

**Submission
No 62**

FOOD PRODUCTION AND SUPPLY IN NSW

Organisation: Vegan NSW

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The Committee Secretary
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Parliament of New South Wales

Vegan NSW (VNSW) Ltd is a not-for-profit charity and registered association working to promote veganism, support vegans, and support the vegan movement. Veganism is a way of living “that seeks to exclude, as far as is possible and practicable, all forms of exploitation of, and cruelty to, animals for food, clothing or any other purpose.”¹ Vegan NSW is the only community group focused solely on representing the NSW vegan community.

Each month we engage with and provide services to well over 10,000 people in NSW. Vegan NSW brings a perspective to the public discourse that promotes the well-being of animals, while remaining committed to social justice for all - both humans and other animals. Vegan NSW wishes to thank the Committee Secretariat for the opportunity to contribute to this issue. Our response addresses the interweaving themes of the terms of reference.

1. Improving food security and equitable access to food.
2. Reducing food waste and destruction.
3. Developing technologies to bring food production into cities.
4. Preserving productive land and water resources.
5. Managing the impact of climate change.
6. Limiting the impact food production has on the environment, including overfishing.
7. Addressing complex challenges to food production including declining pollinating species and productive fertilisers.
8. Consideration of workforce challenges and skills development.
9. Development and growth of the food industry (raw or processed) as an export.
10. Implications for quality control and labelling of processed/manufactured food.
11. Consideration of Indigenous food and land management practices.

Term 1: Improving food security and equitable access to food

¹ The Vegan Society. 2020. Definition of veganism | The Vegan Society. [ONLINE] Available at: <https://www.vegansociety.com/go-vegan/definition-veganism>. [Accessed 30 September 2020].



Food security, as defined by the United Nations' Committee on World Food Security, means that all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life.²

Australia produces food for more than twice its population. Due to its low population numbers and high levels of food production, Australia may be considered relatively “food secure”^{3, 4} compared to other countries. However, producing food is not enough. Our food supply system also needs to become resilient to the emerging threats of climate change and supply chain disruptions. We have seen the impact of extreme weather events like the black summer of 2019-2020 and the global Covid-19 pandemic impacting food supply and distribution. These serve as a reminder that food security is not a permanent advantage.

Another reminder is that producing enough food does not imply equitable access to food. Equity in access is a function of socio-economic justice, which we see failing when we consider the population numbers that are food insecure in Australia.

An estimated 4% and 13% of the general population and 22% to 32% of the Indigenous population lack food security⁵ for reasons such as material hardship, inadequate financial resources, lack of nutrition literacy and lack of access to affordable healthy food. There is currently no cohesive federal policy platform underpinning the goal of food security in Australia (Foodbank 2021⁶). This may be a point for the Government to make a start from.

The most efficient way of ensuring food security is to focus on supply of vegan or plant foods, such as legumes, grains, vegetables and fruit. Plant based protein sources require less water to produce, and therefore are more appropriate for our climate, and a more secure source of protein than animal-based protein sources. This also eliminates unnecessary animal suffering.

Term 2: Reducing food waste and destruction

Food waste is estimated to cost the Australian economy \$20 billion each year. Each year we waste around 7.6 million tonnes of food across the supply and consumption chain – this wastage equals about 312 kg per person, equivalent to around one in five bags of groceries

² <https://www.ifpri.org/topic/food-security>

³ Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES). 2020. *Agricultural Commodities: March Quarter 2020*. Canberra: Australian Bureau of Agricultural and Resource Economics and Sciences.

⁴ ———. 2020b. Australia is one of the most food secure countries in the world. Available via www.awe.gov.au/abares/news/media-releases/2020/australia-most-food-secure-countries-world.

⁵ *Understanding food insecurity in Australia*. (2020, August 31). Australian Institute of Family Studies. <https://aifs.gov.au/cfca/publications/understanding-food-insecurity-australia>

⁶ Foodbank. 2021. National food security strategy. Available via www.foodbank.org.au/national-food-security-strategy/?state=nsw-act



or \$2,000 to \$2,500 per household per year (FIAL, 2021⁷). More than 50% of retail food waste goes into landfill in Australia. Food waste accounts for approximately 3% of Australia's annual greenhouse gas emissions.

Australia uses around 2600 gigalitres of water to grow food that is wasted – this equates to the volume of water in five Sydney Harbours. The amount of land used to grow wasted food covers more than 25 million hectares, a landmass larger than the state of Victoria⁸.

Reducing food waste demands action across the supply chain and supermarkets and behaviour change at the consumer/household levels. Currently, the two largest supermarkets in Australia, Coles and Woolworths, manage their food wastage by donating surplus and unsold food to charities or for animal feed. While helpful for people in need, donating food alone does little to address the structural problems of the supply chain (Richards & Hurst, 2016⁹).

There is also the issue of packaged food that is close to their use by dates. A report card on American supermarkets' path to zero food waste (Molidor & Feldstein, 2019¹⁰) finds that use by dates are provided by manufacturers as a suggestion to indicate the time till when the food product will taste fresh. For most products there are no physiological risks if they are consumed close to or after the use-by date. Yet majority consumers "will not buy" such products. To sell products approaching their use by dates, supermarkets regularly mark down their prices. But most often this is done too late, which results in substantial unsold but still consumable inventory getting tossed into waste.

While all types of food waste is concerning, there is an added horror when it involves animal products. The unnecessary suffering and death experienced by animals considered 'products' for human consumption (unnecessary as the evidence shows that animal products are not necessary for human health) is made even more appalling when the animal's unpleasant life and untimely death is ultimately for naught.

Charities like Foodbank, OzHarvest and SecondBite help supermarkets and retail outlets share their surplus food with people in need. Together these organisations have diverted a large amount of food from ending up in landfills. This is a significant contribution considering in Australia, the annual food waste in landfills produces methane to an equivalent of 6.8 million tonnes of carbon dioxide.

⁷ FIAL (2021). *National Food Waste Strategy Feasibility Study - Final Report*. Retrieved November 1, 2021, from <https://www.fial.com.au/sharing-knowledge/food-waste>

⁸ Australia Department of Agriculture, Water, and Environment. (n.d.). *Tackling Australia's food waste*. Retrieved November 1, 2021, from <https://www.awe.gov.au/environment/protection/waste/food-waste>

⁹ Richards, C., & Hurst, B. (2016, February 29). *Powerful supermarkets push the cost of food waste onto suppliers, charities*. The Conversation. Retrieved February 20, 2022, from <https://theconversation.com/powerful-supermarkets-push-the-cost-of-food-waste-onto-suppliers-charities-54654>

¹⁰ Molidor, J., & Feldstein, S. (2019, September). *Slow Road to Zero: A report card on U.S. Supermarkets' Path to Zero Food Waste*. The Center for Biological Diversity. https://www.biologicaldiversity.org/programs/population_and_sustainability/grocery_waste/pdfs/Slow-Road-to-Zero-2019.pdf



Although this is a commendable effort, supermarkets are largely at fault here, having set unnatural cosmetic standards for fresh produce, which means a huge amount of “imperfect looking” but perfectly edible and nutritious produce (estimated by Harris Farm markets to be up to 25 per cent of farmer’s crops) does not come to supermarket shelves.

Along with being an environmental and animal cruelty issue, food waste is also a social issue highlighting the inequity in our society. For instance, on one hand fresh and packaged food is regularly binned by retail outlets, while on the other hand we have a concentration of food deserts in Western Sydney. These are areas that have limited access to shops selling fresh and healthy food, and instead have a greater number of fast-food outlets.

Aligning with the UN’s Sustainable Development Goal 12.3, Australia’s National Food Waste Strategy aims to reduce food waste by 50% by 2030 (Australian Government 2017). This is a needed target, but it remains to be seen how it will be met with the Government not having the regulatory teeth to penalise food waste as done by France with their 2016 food waste ban.

In NSW, the Love Food Hate Waste ((Love Food Hate Waste, 2022¹¹) program is a good initiative to educate on food waste prevention. There is however much more the Government can do to reduce food waste. Some suggestions are to:

- Introduce disincentives for establishments found wasting edible and safe food
- Support grocery markets dedicated to imperfect produce and packaged goods nearing use by dates
- Promote the use of dynamic pricing technology which enables supermarkets to track upcoming use-by dates for their inventory and apply cascading discounts – so that all food gets sold - by /before their use by date

Term 3: Developing technologies to bring food production into cities

Covid-19 has laid bare the vulnerability of our food supply chain. Recent events have shown how a disruption of a few days can empty out supermarket shelves in urban areas. A large proportion of the Australian population lives in urban areas and is dependent on supply chains. With climate change extreme events becoming increasingly common, there is an urgent need to weatherproof urban food supply. This can be possible only when food production moves closer to cities.

Urban agriculture can ensure provision of fresh food produce, reduce food spoilage and dependence on long and vulnerable supply chains, buffer against price shocks, and create new services and economic opportunities for city dwellers.

There are many cities internationally who have demonstrated successful urban food production like - Food Field in Detroit, Michigan (USA), Lufa Farms in Montreal (Canada), Prinzessinnengarten in Berlin (Germany) and Sky Greens vertical farm in Singapore.

¹¹ *Love Food Hate Waste*. (2022). Environment Protection Agency. Retrieved February 20, 2022, from <https://www.lovefoodhatewaste.nsw.gov.au/about-food-waste>



Sydney too has examples of home-grown innovative initiatives, like:

- Pocket City Farms - an inner-city urban organic farm catering to the local community,
- Westpac Cultivate – an experimental urban farm and education space, and
- South Eveleigh Native Rooftop Farm – Australia’s first indigenous urban farm for edible, medicinal and culturally significant plants.

Currently, as per the University of Technology Sydney's Sydney Food Futures (2015-2016) report¹², 20 percent of Sydney’s food comes from within the Sydney basin. However, with the city’s enormous urban sprawl, food production could shrink by 60 per cent, and the Sydney basin’s capacity to meet its residents’ food demand could drop from 20 percent to 6 percent.

High density apartment housing has caused land to become a scarce commodity. There is therefore a need for the Government to promote vertical and rooftop gardens. This requires a shift in strategy from looking for land to leveraging the vast real estate of rooftops available across our cities. There are established examples of rooftop gardens serving urban communities that the Government could learn from - like the Boston Medical Centre and InterContinental New York Barclay Hotel in the USA and the Fairmont Hotel in Vancouver, Canada.

In Australia, early mover start-up companies are exploring production of high value produce such as leafy greens, herbs and plant seedlings using vertical multi-level modular systems in urban areas. Such innovations can make healthy and fresh food available and accessible, especially in food desert areas.

The benefit of urban agriculture to the economy is expected to be upwards of \$4.5 billion. In addition there are health benefits of having access to fresh, healthy and affordable seasonal produce.

Per the Australian Bureau of Statistics (ABS, 2015a¹³), approximately 93.0% of Australian adults do not meet the recommended daily vegetable intake. This has a direct link to health outcomes, as reported by Deloitte Access Economics, which estimates that there is approximately \$978.5 million of government health expenditure attributable to low consumption of vegetables in 2015-16.

This again highlights the advantage of plant foods - plant foods can be cultivated in smaller places without the impost of cruelty on animals held in close quarters and the associated overuse of antibiotics to prevent animal diseases brought about by crowded conditions.

Term 4: Preserving productive land and water resources

¹² University of Technology Sydney. (2016). *Sydney's Food Futures*. Institute for Sustainable Futures. <http://www.sydneyfoodfutures.net/>

¹³ Australian Bureau of Statistics 2015a, 4364.0.55.001 *National Health Survey: First Results 2014-15, Australia*, Australian Government, Canberra.



In Australia, 53 per cent of the landmass is used for agriculture (ABS, 2010¹⁴). Livestock grazing uses 80% of this area, while the remaining 20% of the area is used by more intensive grazing, rainfed cropping and irrigated agriculture (ABS, 2003/2004 survey). Being the driest populated continent, its land and water resources are finite and very valuable. There is a need for Australia to be prudent in how it is using its resources for food production. Current practices however paint a picture to the contrary. For example:

- It is now widely known that livestock farming causes harm to the environment. Beef especially is one of the most environmentally detrimental meats to produce, with one kg of beef generating 60 kgs of greenhouse gas emissions. In addition, it causes land clearing, soil erosion and consequent sedimentation of waterways. Yet, 43 per cent of the country's landmass is used for producing beef,¹⁵ a clear over allocation of land resources.
- Irrigation covers less than 1 percent of the area under agriculture. Yet the over allocation of water to irrigate just this fraction of land is threatening the demise of the entire Murray Darling basin. Recent massive fish kill events in the Menindee Lakes was directly related to reduced water flows from over extraction and drought.

The strain on our land and water resources means that food produced in Australia does have a high environmental cost. Further, most of this food is not consumed in the country but is exported.

- Australia exports 70% of its production (Prasad & Langridge, 2012¹⁶) and is the world's second largest exporter of beef with earnings of more than \$8 billion

The profitable proposition of being a net food exporter wanes if export earnings are to be compared with the 'real cost' on land, water and GHG emissions. Increase in environmental awareness is causing consumer preferences, especially in affluent economies, to gradually steer away from food with high environmental impact. Such a trend will eventually have an impact on Australian-grown foods if measures are not taken to ameliorate the environmental impacts of their production.

This may be time to seriously consider whether Australia needs to produce so much food, whether dryland farming which Australian farmers are already experts in should be promoted rather than irrigation, and how existing resources can be optimised to generate innovative and value added services from agriculture.

Term 5: Managing the impact of climate change

¹⁴ ABS, 2010b. Agricultural Commodities, 2008–09, Australia Australian Bureau of Statistics Catalogue No. 7121.0, Canberra

¹⁵ WWF-Australia. (2018). *Beef*. <https://www.wwf.org.au/what-we-do/food/beef>

¹⁶ Prasad, S., & Langridge, P. (2012, December). *Australia's Role in Global Food Security*. Office of the Chief Scientist. <https://www.chiefscientist.gov.au/sites/default/files/OPS5-FoodSecurity-ForWeb-2.pdf>

Agriculture is one of Australia's most climate-vulnerable industries (DAWE, 2021¹⁷). The Australian Bureau of Agricultural and Resource Economics and Sciences has noted that climate changes have already had a detrimental impact on cropping productivity in Australia (ABARES 2019¹⁸), with the potential of Australian wheat yields reducing by 27% since 1990 (Hochman et al. 2017¹⁹).

Findings from the Intergovernmental Panel on Climate Change (IPCC), as cited by a paper from Future Directions (Collet, 2014²⁰), forecast major declines in production of between 2050 and 2100 of crops like wheat, barley, pulses and oats in the South-West, and rice, sugarcane, and horticulture in the Murray-Darling basin.

These forecasts mean Australia could turn from a net exporter into a net importer of food if ameliorative measures against climate change are not taken soon.

It is now widely acknowledged that animal agriculture is a leading cause of climate change. Animal protein production is already the largest source of deforestation due to land clearing for grazing and growing feed crops. Global livestock emissions, according to [FAO](#), represent 14.5% of all anthropogenic greenhouse gas (GHG) emissions. Any further deforestation would now directly contradict the [UN climate change goals](#) of securing global net-zero and 1.5 degree warming limit by mid-century.

We need to urgently embrace agricultural practices that are less resource intense and therefore more sustainable, such as avoiding animal agriculture and turning to more sustainable plant foods for human consumption.

Term 6: Limiting the impact food production has on the environment, including overfishing

In Australia, direct livestock emissions account for about 70% of greenhouse gas emissions by the agricultural sector and 11% of total national greenhouse gas emissions²¹. This makes Australia's livestock the third largest source of greenhouse gas emissions after the energy

¹⁷ Department of Agriculture, Water and the Environment (DAWE). 2021. Climate change and the agricultural sector. Available via <https://www.awe.gov.au/agriculture-land/farm-food-drought/climatechange>

¹⁸ Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES). 2019. Farm performance and climate. Available via <https://www.awe.gov.au/abares/research-topics/climate/farm-performance-climate>.

¹⁹ Hochman, Z., Gobbett, D. and Horan, H. 2017. Climate trends account for stalled wheat yields in Australia since 1990. *Global Change Biology*, 23(5): 2071-2081.

²⁰ Collet, J. (2014, June 27). *Climate Change and Australian Food Security*. Future Directions International. <https://www.futuredirections.org.au/publication/climatechange-and-australian-food-security/>

²¹ *Reducing livestock greenhouse gas emissions | Agriculture and Food*. (2021). Department of Primary Industries and Regional Development. <https://www.agric.wa.gov.au/climate-change/reducing-livestock-greenhouse-gas-emissions>

and transport sectors. Livestock are the dominant source of methane (CH₄) and nitrous oxide (N₂O), accounting for 56% and 73%, respectively, of Australia's emissions.

Livestock grazing is also responsible for land clearing in Australia. Australian agriculture is highly dependent on insect pollination. However, the loss of remnant vegetation as a result of land clearing threatens valuable pollinating species like the western honeybee, *Apis mellifera*²² and native insects.

Any conversation about limiting the environmental impact of food production is therefore not complete if reduction of livestock cultivation is not discussed. This is attested to by a growing body of research.

Poore & Nemecek (2018²³) have estimated that moving from current diets to a diet that excludes animal products has transformative potential. It can:

- reduce food's land use by 3.1 (2.8 to 3.3) billion ha (a 76% reduction), including a 19% reduction in arable land;
- reduce food's GHG emissions by 6.6 (5.5 to 7.4) billion metric tons of CO₂ eq (a 49% reduction);
- reduce acidification by 50% (45 to 54%);
- reduce eutrophication by 49% (37 to 56%); and
- reduce freshwater (withdrawals by 19% (-5 to 32%)) for a 2010 reference year.

Further, Hayek et al. (2020²⁴) estimate shifts in global food production to plant-based diets by 2050 could lead to sequestration of 332–547 giga tonnes of CO₂. This is equivalent to 99–163% of the CO₂ emissions budget consistent with a 66% chance of limiting warming to 1.5 °C.

This again demonstrates the opportunities and importance of moving away from animal agriculture and the promotion of plant foods.

Term 7: Addressing complex challenges to food production including declining pollinating species and productive fertilisers

See Section 6

Term 8: Consideration of workforce challenges and skills development

Transforming food production from environmentally destructive to sustainable practices will obviously come with workforce challenges. However, this has occurred throughout history, as new technologies or trends have made other practices and skills obsolete.

²² Cunningham, Saul & FitzGibbon, Frances & Heard, Tim. (2002). The future of pollinators for Australian agriculture. *Crop and Pasture Science*. 53. 893-900. 10.1071/AR01186.

²³ Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. *Science*, 360(6392), 987–992. <https://doi.org/10.1126/science.aaq0216>

²⁴ Hayek, M. N., Harwatt, H., Ripple, W. J., & Mueller, N. D. (2020). The carbon opportunity cost of animal-sourced food production on land. *Nature Sustainability*, 4(1), 21–24. <https://doi.org/10.1038/s41893-020-00603-4>

Our key recommendation here is that the government is proactive and generous with assisting the transition of workers, businesses and regions from current practices to practices and products that will support us to transform into a sustainable future. The pandemic has demonstrated how government support, incentives and disincentives can be pivotal for the outcomes of industries and regions under stress.

Term 9: Development and growth of the food industry (raw or processed) as an export

To feed the world while addressing climate change requires the world population to move away from meat. Access to animal welfare information, and environmental concerns are already prompting a growing number of people to do so, with the younger demographic adopting vegan or flexitarian diets. The dietary shift is supported by leading scientific reports like the **IPCC Climate Change and Land report**²⁵ and the **EAT-Lancet scientific report**²⁶ which advocate transitioning to plant-based foods while reducing meat consumption.

Plant proteins are emerging as the next big innovation to address world nutrition while emitting less CO₂ and using a fraction of the land and water used for producing meat. This is an opportunity to meet a triple bottom line of economic, health and environmental outcomes and one that Australia should highly capitalise on.

Australia's research, development, and manufacturing infrastructure, coupled with its high-quality domestic production of legumes, grains, and pulses, positions it advantageously as a potential leader in the plant-based protein market. The think tank Food Frontier²⁷ highlights this as an avenue to provide new markets for Australian farmers and generate additional value in the agricultural supply chain. In 2018-2019, the plant protein industry generated approximately A\$150 million in retail sales²⁸, \$30 million in manufacturing and supported 265 jobs. At the current growth trajectory by 2030, the sector is expected to generate \$3 billion in retail sales, over \$1 billion in manufacturing and employ over 6,000 Australians.

The Government should promote innovation and provide funding in this area so Australian research groups can catch up with the research already taking place in the US, Europe, and Asia. Some work has already commenced, for instance: the University of Sydney is investigating²⁹ turning Australian-grown pulses into plant protein ingredients and foods, CSIRO is investigating pea protein, the University of Queensland is looking at algal

²⁵ IPCC. (2020). *Climate Change and Land*. Intergovernmental Panel on Climate Change. <https://www.ipcc.ch/srccl/>

²⁶ *The EAT-Lancet Commission on Food, Planet, Health*. (2019). EAT-Lancet Commission. <https://eatforum.org/eat-lancet-commission/>

²⁷ FoodFrontier. (2019a). *Meat Re-imagined*. https://www.foodfrontier.org/wp-content/uploads/2019/03/MeatReimagined_FoodFrontier.pdf

²⁸ FoodFrontier. (2019b). *Meat the Alternative*. <https://www.foodfrontier.org/wp-content/uploads/2019/09/Meat-the-Alternative-Food-Frontier.pdf>

²⁹ <https://www.sydney.edu.au/news-opinion/news/2021/09/07/putting-more-australian-pulses-into-the-plant-protein-market.html>

biotechnology, UTS Sydney is exploring lab-grown kangaroo meat and University of Melbourne is hosting the Future Food research initiative for alternative proteins.

Term 10: Implications for quality control and labelling of processed/manufactured food

It is important that food labelling is complete and informative for consumers:

Our recommendations for food labelling include:

- Health information - allergens, antibiotic use, other contaminants
- Animal harm - whether animals experienced harm, suffering or death to produce the product
- Environmental sustainability - how well does this product meet sustainability goals (food miles, water use, CO2 production)

Term 11: Consideration of indigenous food and land management practices

Economic growth of Australia has majorly rested on agriculture, which continues to provide the country with food and fibre for both international and domestic markets (Pollard 2000³⁰; Keogh et al. 2015³¹; Wu et al. 2019³²). The economic value provided by the sector is countered by the amount of land and water resources it uses (Turner et al. 2016).

Indigenous Australians over ~50,000 years developed a relatively stable system of land use grounded in a detailed awareness and knowledge of the dynamics and capacity of ecosystems (Bolton 1992³³). In comparison, the establishment of European farming methods post-colonisation led to significant environmental impacts, including land degradation (Lockie and Vanclay 1997³⁴) and structural decline (Yapp et al. 2001³⁵).

Modern Australia should listen and learn from values and agricultural practices of our ancient and contemporary First Nations peoples, and combine this sensitively with other existing and developing knowledge and values.

³⁰ Pollard, J. 2000. A hundred years of agriculture. In *Year Book Australia 2000*. Canberra: Australian Bureau of Statistics.

³¹ Keogh, M., Tomlinson, A. and Henry, M. 2015. *Assessing the Competitiveness of Australian Agriculture*. Canberra: Rural Industries Research and Development Corporation

³² Wu, W., Dawson, D., Fleming-Muñoz, D., Schleiger, E. and Horton, J. 2019. *The Future of Australia's Agricultural Workforce*. Canberra: CSIRO

³³ Bolton, G. 1992. *Spoils and Spoilers: A History of Australians Shaping their Environment*. Second edition. Sydney: Allen and Unwin.

³⁴ Lockie, S. and Vanclay, F. 1997. Critical Landcare. In S. Lockie and F. Vanclay (Eds.), *Critical Landcare*. Wagga Wagga: Charles Sturt University Centre for Rural Social Research.

³⁵ Yapp, G., Munro, R., Barson, M., Chartres, C., Hill, M. and Prendergrast, B. 2001. *Environmental Factors Affecting Australia's Livestock Industries: A BRS Report for Meat and Livestock Australia*. Canberra: Bureau of Rural Sciences.



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