

Q&A: Report explores the challenge of ending food waste and food insecurity in Australia

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The Foodbank Hunger Report 2023 found 3.7 million Australian households experienced food insecurity in the last 12 months. Credit: CSIRO

Australia produces more than enough food to feed our population. Yet a third of all the food we produce is currently ending up in the dump, and food insecurity is on the rise.

Food insecurity is when people lack regular access to high quality [food](#), which can be caused by economic, geographical, environmental, or [social factors](#).

The [Foodbank Hunger Report 2023](#) paints a concerning picture with 3.7 million households reporting [food insecurity](#) in the last 12 months. It's

clear we need to start doing things differently. We have been working with industry and research partners to tackle the challenges ahead.

Our Reshaping Australia's Food Systems roadmap provides some guidance on a way forward to this growing problem.

We sat down with our scientists Dr. Pablo Juliano and Dr. Colleen MacMillan and Foodbank Australia's Sarah Pennell to explore a way forward on how best to tackle food [waste](#) and getting food to those who need it most. And how science and innovation can help guide a [circular economy](#) approach.

What are the key drivers for food security and food waste in Australia?

Pablo Juliano: Food security and quality are key challenges for Australia. Where they happen and how they happen are dynamic. Food insecurity can affect you whether you live in a city, regional or [remote area](#) and it affects many demographics. It can be dependent on [economic factors](#) such as food affordability for a balanced and healthy diet.

More recently, droughts, floods, and bushfires have been impacting food production and supply chains contributing to an increase in food insecurity. Supply chain disruptions also generate food waste. This is counterbalanced by improvements in [precision farming](#) that enhance productivity. Our [national food waste baseline](#) shows Australia wastes 7.6 million tons per year. We have contributed to the data in this study by [mapping fruit and vegetable losses](#) pre-retail.

Colleen MacMillan: In many respects we've been living in "the lucky country" for a long time when it comes to food security in Australia. However, our challenges are increasing. In addition to the significant

factors of geography and demographics, food waste also occurs because of consumer behavior. For example, extremely large amounts of food are wasted in Australian households with most of this ending up in landfill.

Some factors contributing to household food waste include busy lifestyles, which constrain our food handling practices and choices. Lack of knowledge of what food labels mean (use-by versus best-before), purchasing excess food, and not knowing how to maximize the food resources we do purchase.

Valuing our food resources is also a central driver. As a scientist, I like to think of the trillions of wonderful molecules and bonds of energy embodied in each morsel of food that plants, animals, and primary producers have generated. These have passed through many hands and lives to reach our plates.

Sarah Pennell: Australia is in a food crisis. It's true we produce way more food than we need, much of which is exported, and yet Australians are feeling food insecurity right across the country. Our recently released [Foodbank Hunger Report 2023](#) highlights key drivers for this current situation.

The food insecurity reported by 3.7 million households over the past year, represents over a third of the population. If you count the people on the brink, who are anxious about putting food on the table, it is half the population. This is no longer a marginal issue affecting the unemployed and homeless. Cost of living is a big driver here, with increasing demands on people's budgets resulting in many people experiencing food insecurity for the first time. Other drivers include natural disasters and extreme weather events, which we expect will only increase in the future.

How are we responding to that?

Pablo Juliano: One of the key areas we've been looking at is the food supply chain from farm to fork. I contributed to drafting Australia's National Food Waste Strategy, which aims to halve Australia's food waste by 2030. From the outcome of that strategy, it was clear a whole-of-system approach was needed. Some of the areas we've been working on in response include mapping the transport networks of food through our [TraNSIT](#) models. We're also looking at [digital sensing](#) and storage, and thermal and [nonthermal](#) treatments and drying technologies to help give different foods a longer [storage life](#).

Another area we're focusing on is transforming food that is currently going to waste into new ingredients for new food products. A great example is the work we've done with NutriV, a company exemplifying the waste-to-value approach. Taking vegetables that would otherwise have gone to waste and turning them into nutritious snack food. This is good news not just for farmers, but also for the environment. It's also a great example of how important it is to locate food waste zones with areas that could transform that food waste.

Colleen MacMillan: At CSIRO we've established a Circular Economy for Missions initiative to help transform our current linear waste economy to a circular one. This means waste and pollution are designed out for economic and sustainable benefit. Food is a big focus of that work, as are important sectors like housing, clothing and goods, manufacturing, energy, and transport. We're working on embedding circular economy principles and practices right across our missions portfolio which also aligns with Australia's circular economy transition.

Sarah Pennell: There are two sides of the coin to address here—food waste on the one side and food security on the other. It's great to see the work that's being done towards the goal of halving food waste by the end

of this decade. But we need to address the question of [food security](#) with equal energy and commitment.

We've been advocating for the introduction of tax incentives, which we think will tackle both challenges. We've been working with partners to develop the Australia National Food Donation Tax Incentive. We think the benefits will be significant right across the board, for farmers to manufacturers and retailers and could bring around \$2 billion in social return for Australia. I believe the food industry wants to do the right thing, but they need to know they're not going to lose out.

How can a circular approach support us into the future?

Pablo Juliano: We need to understand better how we maximize food resource utilization regionally and make full use of the food we produce and process including by-products. We envisage regional hubs that will be enablers of circularity within and across supply chains. Examples include the creation of regional processing hubs for whole of vegetable utilization, [whole of protein crop utilization](#), or [low value meat utilization](#). An example is a cheese maker using a whey by-product for the billion-dollar [protein powder market](#).

In addition to the Nutri V example, we've worked on making new ingredients from left over apple parts from the juicing industry and grains. These could have otherwise gone to livestock feed but are still perfectly nutritious.

Colleen MacMillan: The circular economy approach encourages the reuse of materials for as long as possible, so there's less demand on resources and less waste. Or better still, we design out wasting resources right from the start!

Adopting a circular approach for our food systems means we could reuse food waste for other purposes like new innovative products and systems. For example, fish and vegetable production, via aquaponics. Or clothing made from dead-stock or other "waste" streams—imagine wearing our food waste as footwear! Or fibers we can re-use to generate new services that enrich our local, metro, and regional communities.

These approaches reduce environmental and health impacts from waste production and disposal and create new business opportunities and jobs. Importantly, a circular approach to our food systems will also support increased well-being for our population and the value chains that generate our food. It's estimated that redirecting [food waste](#) can bring \$2 billion to our society each year!

Sarah Pennell: It's important we involve a range of organizations when it comes to circularity. We've been working with KPMG and Woolworths on the tax incentive project, we've worked with CSIRO on a number of initiatives. The U.S., France and other OECD countries are already implementing tax incentives as the most effective intervention to get surplus food to food relief.

I've never met a farmer who enjoyed seeing the good food they'd produced go to waste. Many have said they would be happy to reinvest any incentive on offer to have the resourcing needed to ensure every kilo of edible food is redirected. In the U.S., they bring pulses, lentils and "ugly" veggies together to create long-life and stable packets of food for donation to charities. This is all run by volunteers. How good would it be if we could get initiatives like this going in Australia.

Provided by CSIRO

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