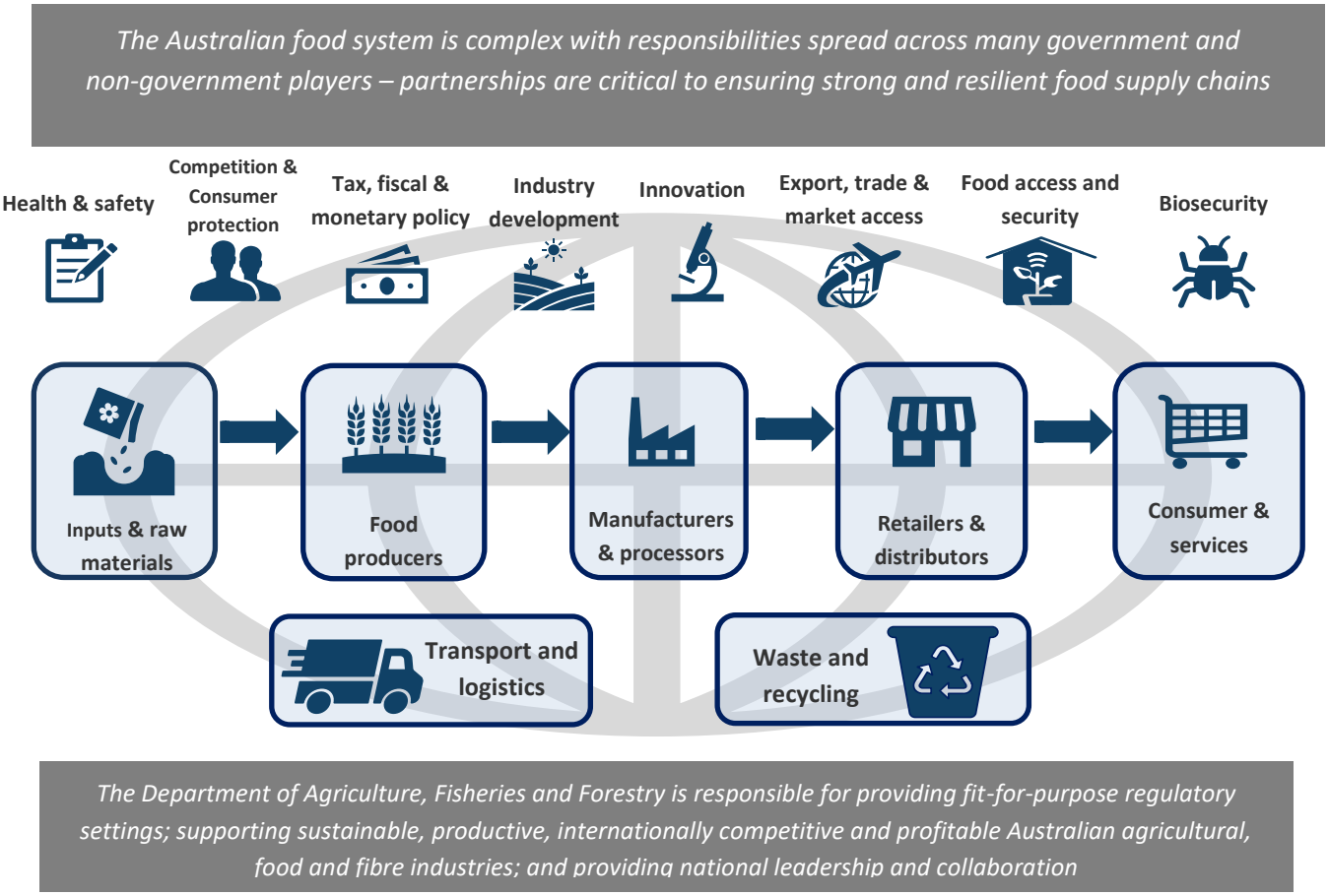
Introduction

The Australian Government Department of Agriculture, Fisheries and Forestry (the Department) welcomes the opportunity to provide this submission to the House of Representatives Standing Committee on Agriculture in response to its Inquiry into Food Security in Australia.

Our food industry is integral to Australia's economic and social prosperity and has a reputation internationally as a modern, safe, reliable and sustainable producer of food, with Australia being a significant net exporter of agricultural and food commodities. The role of the department is to enhance our agricultural industries and trade and manage the threat of biosecurity risks to Australia. We are responsible for policy and programs that support a globally competitive and sustainable Australian food industry. We do this by providing fit for purpose regulatory settings, supporting sustainable, productive, internationally competitive and profitable Australian agricultural, food and fibre industries, and providing national leadership and collaboration. The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) is the research arm of the department. ABARES provides professionally independent data, research, analysis and advice that informs public and private decisions affecting Australian agriculture, fisheries and forestry.

While the department plays a critical role in food security, particularly in agricultural production and availability, we are one of many government and non-government players with a role in addressing this issue. Responsibilities are spread across many organisations and policy areas along the food value chain (as highlighted in Figure 1) and include a number of interdependencies.

Figure 1: Australia's food value chain.



There are a number of other Australian Government portfolios that influence elements of food security including:

Department	Role
Department of Climate Change, Energy, the Environment and Water	• Supports the transformation of Australia's economy to net-zero emissions by 2050. • Supports actions to promote adaptation and strengthen resilience in Australia's economy, society and environment. • Protects, restores and manages Australia's biodiversity, ecosystems, environment and heritage. • Ensures enhanced sustainability, efficiency and productivity in the management and use of water resources. • Supports the reduction of food loss and waste through implementation of the National Food Waste Strategy.
Department of Foreign Affairs and Trade	• Supports stability and economic recovery by investing in agriculture and food security through a mix of global, regional and bilateral initiatives. • Supports countries to build capacity for food security.
Department of Health and Aged Care	• Develops policies with a focus on nutritional wellbeing. • Works within the food regulatory system to develop laws, policies, standards and processes to ensure our food is safe to eat and to help consumers make informed decisions.
Food Standards Australia New Zealand	• Develops standards that regulate food, to ensure that food is safe and free from contamination.
Department of Home Affairs	• Maintains migration settings for agricultural workers and infrastructure resilience for the food and grocery sector. • Maintains the Trusted Information Sharing Network which is the primary engagement mechanism with industry on critical infrastructure, including the food and grocery sector.
Department of Industry, Science and Resources	• Drives the transformation, growth and competitiveness of Australia's industries and building domestic capability to meet the needs of the Australian economy. • Leads cooperation with industry, government and international partners to identify and mitigate vulnerabilities in Australia's critical supply chains, and improve business' ability to respond to crises.
National Emergency Management Agency	• Supports the needs of Australian communities and businesses, including primary producers and agri-food businesses, before, during and after disasters, and to support response, recovery and resilience of the food supply chain to disaster impacts.
Department of Infrastructure, Transport, Regional Development, Communications and the Arts	• Supports the infrastructure and transport systems that facilitate the transport of food through a safer, more efficient, and sustainable freight industry and supply chains.
National Indigenous Australians Agency	• Implements policies and programs to improve the lives of all Aboriginal and Torres Strait Islander peoples.
Treasury	• Monitors the fiscal and economic environment as well as the relationships between retailers/wholesalers and suppliers, in relation to the Food and Grocery Code.

This submission addresses each of the terms of reference, including data from ABARES, with a particular focus on areas within the remit of this portfolio.

What is Food Security?

"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 health life"[1]

The Food and Agriculture Organisation (FAO) of the United Nations defines 4 key elements of food security from this definition:

- Availability – is there enough food?
- Access – can people access food? Can they afford it, and can it be transported to them?
- Utilisation – can people utilise food through adequate diet, clean water, sanitation, and health care to reach a state of nutritional well-being?
- Stability – is food always available and accessible, and can it always be utilised?

Source: Adapted from FAO (2006)

Over the last 60 years, increases in global food supply have outpaced increases in demand, leading to a long-term trend of declining agricultural commodity prices. From 1961 to 2019, the global population grew by 149% (United Nations Population Division 2019), while agricultural production grew by 262% (FAO 2022). Food-wise, calorie, fat and protein supply per person also increased.

[1] World Food Summit, 1996.

Australia ranks highly in food security

Australia is a high-income country, ranking 20th in the world for GDP per capita in terms of Purchasing Power Parity (IMF 2022), and most Australians can purchase food products that provide adequate nutrition. Australia ranked 22nd overall in the Global Food Security Index for 2022, including:

- 1st for affordability,
- 48th for availability,
- 13th for quality and safety, and
- 33rd for sustainability and adaptation.

By comparison, Finland is the top ranked country overall. France (4th), Japan (6th), Sweden and Canada (equal 7th), the UK (9th), USA (13th) and New Zealand (14th) rank ahead of Australia.

The Global Food Security Index considers food affordability, availability, quality, safety, sustainability and adaption across 113 countries. It is a quantitative and qualitative benchmarking model that uses 68 unique indicators to measure each of the drivers of food security. The methodology and weighting for each indicator are reviewed annually by a panel of experts.

Australia's relatively low ranking for availability is primarily due to fluctuations in agricultural production over the last five years and to the index placing a relatively high weight on food security and access policy commitments. The index notes that relative to other countries, Australia does not have a national food security strategy or food security agency (which largely reflects our status as a net food exporter).

Australia's role in global food security

Australia also plays a part in the food security of other countries. International trade – including Australian food exports – supports food security in other countries through providing physical access to food, lowering prices, and making food more economically accessible. Australia also contributes to food security in other countries through agricultural research, development assistance, and the transfer of Australian agronomic knowledge and expertise.

National production, consumption and export of food

Record high agricultural production

The gross value of production in the agricultural sector is forecast to be $85.3 billion in 2022-23, and the value of exports forecast to be a record $72.3 billion. As of December 2022, ABARES forecasts the gross value of both crop and livestock production in 2022–23 will remain fairly steady, marginally below the record highs reached in 2021-22. These are strong results, but there are continued challenges for the sector including localised flooding risk associated with a third straight La Nina event and increasingly complex biosecurity threats.

Heavy October rainfall and recent flooding in many regions of eastern Australia have caused significant damage and crop losses for growers in affected areas. The more widespread effects of the heavy rainfall will be harvest delays and quality downgrades to winter crops. However, this is not likely to significantly affect national winter crop production due to near-record production in other areas. Continued high rainfall in December will cause further damage and additional losses if crops cannot be harvested.

While Australia is free of many diseases such as foot-and-mouth disease and lumpy skin disease, the presence of these in Indonesia has put Australia on heightened alert for the risk of an incursion. The recent incursion of Varroa mite in New South Wales heightened concerns about the impact of pests and diseases on food security – with thousands of beehives destroyed. Honeybees are critical for the production of many crops, pollinating around 65 per cent of agricultural and horticultural crops in Australia. An outbreak, like the June 2022 detection of Varroa mite at the Port of Newcastle, NSW, could have significant repercussions for our economy and production. It has the potential to cost producers and consumers of pollination dependent crops, like almonds and pears. ABARES estimated the cost to producers and consumers over 30 years of an incursion at the port of Sydney is calculated to be $5.2 billion without containment and about $3.8 billion with containment.

In 2022, data describing crop loss/waste on Australian horticulture farms were collected through the ABARES Horticulture Survey. Crop loss/waste refers to primary production outputs that were intended for human use but ended up either not being harvested, disposed or were recovered for alternative uses. The average percentage of crop loss/waste in 2021–22 ranged from a high of 34% per farm for berries to lows of 12% per farm for almonds and 13% per farm for pineapples. Most farms that experienced crop loss/waste in 2021–22 indicated that environmental factors (such as natural disasters, pests and disease) were the primary cause of their total crop/loss waste (82% of farms), with most of this loss occurring pre-harvest and largely outside of their control.

Case study: National Biosecurity Strategy

Australia's first National Biosecurity Strategy (Strategy) was released in August 2022. It provides a strategic roadmap for Australia's biosecurity system over the next 10 years in recognition of the critical role biosecurity plays in maintaining a strong agricultural sector and supporting our environment and biodiversity.

Our biosecurity system has served us well by protecting our plants, animals and ecosystems to generate high-quality primary produce and access to export markets. Biosecurity risks are becoming increasingly complex and harder to manage which needs a system that is continually evolving to ensure biosecurity measures remain strong.

The Strategy covers exotic and established pests, weeds and diseases, including zoonotic diseases, but does not extend to human biosecurity. The 6 priority areas include:

1. Shared biosecurity culture
2. Highly skilled workforce
3. Sustainable investment
4. Stronger partnerships
5. Coordinated preparedness and response
6. Integration supported by technology, research and data

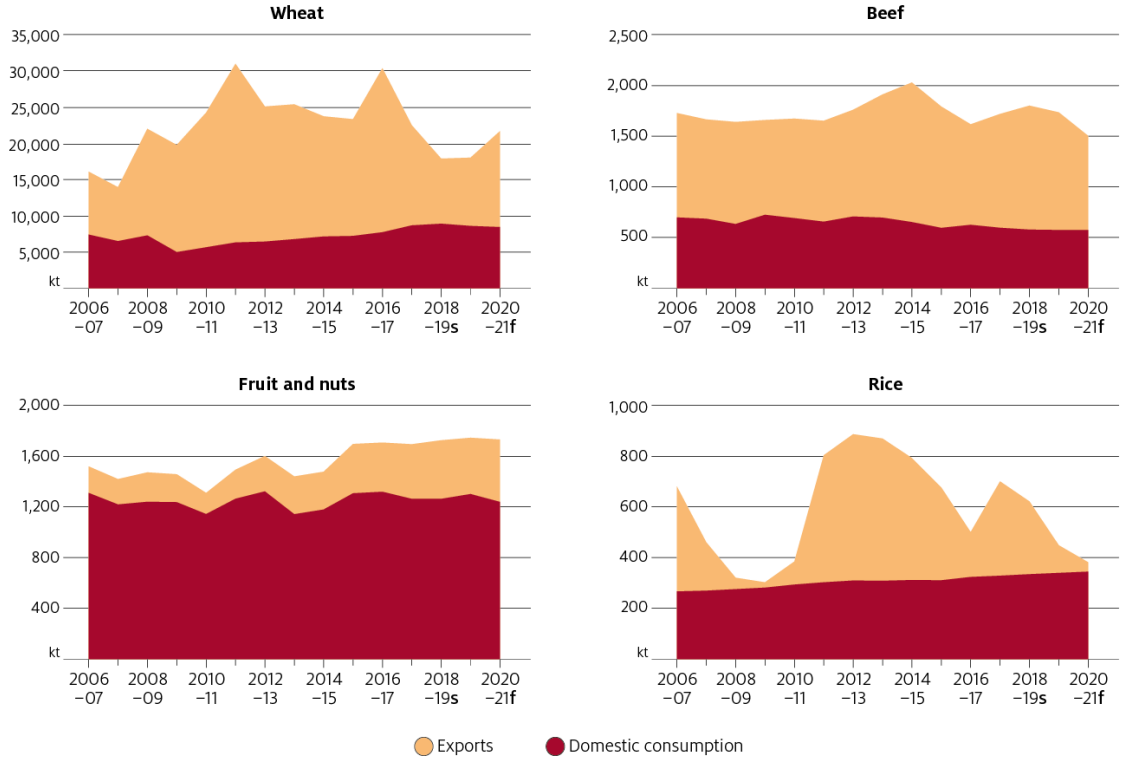
The Strategy is informed by, and builds on, existing strategies and plans. Ensuring the Strategy is implemented is a collective effort to ensure ongoing food security. Implementing the Strategy will be underpinned by a national implementation plan and national action plan, complemented by other local, regional and sector-based action plans. It is underpinned by the Intergovernmental Agreement on Biosecurity and builds on the National Biosecurity Statement, and federal, state, territory and sectoral biosecurity strategies.

Australia produces much more food than we consume

Australia is a net food exporter, producing more food than required for domestic consumption. This strong position has held even in years of severe drought. Domestic consumption has remained stable while exports tend to vary, absorbing the ups and downs in annual production associated with Australia's variable climate and seasonal conditions. Despite food consumption remaining relatively stable through years of below average agricultural production, domestic prices for specific food products may increase slightly.

Australian food prices rose at the fastest annual pace in the September 2022 quarter since 2006. A key factor in the price increase was flooding and heavy rain on the east coast. However, the Australian Bureau of Statistics (ABS) also noted the contributions of state-government funded restaurant voucher programs, labour shortages in hospitality, and higher transport costs. While some parts of the Australian community may experience food security issues – it does not usually reflect issues relating to inadequate supply in Australian markets, but rather individual circumstances and temporary shortages for specific products.

Figure 2: Domestic consumption and export estimates for agricultural products, 2006–07 to 2020–21



Source: ABARES 2020

Australia does import food which accounts for around 11% of food consumption by value. Imported food generally caters for different consumer preferences for taste and variety, along with small amounts of out-of-season fresh produce. The majority of food imports are processed products, including frozen vegetables and seafood products.

Open trade plays a key role in global food security

International trade is crucial to global food security, as well as to Australia's national income and economic performance. Australia exports around 70% of the total value of agricultural, fisheries and forestry production on average. In real terms, the value of agricultural exports has fluctuated between $36 billion and $55 billion since 2001–02 to 2020-21, reaching a record $67 billion in 2021-22.

Global agricultural demand is growing strongly, reflecting rising per capita incomes as well as population growth, but export competition is also increasing. Asia is a fast-growing major export region for the Australian agriculture, fisheries and forestry sectors. Exports to Australia's eight largest markets in Asia increased by 60% over the 20 years to 2021–22, reaching around $36 billion in 2021-22, and accounted for around 50% of the total value of agricultural, fisheries and forestry exports in 2021–22. China is Australia's largest export market for agricultural, fisheries and forestry products, at $14 billion in 2021–22. Exports to China are worth more than 3 times what they were in 2001–02. Asian demand is projected to continue to grow, reflecting population growth, income growth and urbanisation-led changes to consumption patterns, providing opportunities for exporters of high-value, high-quality agricultural and food products.

The expectations of domestic and international consumers are evolving. Increasingly, consumers want to know the products they buy are authentic, clean, green and produced ethically. Additionally, more rigorous sustainability requirements are emerging in key markets such as the EU, posing a potential risk to ongoing market access if Australia's premium and sustainable agricultural production systems aren't recognised.

Participation in global agricultural markets reduces prices for consumers in importing countries, reduces price volatility, and the potential for food price spikes. However, trade restrictions – such as import quotas or tariffs – may provide incentives to increase domestic food production in good years, but also increase domestic food prices and food price volatility. Trade restrictions also make countries more vulnerable to extreme events and poor local seasonal conditions. This generally reduces national food security, despite improving food production.

In 2022, some major food exporters, such as India, Kazakhstan, and Russia, have restricted exports. Similar measures applied during the 2007 and 2008 significantly increased world prices and amplified the impact on poverty and food insecurity. Although such actions have little impact on food availability in Australia (as a net food exporter), they increase global prices, which can particularly impact low and medium-income consumers, particularly in developing countries.

Case Study: Agriculture Counsellor Network

The department's network of 22 Agriculture Counsellors, located in 16 key agricultural trade markets around the world, plays an important role in pursuing Australia's trade and market access priorities.

As the international face of the department, Agriculture Counsellors deliver in-country stakeholder engagement and advocacy for Australian agriculture and agri-food and fibre products. This supports trade and technical cooperation, contributing to trading partners' interests in food security, value chains and market access. Counsellors also represent the Australian Government in key multilateral fora, including the FAO, OECD, and WTO.

The Counsellor network has been instrumental in identifying market diversification opportunities for our agriculture industry in response to ongoing trade disruptions as they have emerged over recent years. In 2020-21, our Agriculture Counsellor network contributed to an estimated $435 million in market access achievements, including:

- Agreement for Australian seafood establishments seeking access to Taiwan to bypass lengthy and costly audit processes, a key step to increasing Australia's share of Taiwan's $1.7 billion seafood market.
- Gaining approval from Malaysia for a Queensland based beef establishment to resume exports, after losing access in 2018. Australia now has 17 establishments approved to export red meat to Malaysia.
- Agreement with India and Bangladesh on improved conditions for table grape and citrus exports, including in-transit cold treatment which is less damaging to the fruit than other treatments.
- Maintaining seafood access to Indonesia by securing acceptance of Australian health certificates.

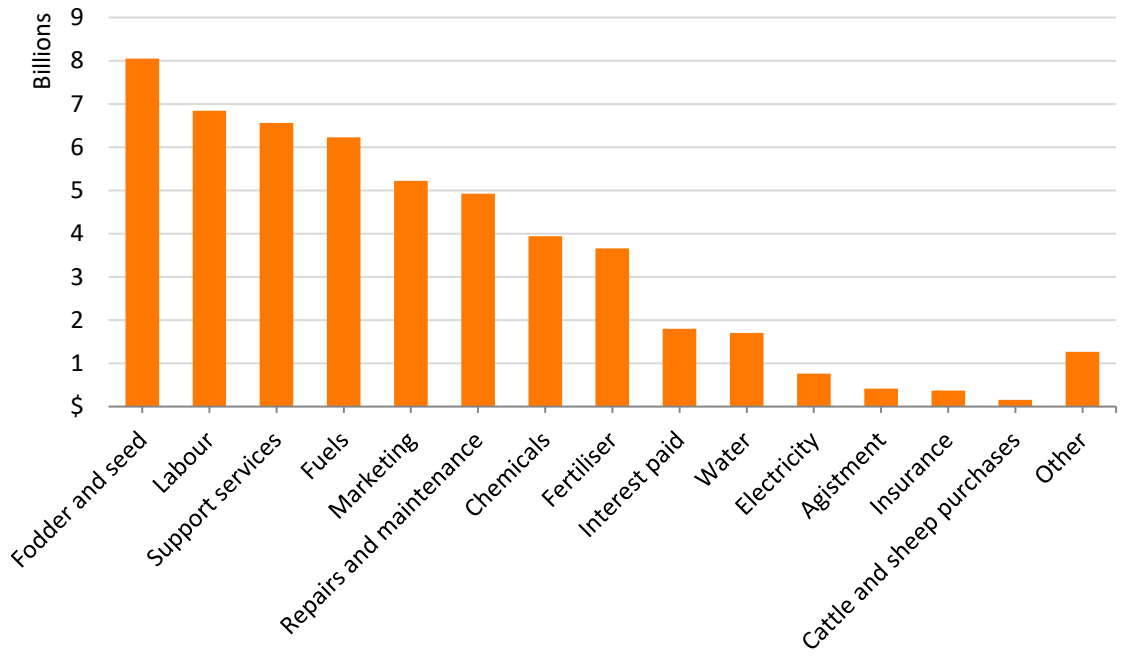
Access to key inputs such as fuel, fertiliser and labour, and their impact on production costs

Stability of inputs to agricultural production are an important part of food security

Australian agriculture relies on international markets and supply chains for a range of inputs to agricultural production, with food production capability impacted by changes in input prices and supply chain disruptions.

The cost of fertiliser, chemicals, fuel, and labour has increased substantially over the last 2 years, increasing the cost of agricultural production. However, Australian farms generated record incomes in 2021–22 on average, despite higher input costs, due to high production and high prices received for agricultural products.

Figure 3: Estimated aggregate farm cash costs, Australia, 2021–22



Source: ABARES

Agricultural chemicals are a key input into agricultural productivity

The application of chemicals, including fertilisers and protection chemicals, plays an integral part in increasing the yield and value of Australia's food production each year. The absence of agricultural chemicals would have a profound impact on agricultural productivity—crops and pastures would lack the necessary nutrients to grow; be forced to compete with weeds and other invasive plants; or experience wastage from pests, disease, and fungal infections.

In 2021–22, an estimated $3.7 billion of fertiliser was applied to Australia's crops and soil. Fertiliser accounted for 7% of aggregate farm cash costs in 2021–22, but 20% on specialist cropping farms.

Global supply chain disruptions have resulted in supply shortages. Russia's invasion of Ukraine has disrupted production and shipping and driven up prices for natural gas, a key ingredient for fertiliser manufacturing. Additionally, Russia imposed initial restrictions on nitrogen and complex nitrogen fertiliser exports in mid-2022 in response to international sanctions. China also suspended most fertiliser exports in mid-2022, placing further upward pressure on fertiliser prices.

Australian businesses have continued to import fertiliser in 2022, despite higher global prices, which will erode farm business profit margins.

Figure 4: Import price index, Australia

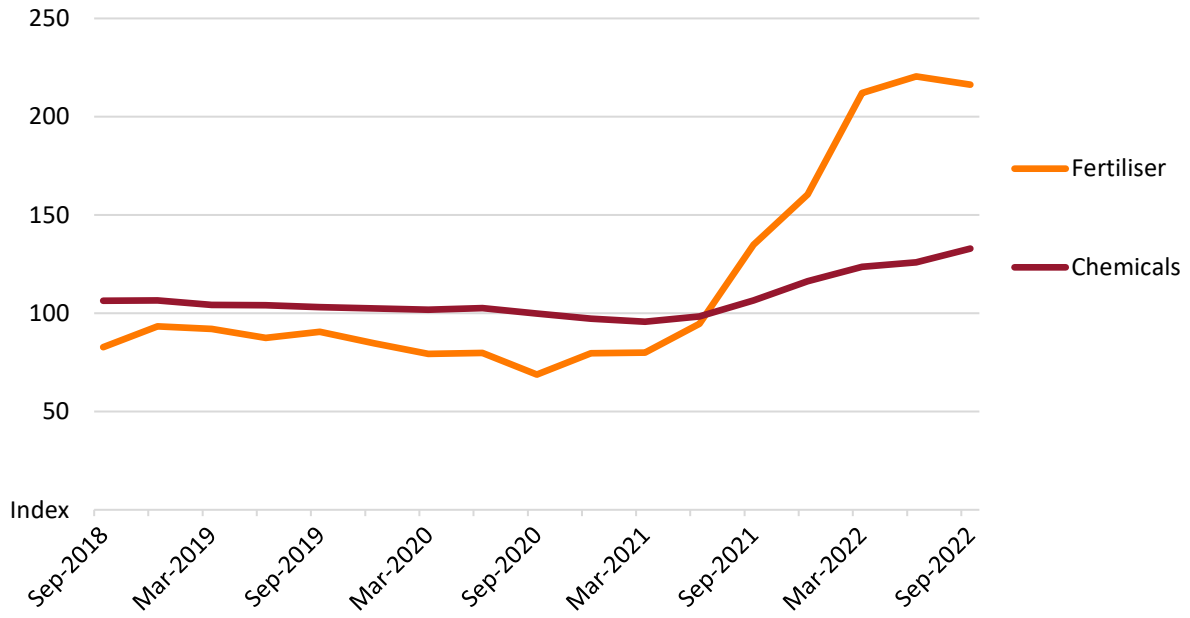
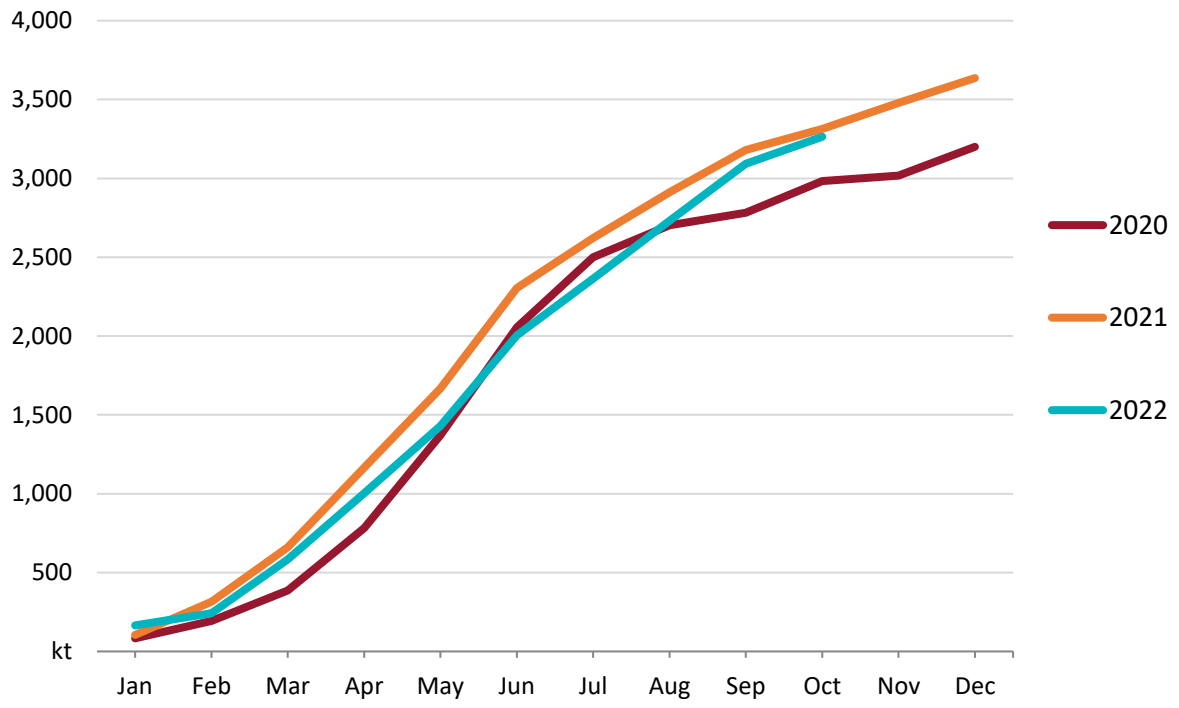


Figure 5: Cumulative nitrogen fertiliser imports



Source: ABS

Workforce shortages may prevent the sector from meeting its full potential

Australian agriculture is facing ongoing skills and labour shortages, which have been exacerbated by the COVID-19 pandemic. These pressures are not unique to agriculture and are felt across the economy, including health and aged care, teaching, and construction.

ABS data indicates that the Australian agriculture, fisheries and forestry sector employed 296,000 people on average over the 4 quarters to August 2022. However, this data focuses on the Australian resident civilian population and is likely an underestimate of total agricultural employment due to the significant number of overseas workers employed on farms. Broadacre, dairy and horticulture farms account for over 88% of total agricultural employment in Australia and on average horticulture farms employ more workers per farm than other industries.

It is difficult to quantify the agricultural workforce shortage. ABARES estimates that employment in horticulture declined by 20% (29,300 workers) from 2019–20 to 2021–22, with declines in all states and across fruit, nuts and vegetable farms. This decline is consistent with the range of labour shortages reported by the horticultural industry for 2021–22. The Food Supply Chain Alliance has also estimated 172,000 workers are needed to fill workforce gaps across the food supply chain; 100,000 of these are in the hospitality sector.

With unemployment rate at historic lows, there are shortages in domestic workers to meet the agricultural industries' needs, and the COVID-19 pandemic significantly disrupted the supply of overseas workers that make an important contribution to the sector. With the reopening of international borders, overseas worker numbers are continuing to increase. As at 31 October 2022, there were 31,500 Pacific Australia Labour Mobility (PALM) scheme workers in Australia with more than 40,000 workers registered to participate in the PALM scheme. The number of working holiday makers in Australia has also increased from a low of just over 19,000 in March 2022 to 90,188 as at 6 November 2022, though this remains lower than pre-COVID numbers with 137,461 working holiday makers in Australia as at 20 March 2020.

Case Study: Agricultural Workforce Working Group

Following the Australian Government's Jobs and Skills Summit, the Minister for Agriculture, Fisheries and Forestry, Senator the Hon Murray Watt, established a tripartite Agricultural Workforce Working Group to pursue short and long-term solutions to the sector's workforce challenges. The Working Group comprises government, unions, and industry members.

The Working Group's objective is to pursue solutions to better skill, attract, protect and retain workers in the agriculture and processing sectors. It will explore opportunities for:

- agriculture specific skills, apprenticeships and training programs, including in the regions, to uplift capability for workers and employers.
- attracting Australians to the sector by promoting well-paid, secure, local employment and careers,
- maximising value and security from visa classes, including the successful PALM scheme, to support the farm and processing sectors,
- further protections for workers to ensure they are treated fairly, including in relation to labour hire and deductions,
- encouraging wider participation in the industry among women, First Nations, youth, people with disability and older Australians,
- improved housing for key workers in regional areas, and
- building capability for data collection on the agricultural workforce.

The Working Group held its first meeting in October 2022 and will operate for period of 12 months. It will discuss issues to inform the Australian Government's forthcoming Employment White Paper.

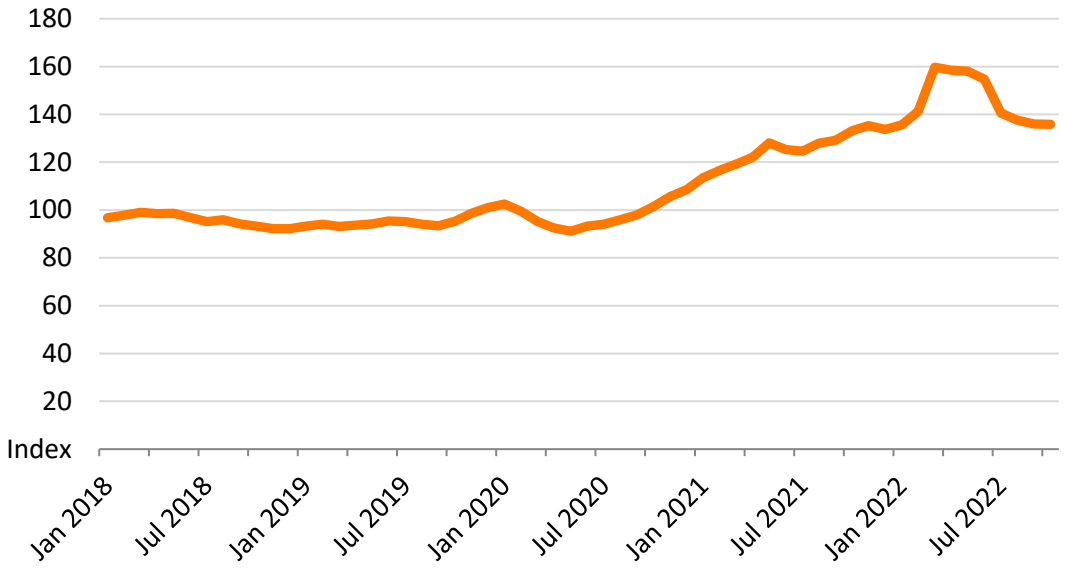
The impact of supply chain distribution on the cost and availability of food

Global food availability and affordability have decreased since 2020

Global food prices have increased substantially over the last two years. The FAO's global food price index peaked in March 2022 at 67% higher than the two–year average to 2020. Prices have eased somewhat since March 2022 but remain 42% above the pre-pandemic average across all food categories: meat, dairy, cereals, oils, and sugar, with the largest increases for cereals and oils.

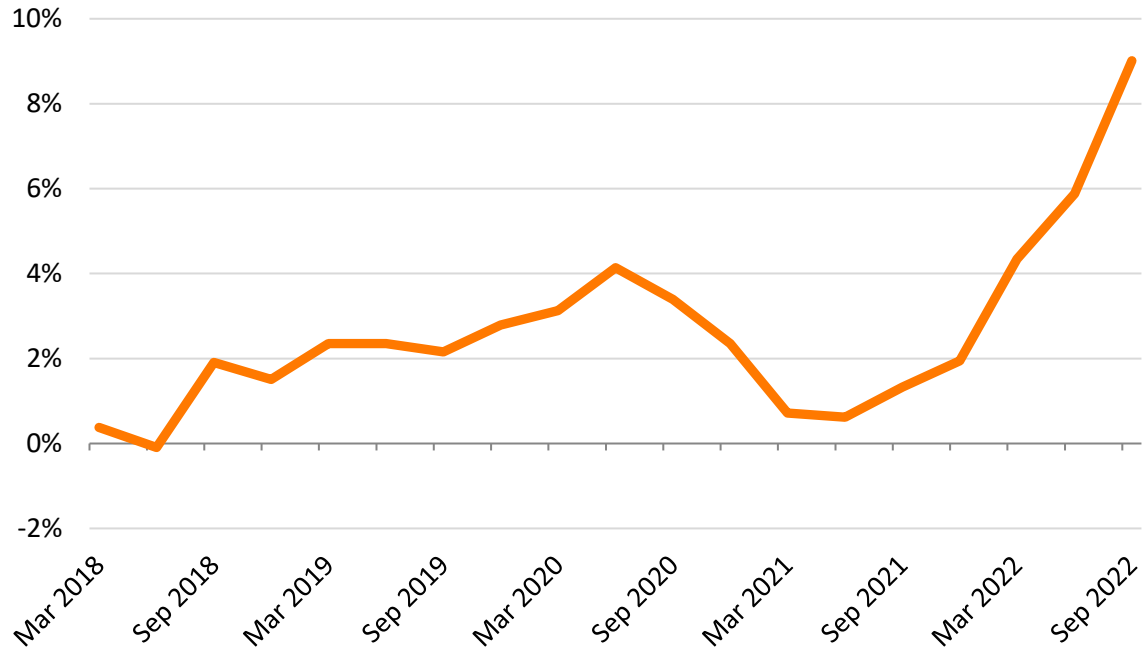
Global food prices initially accelerated in 2020 due to supply chain problems associated with the COVID-19 pandemic. Food prices then continued to increase in 2021 due to poor climatic conditions in many major food growing regions in the Northern Hemisphere. In early 2022, global food prices surged due to the Russian invasion of Ukraine.

Figure 6: FAO food price index, Jan 2018 to Oct 2022



Food prices have also increased in Australia. Annual food inflation has increased significantly over the last 18 months to be 9% in September 2022, with strong price rises across all food products in the September quarter. Additionally, in the 12 months to September 2022, ABS data indicates that fruit and vegetables prices rose around 16% across Australia. The increases reflected a range of price pressures including supply chain disruptions, flooding, and increased input costs, including labour.

Figure 7: Annual inflation, Australia, Food and non-alcoholic beverages



Source: ABS

Food availability and affordability can be affected in specific instances

While Australia ranks highly for food security as a nation, some regions and demographic groups can experience periods of reduced food security. This is particularly so for those living in rural and remote areas, from lower socioeconomic backgrounds or experiencing homelessness, as well as culturally and linguistically diverse and First Nations Australians. In addition, certain foods can become more expensive over short periods.

Uncertainties around the impacts of COVID-19 in 2020 triggered a sudden increase in purchasing by consumers of a range of items, resulting in disruption to stocks of some basic food items in supermarkets. This was compounded by measures put in place to control the spread of COVID-19 restricting the movement in people in the food supply chain. This disruption was temporary and not an indication of a widespread food shortage. Rather, it was the result of logistics taking time to adapt to the large, unexpected surge in purchasing of some items.

Recent natural disasters have also impacted the prices and availability of some foods. In 2022, large areas of fruit and vegetable crops have been damaged by floodwater in the eastern states. During natural disasters, some fruit and vegetables will need to be shipped to domestic markets from other parts of the country, likely resulting in delays stocking shelves and potential shortages at supermarkets. As a result, prices for some fruit and vegetables are expected to increase due to higher costs transporting product to market.

Case study: Food and Grocery Sector Group

The Food and Grocery Sector Group (FGSG) was established in 2003 to develop strategies and options to mitigate risk and maintain continuity of food supply in the face of all hazards. The FGSG is one of 15 sectors under the Department of Home Affairs' Trusted Information Sharing Network which is the Australian Government's primary engagement mechanism with industry on critical infrastructure.

Membership of the FGSG is made up of a broad range of organisations from the food and grocery sector, peak bodies, transport and logistics, charities and all levels of government. The FGSG met regularly during the 2019-20 bushfire season, COVID-19 pandemic and convenes in response to natural disasters to ensure continued supply of essential goods to the Australian public.

The Australian Government Department of Agriculture, Fisheries and Forestry provides secretariat support to the FGSG.

Global pandemic and geopolitical tensions impact production and nutrition

Due to several global circumstances, food businesses have been experiencing supply chain issues for certain ingredients and food additives, having to find alternatives which can impact the ordinary composition and labelling of a specific final food product. A key example is the impact of the war in Ukraine on the supply of sunflower oil which is an important ingredient for infant formula. Many Australian manufacturers have faced shortages and the potential need to substitute sunflower with other oils while ensuring safety and regulatory compliance.

The food regulatory system has also been dealing with ongoing challenges in relation to shipping which is causing pallet shortages and availability of packaging materials leading to delays in adopting clearer food labelling (i.e., the Health Star Rating system) and increasing input costs. Continued challenges can lead to fewer products being available on shelves for consumers.

The Australian Dietary Guidelines recommend that Australians enjoy a wide variety of nutritious foods from the five food groups every day. These include plenty of vegetables, including different types and colours, and legumes/beans, and fruit; as well as grains, lean meats and alternatives, and milk and alternatives[2]. Cost of living and access to healthy and nutritious foods is increasingly becoming a challenge, particularly for those on lower incomes.

[2] National Health and Medical Research Council (2013) *Australian Dietary Guidelines.* Canberra: National Health and Medical Research Council

Research shows that eating a diet consistent with the Australian Dietary Guidelines is generally less expensive than an unhealthy diet[3,4], with most Australian households spending more money on unhealthy diets including a significant proportion of foods that are discretionary choices such as takeaway foods and alcohol. Barriers to healthy eating include time and knowledge to prepare foods from scratch, access to kitchen facilities including power for refrigeration and cooking, and proximity to, and stock availability at supermarkets or other grocery stores.

Case study: Export of Infant formula to the USA

The Department of Agriculture, Fisheries and Forestry (DAFF) has responsibility for negotiating market access and the regulatory oversight and export of agricultural products, including dairy products such as infant formula, to provide assurance to our trading partners that Australian products meet strict food safety and importing country requirements. Robust export legislation is important for Australia's reputation as a source of safe, high quality and reliable agricultural products, which enables Australia to be a supplier of choice.

DAFF has been working with government partners and Australian infant formula manufacturers to access temporary export opportunities in the USA. The USA experienced a shortage of infant formula that initially began due to panic buying and supply chain challenges in the early stages of the COVID-19 pandemic. It worsened in early 2022 when a major manufacturer, Abbott Nutrition, recalled several products and closed its main manufacturing plant. This was in response to product contamination which was linked to a number of infant related illnesses.

To address the shortage, the USA looked at increasing the volume of imported product. Australia was well placed to capture this opportunity as it is one of the few dairy exporting countries with existing preferential access to the USA based on recognition of Australia's regulatory and food safety systems. In 2022, DAFF assisted several Australian infant formula manufacturers to gain temporary approval from the US Food and Drug Administration (FDA) of their infant formula products. As a result, for example, one company was able to export 1.25 million cans of infant formula to help increase supply while still producing enough to meet domestic demand in Australia.

Australia's ability to respond to the USA infant formula shortage demonstrates the importance of a strong regulatory and food safety system and open trade to support global food security.

[3] Lee et al (2016) *Testing the price and affordability of healthy and current (unhealthy) diets and the potential impacts of policy change in Australia*. BMC Public Health. DOI 10.1186/s12889-016-299-y
[4] Zorbas et al (2021) *Costing recommended (healthy) and current (unhealthy) diets in urban and inner regional areas of Australia using remote price collection methods*. Public Health Nutrition. DOI 10.1017/S1368900214006

The potential opportunities and threats of climate change on food production in Australia

Climate change is impacting farm performance, but farmers are adapting to maintain production

Australian agriculture is highly climate dependent. Recent decades have seen a shift towards higher temperatures and lower winter rainfall in Australia, which will increase the incidence of natural hazards such as drought, flooding, fires and disease outbreaks. This poses significant risks to the performance and profitability of the sector.

As outlined in the State of the Climate Report 2022, Australia can expect ongoing changes to its weather and climate. This includes continued increases in air temperatures, more heat extremes and fewer cold extremes. Cool season rainfall will continue to decrease, on average, across many parts of southern and eastern Australia, which is likely to lead to more time in drought. However, there will continue to be short-duration heavy-rainfall events at a range of timescales (Bureau of Meteorology 2022).

ABARES estimates that changes in seasonal conditions over the period 2001 to 2020 (relative to 1950 to 2000) reduced annual average farm profits by 23%, or around $30,000 per farm. However, while farm profitability would have been higher in the absence of climate change, farm production has been maintained due to farmers' adaptation strategies. For example, improvements in technology and management practices have helped to increase farm productivity, while increases in farm size, particularly in the cropping sector, have led to gains from scale. The proportion of Australian farmland devoted to cropping has declined in recent years which reflects a shift away from cropping in some more 'marginal' parts of the Australian cropping zone due in part to long-term shifts in rainfall patterns.

Drought events in Australia are expected to become more frequent, widespread, prolonged and severe in many regions as a result of climate change. This presents risks for farming businesses and communities. For example, in the drought years of 2018-19 and 2019-20 the amount of broadacre crops produced declined. Livestock numbers were also down due to destocking, and there were mixed results for fruit, nuts and vegetables. In 2020-21, production of broadacre and fruit, nuts and vegetables increased due to favourable conditions, and rebuilding livestock numbers started.

The agricultural sector is investing significantly in its sustainability agenda and in the implementation of climate-smart initiatives and practices. Innovation, technology and improved farm efficiency will contribute to the economy-wide transition to net zero and supports Australia's commitment to the Glasgow Breakthrough Agenda on Agriculture (GBAA) at COP27 to make "climate resilient, sustainable agriculture the most attractive and widely adopted option by farmers everywhere by 2030." Ongoing commitments to innovation and adaptation will support continued agricultural productivity and promote food security in difficult conditions, and as our climate changes.

Case study: Future Drought Fund (FDF)

The FDF commenced in June 2020 and is an investment by the Australian Government to build drought resilience in Australia's agriculture sector, landscapes and communities. The investments made by the Future Drought Fund centre around four connected themes:

- Better Climate Information: enabling farmers, businesses, and communities to better understand the climate risks they face and their resilience to those risks
- Better Planning: helping farmers and regions proactively plan for drought and other risks
- Better Practices: developing and adopting farming and land management practices and technologies that improve resilience to drought
- Better Prepared Communities: building and supporting the community leaders, networks and organisations that underpin community resilience

Since commencement, a total of $420 million has been allocated to drought resilience initiatives. To date, the fund has achieved the following outcomes:

1. Better climate Information
    a. Two digital tools launched to help users understand climate risks
2. Better planning
    a. Over 7,900 farmers accessed direct support to improve business and risk management skills
    b. 21 regions have drought resilience planning underway
3. Better farming and land management practices
    a. Eight Drought Resilience Adoption and Innovation Hubs providing regionally focused support
    b. 150 projects underway to support development, trial, demonstration and extension of drought resilience practices.
4. Better prepared communities.
    a. 93 organisations and more than 900 people supported to develop leadership skills to build and drive locally led actions to build community drought resilience.

While Australia is currently experiencing a La Nina event which means large parts of the country are exposed to increased rainfall, inevitably there will be another drought. Climate change means that more frequent and longer lasting and intense droughts are more likely. The FDF is a proactive way to build preparedness and resilience to future droughts.