



## Parliamentary inquiry into food security in Australia

The University of the Sunshine Coast welcomes the opportunity to provide a submission to the Agriculture Committee's inquiry into Food Security in Australia.

### Introduction

As the Committee notes, food security is a growing issue nationally and internationally, with population growth, war, weather, and climate all posing risks to the availability and accessibility of food.

Food security can be addressed through a multitude of avenues, guided by the established and more recently proposed pillars of food security: availability, access, utilisation, stability, sustainability, and agency.<sup>1</sup> Application of these pillars may include consultation with First Nations people, renewable energy production, optimisation of agricultural practices, supporting local food environments, and changing food knowledge, attitudes, and behaviours.

### Impacts of climate change and global economy on Australian food security

As the Public Health Association Australia notes, mitigating the impacts of climate change will positively impact Australian food security.<sup>2</sup> Reducing impacts on farming conditions, ensuring corporate responsibility, reducing global conflict, and building resilience to extreme weather events are all key to ensuring food security.

Changes to environmental conditions place pressure on food supply. Thus, seeking to reduce impacts of climate change may assist in maintaining farming productivity and strengthening Australian food systems. Changing environmental conditions may, for example, have impacts on timing of planting and harvest, pest and disease outbreaks, crop yields and quality, and livestock wellbeing and productivity.<sup>3</sup> Impacts can be felt in food pricing resulting in increasing food insecurity for population groups such as low-income earners.<sup>4</sup> Extreme weather events impact on farming yields, food transport, and food access, compounding the presence of food insecurity. Compared to more urban areas, regional areas appear to have lower resilience to price impacts of extreme weather events and thus should be a focus of strengthening Australian food security.<sup>5</sup>

War and conflict also impact food security through disruptions to the global economy, including through supply chains (e.g. availability of essential food systems inputs like fertilisers), food exports, and the associated flow-on effects to food costs. For example, the Ukraine crisis triggered food shortages for the world's poorest people related to wheat, maize, and sunflower seed products.<sup>6</sup>

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<sup>1</sup> Clapp J, Moseley WG, Burlingame B, Termine P. The case for a six-dimensional food security framework. *Food Policy*. 2021 Oct 27:102164.

<sup>2</sup> PHAA. Climate Disruption, the Food System and Food Security. Policy Position Statement. Public Health Association Australia, 2021. <https://www.phaa.net.au/documents/item/5251>

<sup>3</sup> Hughes, N., Lu, M., Soh, W. and Lawson, K. (2020) Simulating the effects of climate change on the profitability of Australian farms. ABARES working paper, Canberra, Australia

<sup>4</sup> Victorian Agency for Health Information (2017) Challenges to healthy eating – food insecurity in Victoria: findings from the 2014 Victorian Population Health Survey. Melbourne, Australia

<sup>5</sup> Singh-Peterson L, Shoebridge A, Lawrence G. Food pricing, extreme weather and the rural/urban divide: A case study of Northern NSW, Australia. *Journal of Food Security*. 2013 Nov 21;1(2):42-8.

<sup>6</sup> United Nations. (2022). The Sustainable Development Goals Report 2022. rep. United Nations. Available at: <https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022.pdf> (Accessed: November 21, 2022).

Lastly, the contribution of large corporations producing nutrient poor, highly processed foods are often accompanied by adverse environmental impacts such as high water use in food production and reliance on single-use plastics for food packaging. Australia exports approximately 70% of total agricultural production.<sup>7</sup> Legislation to assist large corporations to reduce their carbon footprint and be responsible for their product end of life is a component of addressing climate change and thus Australian food security.

### **Consultation with First Nations peoples**

First Nations peoples are disproportionately impacted by food insecurity in Australia.<sup>8</sup> As traditional custodians of the land, waterways and biodiversity that underpin food systems, supporting First Nations peoples to apply traditional food production knowledge and practices could enhance food security.

Many existing initiatives can be upscaled in supporting food security. International initiatives supported by University of the Sunshine Coast researchers can be platforms to learn from in addition to local First Nations programs and businesses. One such example is the increase in economic wellbeing and food security through supporting development of a local seaweed supply chain that has been demonstrated in Pacific regions.<sup>9</sup> Our researchers are working with First Nations peoples to transfer traditional knowledge from the Pacific and reinvigorate knowledge of seaweed for Indigenous Australians. Contemporary and traditional production methods offer a variety of income-generating opportunities, including medicine, fertiliser, and food, all of which contribute to addressing food security.

### **Local food policy and investment in sustainable farming practices**

Building and supporting local food environments through Federal, state, and local government policy, funding and collaboration would support enhanced food security. Many initiatives already exist to reduce food insecurity and shift the food supply to be more circular, for example Brisbane City Council and the University of the Sunshine Coast community gardens. Continued support and expansion of such initiatives will play a role in maintaining food security.<sup>10</sup>

There is a need to consider opportunities and incentives for urban agriculture to further support access and availability to nutritious foods. Initiatives such as community gardens and urban foodscapes create opportunities to increase food literacy, community resilience, food availability and access, and food waste management. Community settings, such as educational institutions, provide opportunities for urban agriculture and integrated solutions. Examples of urban agriculture in a tertiary education setting include the University of the Sunshine Coast 'Moving Feast' garden and On-Site Composting Apparatus (OSCA).<sup>11</sup>

Increased support for regenerative farming practice initiatives and research is required to safeguard Australian food security. Regenerative farming practices may contribute to mitigation of climate

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<sup>7</sup> Agricultural and food trade. Australian Government Department of Foreign Affairs and Trade. Available at: <https://www.dfat.gov.au/about-us/publications/trade-investment/trade-at-a-glance/trade-at-a-glance-2015/agriculture-and-food-trade> (Accessed: November 18, 2022).

<sup>8</sup> PHAA. Supporting document for the Joint Policy Statement on: Food Security for Aboriginal & Torres Strait Islander Peoples. Public Health Association Australia. Report No.: 3825.

<sup>9</sup> Swanepoel L, Tioti T, Eria T, Tamuera K, Tiitii U, Larson S, Paul N. Supporting women's participation in developing a seaweed supply chain in Kiribati for health and nutrition. *Foods*. 2020 Apr;9(4):382.

<sup>10</sup> Sarker, A., Bornman, J. and Marinova, D. (2019) A Framework for Integrating Agriculture in Urban Sustainability in Australia. *Urban Science* 3 (2): 50

<sup>11</sup> On-site composting apparatus (OSCA) [Internet]. UniSC. University of the Sunshine Coast; [cited 2022Dec1]. Available from: <https://www.usc.edu.au/about/sustainable-unisc/waste-and-recycling/on-site-composting-apparatus-osca>

change, while also improving farming efficiency and capacity, ultimately increasing availability and access to nutritious foods. There is an opportunity to learn from and scale up regenerative farming techniques and innovative research that mitigate or allow adaptation to climate variability. Examples include plant cultivar or animal optimisation, permaculture and syntropic farming.<sup>12</sup>

Current livestock practices contribute to climate change impacts; however, supporting shifts toward nutrient cycling and initiatives to reduce livestock emissions are avenues to both reduce impacts toward climate change and maintain their inclusion in dietary patterns as valuable sources of macro- and micronutrients.<sup>13</sup> University of the Sunshine Coast researchers are at the forefront of land and sea-based seaweed farming technology to supplement the diets of cattle, in order to reduce methane production and cut greenhouse gas emissions. An additional consideration is supporting use of crops that have optimised nutritional profiles to meet local population nutritional and health needs as this is supportive of Australian food security.<sup>9</sup>

### **Promote healthy, sustainable dietary patterns**

Changing food knowledge, attitudes, and behaviours can support food security. Healthy dietary patterns are associated with lower environmental burden and better health outcomes,<sup>14</sup> however, there is a need to educate and support Australians to enable behaviour change. Supporting and enabling families and communities to eat nutritious, minimally processed food can result in improved health outcomes and reduce the environmental food print of population dietary patterns. Further government support and funding for nutrition professionals to educate the Australian public is required.

Change in Australian perceptions and choices of foods can assist in strengthening food security. Nutrition and dietetics professionals are well placed to address the impact of climate change, inequities and disruption of the food system as future food system leaders and food equity brokers<sup>15</sup> and can play a key role in making sustainable food choices more appealing and convenient.<sup>16</sup> Shelf stable foods such as canned vegetables and legumes are health-enhancing and present a cost-effective and convenient alternative to foods presently more carbon intensive such as meat. Additionally, improving consumer acceptance of these foods can both support health and contribute to a more resilient community during food shortages and increases in pricing of fresh fruits and vegetables.<sup>17</sup> Research undertaken by the University of the Sunshine Coast can inform understanding of perceived healthiness of sustainable food sources.<sup>18</sup>

It is important to consider the inputs required to produce any food in the system, thus the key inputs such as water, fertiliser and energy required for food processing and storage must be assessed and

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<sup>12</sup> Nguyen NH. Genetic improvement for important farmed aquaculture species with a reference to carp, tilapia and prawns in Asia: achievements, lessons and challenges. *Fish and Fisheries*. 2016 Jun;17(2):483-506.

<sup>13</sup> Nilsson J, Martin M. Exploratory environmental assessment of large-scale cultivation of seaweed used to reduce enteric methane emissions. *Sustainable Production and Consumption*. 2022 Mar 1;30:413-23.

<sup>14</sup> Willett W, Rockström J, Loken B, Springmann M, Lang T, Vermeulen S, Garnett T, Tilman D, DeClerck F, Wood A, Jonell M. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet*. 2019 Feb 2;393(10170):447-92.

<sup>15</sup> Boak R, Palermo C, Beck EJ, Patch C, Pelly, F, Wall, C, Gallegos, D. A qualitative exploration of the future of nutrition and dietetics in Australia and New Zealand: Implications for the workforce. *Nutrition and Dietetics*, 2022, Sept; 79 (4) 427-437.

<sup>16</sup> Barbour L, Bicknell E, Brimblecombe J, Carino S, Fairweather M, Lawrence M, Slattery J, Woods J, World E. Dietitians Australia position statement on healthy and sustainable diets. *Nutrition & Dietetics*. 2022 Feb;79(1):6-27.

<sup>17</sup> Thurecht R, Pelly F, Cooper S. The influence of current food and nutrition trends on dietitians' perceptions of the healthiness of packaged food. *Public Health Nutrition*, 2020 April, 23 (12) 2124-2131.

<sup>18</sup> Taghizadeh-Hesary F, Rasoulnezhad E, Yoshino N. Energy and food security: Linkages through price volatility. *Energy Policy*. 2019 May 1;128:796-806.

improvements sought. The shift toward a renewable energy supply may play a role in reducing the resources required to produce foods such as frozen vegetables.<sup>19</sup>

### **Summary**

Strengthening Australian food security can be pursued through consultation with First Nations people, renewable energy production, optimisation of agricultural practices, supporting local food environments, and supporting shifts in population food knowledge, attitudes, and behaviours.

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<sup>19</sup> Renewable energy – powering a safer future, United Nations. United Nations. Available at: <https://www.un.org/en/climatechange/raising-ambition/renewable-energy> (Accessed: November 18, 2022).