BUILDING THE RESILIENCE OF MELBOURNE'S FOOD SYSTEM – A ROADMAP

Summary Briefing from Foodprint Melbourne

August 2022

Summary

- Recent shocks related to the **COVID-19 pandemic and the 2019-2020 bushfires** have revealed vulnerabilities in Melbourne's food system and created an opportunity to strengthen the resilience of the city's food system to future shocks
- Melbourne's food system will face **more frequent shocks and stresses in the future due to climate change**, including drought, heatwaves, storms and floods
- Shocks and stresses **increase food prices and food insecurity**, with the greatest impacts on those on low incomes who are already at risk
- There are **six key areas of opportunity** for strengthening the long-term resilience of Melbourne's food system to shocks and stresses – equitable access to nutritious food, regenerative and agroecological production systems, protected closed-loop and urban agriculture, circular food economies, local and regional food supply chains and sustainable livelihoods
- These six key areas of opportunity **align to ten of the 17 UN Sustainable Development Goals**
- **A Victorian food resilience plan** should be developed to strengthen the resilience of the state's food system to future shocks and stresses
- **Self-determination and food sovereignty of Victoria's First Nations peoples** should be at the centre of the state's food resilience plan. The plan should recognise the role of First Nations peoples as Custodians of the land, waterways and biodiversity that underpin our food system and their deep knowledge of sustainable land management

LORD MAYOR'S CHARITABLE FOUNDATION

THE UNIVERSITY OF MELBOURNE

Foodprint Melbourne

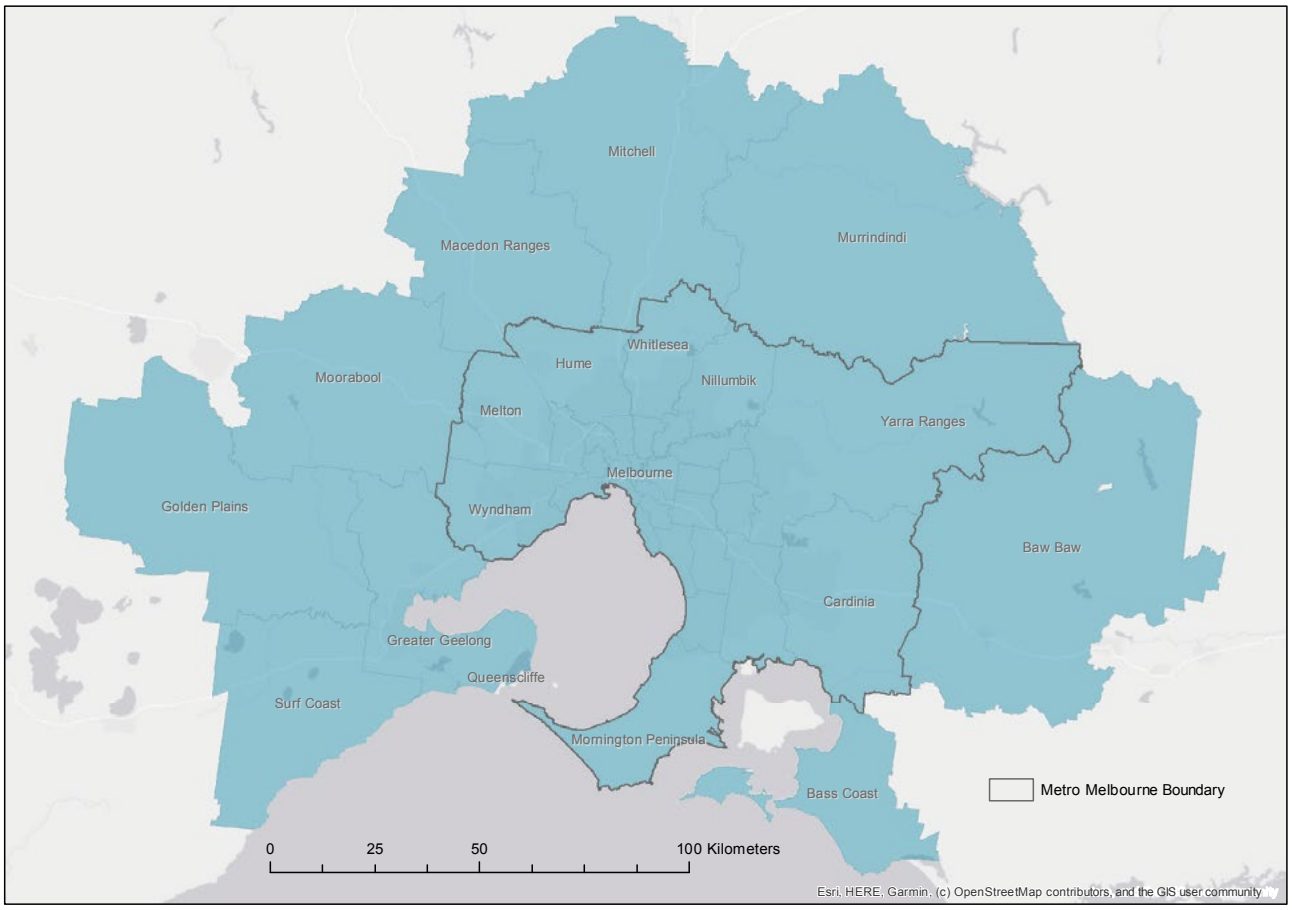
This briefing summarises the findings of the Foodprint Melbourne report *Building the resilience of Melbourne's food system – a roadmap*.[1] The report outlines a vision and roadmap of strategies for strengthening the resilience of Melbourne's food system to shocks and stresses.

The briefing focuses particularly on shocks and stresses related to climate change and pandemic, but also considers underlying food system stresses, such as high levels of food waste and declining supplies of the natural resources that underpin food production. The combined effects of these shocks and stresses undermine the resilience of food systems, drive up food prices and increase food insecurity.

The briefing builds on the findings of the report *The resilience of Melbourne's food system to climate and pandemic shocks*,[2] which identifies the impacts of climate shocks and the COVID-19 pandemic on Melbourne's food system and the opportunities to build the resilience of the city's food system to future shocks and stresses.

Foodprint Melbourne is based in the School of Agriculture and Food at the University of Melbourne. The project is funded by the Lord Mayor's Charitable Foundation and involves a number of project partners, including the City of Melbourne and other local governments in Melbourne's city region.*

Figure 1 Melbourne's city region



* Melbourne's city region was the focus of our assessment. This region was defined as the 31 local government areas that make up Metropolitan Melbourne and another 9 local government areas that form a second peri-urban ring around Greater Melbourne

Challenges to the resilience of Melbourne's food system

During the COVID-19 pandemic, many people in Melbourne experienced disruption to their food supply with empty supermarket shelves and temporary shortages of some staple foods. There were widespread impacts throughout food supply chains, disrupting the production and harvesting of crops, food processing, distribution and transport systems and the hospitality sector.

The COVID-19 pandemic came shortly after major bushfires in south-east Australia in 2019 and 2020, which also had impacts throughout food supply chains, including crop damage, livestock losses, transport disruption and the closure of food retail stores in affected areas.

When multiple shocks to food systems co-occur or follow closely on each other, it has a compounding effect. Food systems around the world are being disrupted more often and more severely, particularly due to climate change.[3] Climate change is likely to lead to more frequent and more severe droughts in south-east Australia, as well as more frequent heatwaves, bushfires, storms and floods. Melbourne's food system will also feel the impacts of global geopolitical shocks, such as Russia's invasion of Ukraine in 2022.

In addition to climate and pandemic and geopolitical shocks, the resilience of food systems is affected by ongoing environmental stresses. These stresses include high levels of food waste and the impacts of intensive agriculture, which undermine the natural resource base on which food production depends. The recommendations in this roadmap aim to increase the resilience of Melbourne's food system to long-term ecological stresses, as well as to sudden shocks.

Food system resilience

Food system resilience means that the food system can continue to deliver an adequate supply of nutritious and culturally acceptable food to everyone, even during shocks to the system.[4] Resilience is also about the capacity of the food system to adapt to changing circumstances and to transform, building longer term resilience to future shocks and stresses. Community resilience is central to the resilience of the food system – our capacity to respond personally and collectively.[5]

Food insecurity

Food system shocks lead to rising food insecurity, with the greatest impacts on those who are already at risk of food insecurity. During the first year of the COVID-19 pandemic in 2020, there was a 47% increase in demand for food relief from charities in Australia.[6] New groups of people began experiencing food insecurity due to the economic crisis accompanying COVID-19. They included casual workers who had lost jobs and people on temporary visas who were ineligible for government support, such as international students.[7]

The drivers of food insecurity are complex, but a key driver is low income. Households on low incomes spend more of their disposable income on food than those on higher incomes, and are particularly vulnerable to rising food prices and other cost of living pressures. Food prices are rising due to a combination of pressures, including the COVID-19 pandemic and climate shocks.[8,9] The pressures on food prices are a long-term trend, and as food prices continue to rise, more vulnerable Victorians will become food insecure.

Vulnerability of food supply chains to shocks

Long supply chains have many potential points of disruption. During the COVID-19 pandemic, food supply chains were affected by border closures and transport disruption. Road closures also disrupted food freight in Victoria during the 2019-2020 bushfires, and extensive flooding in South Australia, New South Wales and Queensland in 2022 cut food supply routes, leading to temporary food shortages in some areas.

Food freight into Melbourne has the potential to be disrupted by a major bushfire or flooding event. These types of extreme weather events are likely to become more frequent and more severe due to climate change.[10] Food supply chains are highly dependent on labour. During the COVID-19 pandemic, labour shortages affected all parts of food supply chains, from food production through to food retail.

Insecure livelihoods in the agriculture and food industries

The livelihoods of Victorian farmers are under pressure from a growing 'cost price squeeze'. The cost of farm inputs, such as fuel, fertilisers and farm chemicals is rising, while there is downward pressure on food prices from the major supermarkets. Farmer livelihoods are also affected by the impacts of climate shocks and stresses and disruption due to the pandemic, which has increased the costs of labour and freight. Precarious employment affects the livelihoods of workers throughout the food system. Industries from production, processing and distribution, through to retail and hospitality have a high degree of casualised labour, low rates of pay, insecure jobs and poor working conditions.[11,12]

Impacts of climate change on food production

Melbourne is in a warming and drying region, and climate change is already having an impact on food production. Average farm profitability in Victoria is estimated to have fallen around 37% between 2000 and 2020 due to the impacts of climate change.[13] Climate change has systemic impacts across all facets of agricultural production, affecting the timing of planting and harvests, pest and disease outbreaks, crop yields and quality, and the well-being and productivity of livestock.[14] Extreme weather events associated with climate change, such as droughts, fires, storms and floods can have significant impacts on production.

Environmental impacts of food production

The long-term resilience of Melbourne's food system is undermined by the impacts of agriculture on the environment. Since colonisation, intensive approaches to agriculture that are ill-suited to Australia's ancient soils have undermined the ecosystems and natural resource base on which future food production depends.[15] Almost half of the land in Victoria is used for agriculture, most of it for grazing. Clearing of land for agriculture has had significant impacts on biodiversity in Victoria. There is a lack of data about land degradation in Victoria, but around 37% of land used in Victoria for dryland (non-irrigated) agriculture is estimated to be at risk of soil erosion.[16] Agriculture is the largest water user in Victoria,[17] and over-extraction of water for agriculture can degrade river systems.

High levels of food waste

High levels of food waste undermine the resilience of Melbourne's food system and the city's food security. Over 200 kilograms of food waste was generated per person per year in 2016 in feeding Melbourne. Around 40% of this waste is generated in households, restaurants and cafes. Around 60% is generated at earlier stages of the food supply chain.[18] The 2019-2020 bushfires in eastern Victoria and New South Wales also led to increased waste due to supply chain disruption,[19] and crops and food supplies were destroyed during extensive flooding on the east coast in 2022.

Roadmap for a resilient Melbourne food system

Shocks and stresses – such as COVID-19 and the 2019-2020 bushfires – reveal vulnerabilities in food systems. However, they also offer an opportunity to address the vulnerabilities to strengthen food system resilience to future shocks. Some shocks are so far-reaching in the way that they disrupt our lives that they create moments with the potential for transformation.

If the opportunity for food system transformation is to be harnessed effectively, it will require an integrated 'food systems' approach to promoting resilient, equitable, healthy and sustainable food systems. The recommendations in this section focus on actions that can be taken by government, industry and civil society organisations to strengthen the resilience of Melbourne's city region food system to future shocks and stresses.

There is a need for all levels of government to develop food resilience plans, which identify actions that will be taken to strengthen the resilience of the region's food system to future shocks and stresses. This briefing outlines strategies that could inform these actions. The strategies have been co-developed by a wide range of stakeholders from government, industry and civil society.

Food resilience plans should be underpinned by a commitment at all levels of government to ensure that citizens can realise their human right to food through dignified access to adequate food that is healthy, culturally appropriate and produced in ways that are sustainable, ensuring the right to food for future as well as current generations.

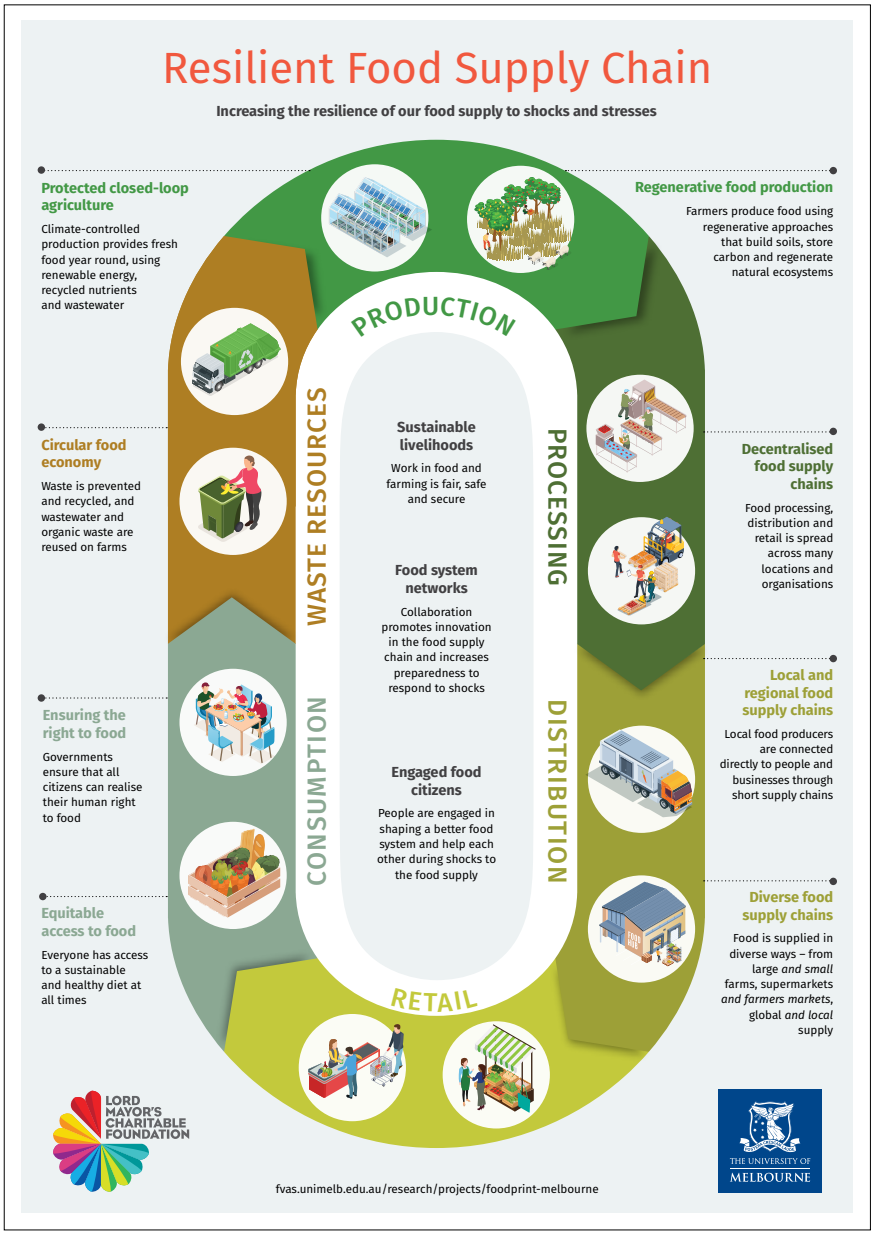


Table 1 Recommendations for a resilient food system

Overarching		
1.1	Develop a Victorian food resilience plan	
1.2	Build stakeholder and community networks to promote food system resilience	
1.3	Build food literacy and empower Victorians to shape the food system	
1.4	Strengthen protection for Melbourne's peri-urban agricultural land	
Equitable access to nutritious food		
2.1	Establish clear government responsibility in Victoria for ensuring the food security of citizens	
2.2	Legislate the Right to Food and embed it in all relevant policy frameworks	
2.3	Address the underlying causes of food insecurity by providing adequate income support and social protection	
2.4	Establish an integrated measurement and monitoring framework to assess food insecurity across Victoria	
2.5	Establish a Victorian 'peak body' to co-ordinate food relief	
Regenerative and agroecological production systems		
3.1	Support farming communities to co-develop regional plans for sustainable production systems that generate net zero emissions	
3.2	Support regenerative and agroecological farming approaches through state and local government agriculture policy	
3.3	Establish outcome-based metrics and benchmarks for sustainable agricultural land management, including regenerative and agroecological farming systems	
3.4	Incentivise farmers to adopt sustainable farming practices by paying them to provide ecosystem services and by providing loans and direct investment	
3.5	Provide learning opportunities to support farmers in adopting regenerative and agroecological practices and build the evidence base for these approaches	
3.6	Support Victorian Traditional Owners to recover and apply knowledge and practices of traditional food production	
Protected closed-loop and urban agriculture		
4.1	Review barriers to the development of protected closed-loop and urban agriculture.	
4.2	Invest in protected closed-loop agriculture through new funding mechanisms and tax incentives	

Protected closed-loop and urban agriculture											
4.3	Establish training pathways in protected closed-loop and urban agriculture to create a skilled local workforce		●		●				●	●	
4.4	Develop urban planning guidelines and templates for protected closed-loop and urban agriculture		●						●	●	
Circular food economies											
5.1	Develop integrated policy and regulatory frameworks to promote a circular food economy		●			●			●	●	●
5.2	Develop integrated assessment frameworks for costing the delivery and benefits of recycled water for agriculture		●			●			●	●	●
5.3	Investigate options for better matching the quality of water needed for different types of agriculture and crops as part of a 'fit-for-purpose' water framework		●			●			●	●	●
5.4	Implement strategies to prevent and reduce organic waste across the food supply chain		●						●	●	●
5.5	Improve uptake and use of organic inputs in agriculture		●						●	●	●
Local and regional food supply chains											
6.1	Invest in local food processing and distribution		●	●				●	●		
6.2	Review regulatory barriers to small-scale and artisanal food processing and distribution		●					●	●		
6.3	Promote resilient local and regional food supply chains through planning and agriculture policy		●					●	●		
6.4	Support the development of decentralised logistics and marketing systems		●					●	●		
6.5	Introduce provenance labelling to promote local and regional food products		●					●	●		
6.6	Strengthen government food procurement standards to give preference to Victorian produce and to pay farmers a fair price		●					●	●		
Sustainable livelihoods											
7.1	Promote compliance with fair and safe work conditions and provide a living wage for workers throughout the food system	●	●				●				
7.2	Provide diverse career and training pathways in the food and agriculture industries		●		●						
7.3	Support the growth and development of a regional agricultural workforce through housing provision		●				●	●			
7.4	Support new and aspiring farmers to access land, training and capital		●		●						

More information

This briefing was prepared by Rachel Carey and Maureen Murphy.

For more information about the Foodprint Melbourne project, including project reports and infographics, see the project **website** or contact:

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1 Carey, R., Murphy, M., Alexandra, L., Sheridan, J., Larsen, K. and McGill, E. (2022) *Building the resilience of Melbourne's food system – a roadmap*. University of Melbourne, Australia.

2 Murphy, M., Carey, R., and Alexandra, L. (2022) *The resilience of Melbourne's food system to climate and pandemic shocks.* University of Melbourne, Australia.

3 IPCC (2022) Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem (eds.)]. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. In Press.

4 Candy, S., Biggs, C., Larsen, K., and Turner, G. (2015) Modelling food system resilience: A scenario-based simulation modelling approach to explore future shocks and adaptations in the Australian food system. *Journal of Environmental Studies and Sciences* 5 (4): 712–731.

5 Smith, K. and Lawrence, G. (2014) Flooding and food security: A case study of community resilience in Rockhampton. *Rural Society* 23 (3): 216-228.

6 Foodbank Australia (2020) *Foodbank hunger report 2020*. Sydney, Australia.

7 McKay, F., Bastian, A. and Lindberg, R. (2021) Exploring the response of the Victorian emergency and community food sector to the COVID-19 pandemic. *Journal of Hunger and Environmental Nutrition* 16 (4): 447-446.

8 Louie, S., Shi, Y. and Allman-Farinelli, M. (2022) The effects of the COVID-19 pandemic on food security in Australia: A scoping review. *Nutrition & Dietetics* 79 (1): 28-47.

9 IPCC (2022) As above.

10 Murphy, M., Carey, R., and Alexandra, L. (2022) As above

11 Fair Work Commission (2021) *Decision – Application to vary the Horticulture Award 2021*, AM2020/104. Commonwealth of Australia.

12 DEDJTR (2016) *Victorian Inquiry into the Labour Hire Industry and Insecure Work – Final Report*. Department of Economic Development, Jobs, Transport & Resources. Melbourne, Australia.

13 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.

14 Victorian Government (2022) *Primary production climate change adaptation action plan 2022-2026*. Department of Jobs, Precincts and Regions, Melbourne, Australia.

15 Iles, A. (2020) Can Australia transition to an agroecological future? *Agroecology and Sustainable Food Systems* 45(1): 3-41. DOI 10.1080/21683565.2020.1780537

16 Commissioner for Environmental Sustainability Victoria (CES) (2018) *Scientific assessments part III: Biodiversity.* Melbourne, Australia.

17 Deloitte Access Economics (2018) *Megatrends and the Victorian Environment: A report for the Victorian Commissioner for Environmental Sustainability*. Melbourne, Australia.

18 Sheridan, J., Carey, R. and Candy, S. (2016) *Melbourne's Foodprint: What does it take to feed a city?* Victorian Eco-Innovation Lab, University of Melbourne, Australia.

19 Bishop, J., Bell, T., Huang, C. and Ward, M. (2021) Fire on The Farm. *Assessing the impacts of the 2019-2020 bushfires on food and agriculture in Australia*. Sydney, Australia.