

# The Foodprint Melbourne project

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**The city of Melbourne is located in a highly productive agricultural region with the capacity to meet approximately 41% of the city population's food needs. Melbourne's "foodbowl" is an important building block in a resilient and sustainable food system for this rapidly growing city. This article presents some findings of the Foodprint Melbourne initiative led by University of Melbourne researchers who worked in partnership with local governments to investigate the significance of periurban food production to the city's long-term food security and the regional economy. They identified risks to city fringe food production from urban sprawl and the impacts of water scarcity, and generated an important evidence base to support the development of a vision and roadmap to strengthen the resilience of Melbourne's foodbowl.**

## Context

Melbourne, a city of about 4.5 million in south-east Australia, is experiencing rapid population growth: within two decades it is predicted to become Australia's largest city. Much of this growth is on the city fringe at relatively low urban density on former farmland. The city is in a water-scarce region predicted to experience further warming and drying as a result of climate change. Like most of Australia's capitals, Melbourne is relatively isolated geographically; food imported from other states must travel long distances. Little evidence was available on the significance of the city's periurban food production to its current food supply or the risks to future production.

## The Foodprint Melbourne assessment

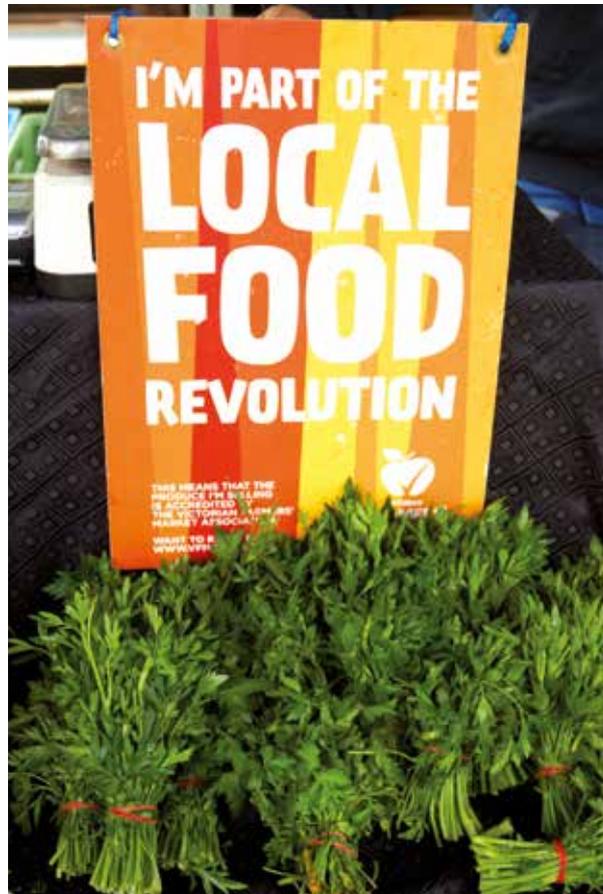
The Foodprint Melbourne project aimed to fill this evidence gap by assessing (i) how much food grows on Melbourne's periurban fringe, and its economic value; (ii) the region's capacity to feed the city now and as it grows to over 7 million people by 2050; and (iii) the risks to its food production from chronic stresses, particularly urban sprawl and water scarcity. The project also aimed to assess the city's "foodprint" – how much land and water it takes to feed the city, and the

resultant food waste and greenhouse gas emissions.

To ensure the project's relevance to a wide range of stakeholders, an advisory group was established that included the City of Melbourne, the associations representing local governments in its periurban region, and some individual local governments. This advisory group helped shape the project's direction, interpret the significance of findings and determine next steps, as well as providing data for the assessment undertaken in 2015.

## Defining the city's foodbowl

A key question was where to draw the boundary of the city's periurban region of food production referred to here as Melbourne's "foodbowl"). Stakeholder advisory group feedback led to the foodbowl definition being expanded from the "Inner foodbowl" area shown in Figure 1 to include the "Outer foodbowl" area, which is represented by an association: "The Periurban Group of Rural Councils".



*A sign welcoming shoppers to an accredited farmers' market in Melbourne, Australia.*  
Photo by Matthew Carey for the Foodprint Melbourne project.

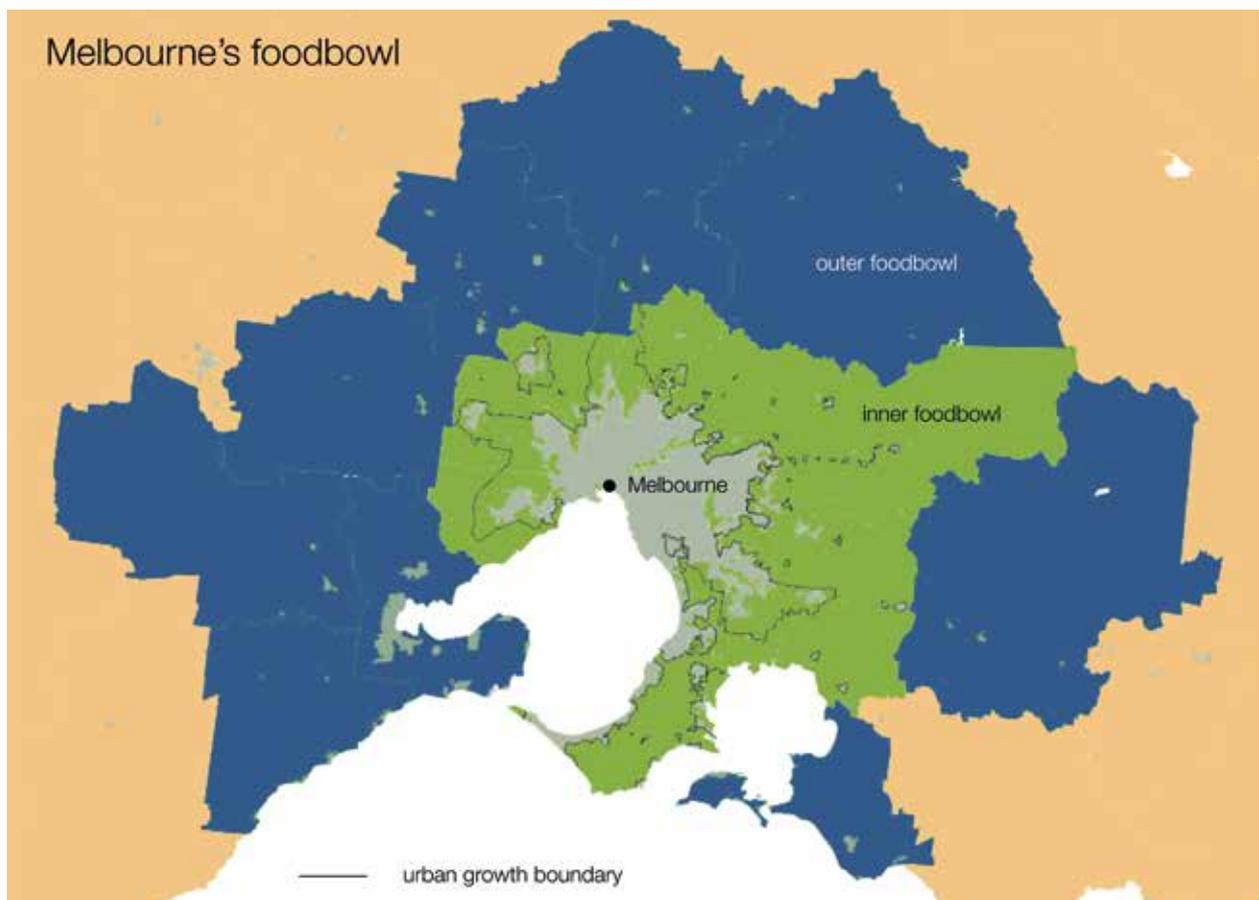


Figure 1: Melbourne's foodbowl

### Assessing the capacity of Melbourne's foodbowl

*Melbourne's foodbowl can meet about 41% of Greater Melbourne's food needs and up to 82% of the city's vegetable needs.*

The productive capacity of Melbourne's foodbowl was assessed using Australian Bureau of Statistics data about the volume of food produced in the region. The foodbowl's current capacity to feed the Greater Melbourne metropolitan area was assessed via a complex research process that drew on data from multiple sources, including a national assessment of Australia's food security carried out under a previous project using the "[Australian Stocks and Flows Framework](#)".

Although the assessment also aimed to establish how much of the food produced in Melbourne's foodbowl was actually consumed in the city (i.e. the city's dependence on food from the periurban region), a key data gap emerged. Australia collects robust data about food exports, but data about food freight movements within and between states is limited. The team was unable to establish how much of the food produced in periurban Melbourne is consumed in the city. The assessment's 41% estimate for the capacity of Melbourne's foodbowl to feed the city suggests that 60% or more of Melbourne's food comes from outside the city region. According to the assessment, the periurban region can meet about 82% of the city's demand for vegetables, 13% for fruit, 39% for dairy, 63% for red meat and 100% for chicken meat and eggs.

### Assessing economic value

*Melbourne's foodbowl contributes about AUD 2.45 billion per annum to the city's regional economy and roughly 21,000 jobs.*

The project's stakeholder advisory group emphasised that data about the economic value of Melbourne's foodbowl was essential to build a case for action and investment in the region. The team commissioned Deloitte Access Economics to [undertake an economic analysis of the value of Melbourne's foodbowl](#), which found that regional agriculture and related food manufacturing contributed about AUD 2.45 billion per annum and roughly 21,000 (full-time equivalent) jobs. The vegetable industry was the largest contributor to agricultural value (about AUD 400 million) and the second largest contributor of jobs (about 2000 employees).

### Assessing the impact of chronic stresses

*If Melbourne continues to grow as it has, the foodbowl's capacity to feed the city could fall to about 18% at a population of 7 million.*

The project also aimed to assess the impact of chronic stresses on production in Melbourne's foodbowl, particularly of urban sprawl and water scarcity. The team used the Australian Stocks and Flows Framework to model the likely impact of land loss scenarios on food production. One scenario estimated the loss of production capacity at a predicted population of 7 million if growth continued at historical rates of urban density: the capacity of the foodbowl

# RESILIENT CITY FOODBOWL

## A vision for Melbourne



Figure 2: Vision for a resilient city foodbowl for Melbourne

to feed the city was likely to fall from about 41% to 18% due to farmland loss and population growth.

The team also commissioned Deloitte Access Economics to assess the likely economic impact of urban growth scenarios with higher rates of urban density and less growth on the urban fringe (i.e. greater infill of existing urban areas). Deloitte found that at a population of 7 million, with significantly higher rates of urban density and urban infill, Melbourne's foodbowl was likely to lose agricultural production capacity of AUD 32 to AUD 111 million per annum (AUD 376 million to AUD 1.33 billion over 20 years). A key finding was that all scenarios modelled (including aspirational rates of urban density and urban infill) led to loss of production capacity in the foodbowl. The issue is not whether farmland will be lost to accommodate growth, but how much and with what consequences.

The team also investigated the impact of water stress on Melbourne's foodbowl. Modelling using the Australian Stocks and Flows Framework found that over 475 L of water was required per person per day to feed the city (not including rain-fed production, which is not tracked in Australia's national water accounts). The economic impact of water stress on food production in the region was evident during Australia's Millennium Drought (1997-2009), during which 35,000 jobs were lost (1998-2002) in Victoria's agricultural industries and food prices spiked. The price of fresh vegetables in Australia rose 33% (2005-2007), and the price of fresh fruit rose 43% over a similar period. The team also drew on Intergovernmental Panel on Climate Change

estimates of likely impacts of climate change in southern Australia showing further regional warming and drying are likely.

The team assessed the potential of recycled water from Melbourne's water treatment plants to increase the resilience of the foodbowl to water stress. Recycled water from Melbourne's two main water treatment plants is currently used by farmers in the foodbowl to produce food (particularly vegetables), but relatively little of the available water is used due to lack of infrastructure to store the water and make it available to farmers. City water corporation data showed that just 6% of the available recycled water was used to produce food in the region; 84% was unused and disposed of at sea. Using the Australian Stocks and Flows Framework, the team estimated the potential of the unused recycled water to support food production in the foodbowl: just 10% of the available recycled water would be enough to grow roughly half of the vegetables eaten in the city.

### Co-designing a vision and roadmap

*A resilient food system is one with the capacity over time to provide sufficient healthy, sustainable and fair food to all, in the face of chronic stresses and sudden shocks, including unforeseen circumstances.*

The assessment findings supported the development of a vision for a resilient foodbowl for Melbourne, and a roadmap of strategies to achieve it. The team developed a visual representation (see Figure 2) to communicate key features,

such as drought-proof areas of food production near the city's water treatment plants. The team is adopting a "co-design" approach to working with stakeholders in developing a vision and roadmap. They continue to work closely with local government stakeholders and have broadened involvement to include farmers, urban planners, water policy specialists, and other food system stakeholders from across the city in a series of interviews and co-design workshops. A key aim is to involve stakeholders representing groups most affected by policies influencing the resilience of Melbourne's foodbowl.

### Influencing policy

The team and local government partners continue to advocate for state government policy to support a resilient city foodbowl, such as stronger measures to protect agricultural land and increased investment in infrastructure to deliver recycled water to farmers. The latest version of Melbourne's metropolitan planning strategy, *Plan Melbourne 2017-2050*, includes objectives to protect agricultural land and recognises, for the first time, that the city's food security is linked to food production on the periurban fringe. However, it includes no new measures to protect agricultural land, and existing legislation, such as the city's Urban Growth Boundary and Green Wedges, has failed to stop the sprawl. The "permanent" Urban Growth Boundary introduced in 2002 has been expanded several times since, justified on the basis of ever higher predictions for increases in population and housing affordability needs. Local governments will likely play an important role in taking action to increase the resilience of the foodbowl and in advocating for stronger state government policy. Local governments on Melbourne's fringe are using evidence from the Foodprint Melbourne project to inform their Green Wedge plans and food policies and to make the case for state and federal government investment in recycled water infrastructure.

### Building social and political licence to act

One lesson from the Foodprint Melbourne project is the need to increase public awareness of the importance of periurban food production in order to build the social and political licence for governments to act to strengthen periurban resilience. A communications strategy was developed, and findings were released as summary briefings, infographics and reports, with a focus on disseminating key messages through online and social media. Findings were released in stages throughout the project to build a public conversation about the issue and to simplify complex messages. The project findings have been covered in over 50 media articles to date, with over 95,000 points of online engagement (including social media shares, comments, reads and downloads). The team recently launched a set of resources for secondary schools, based on the project findings, that enable students to investigate food production in Melbourne's foodbowl and its significance to the city's food security.

### Conclusions

The pressures affecting Melbourne's foodbowl are repeated across the major state capitals in Australia and across cities in many regions of the world. This Melbourne case study highlights the need to understand the potential impacts of urban development and growing water scarcity on the capacity of periurban food production regions. It also points to the potential of periurban food production to increase the resilience of city region food systems, by harnessing valuable city waste streams, such as waste water, for food production. Assessments like the Foodprint Melbourne initiative form an important evidence base as a springboard for action.

### Acknowledgements

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### More information

Foodprint Melbourne project website - <http://research.unimelb.edu.au/foodprint-melbourne>

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