Australian Government

Department of the Environment and Energy

REFRIGERANTS AUSTRALIA EXPERTGROUP

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A study of waste in the cold food chain and opportunities for improvement

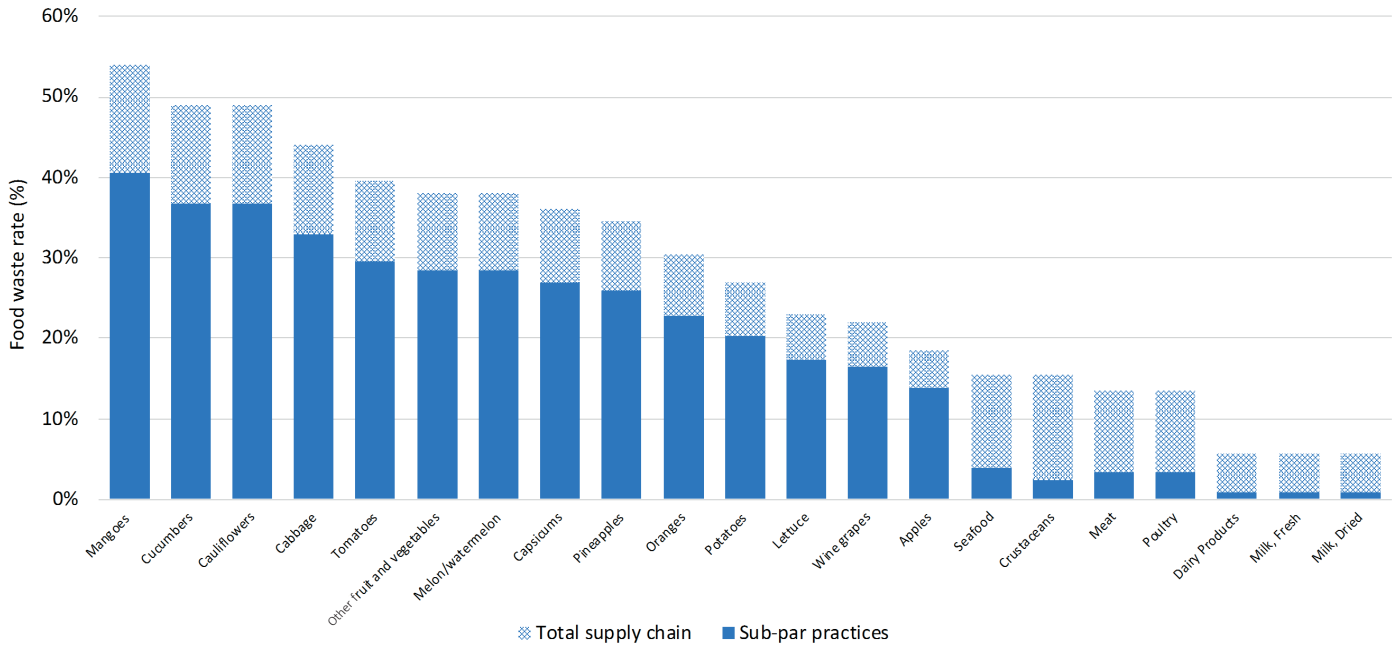
This study is intended to put Australia's cold food chain into focus, and specifically to: quantify the benefits to Australia from an efficient and effective cold chain; to identify the size and characteristics of the cold chain with a focus on its role in domestic food production and distribution, as well as in export markets; and to quantify the size and location of failures in the cold chain and the resulting impact on food waste, refrigerant leaks and energy productivity lost.

The production of food is a major industry for Australia and is projected to grow strongly over the next twenty years as Australia expands its export capacities. In 2018, more than 23 million tonnes of foodstuffs passed through the Australian cold chain, which was worth AUD $42 billion (US $29.4 billion) based on farm gate values.

This study has—for the first time—produced estimates of food waste attributable to breaks in the efficacy of the cold food chain in Australia. These preliminary and conservative estimates found that food waste cost at least $3.8 billion at farm gate values in 2018, comprised of:

- 25% (1,930,000 tonnes) of annual fruit and vegetable production worth $3.0 billion
- 3.5% of annual production of meat (155,000 tonnes) and seafood (8,500 tonnes) worth $670 million and $90 million respectively; and,
- 1% (90,000 tonnes) of dairy products valued at $70 million.

Food waste rates in the cold chain



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Greenhouse gas emissions from food waste are estimated to be greater than the combined energy and refrigerant emissions from operating the cold food chain (~19 Mt CO2e or more than 3.5% of Australia's annual greenhouse emissions).

The cause of these losses are varied and numerous. Without wishing to understate the complexity of the issues involved, there are some simple and effective practices that would cost-effectively reduce perishable food waste. These practices involve better handling of food, chain-of-custody reporting of conditions, and improved operation of the cold food chain.

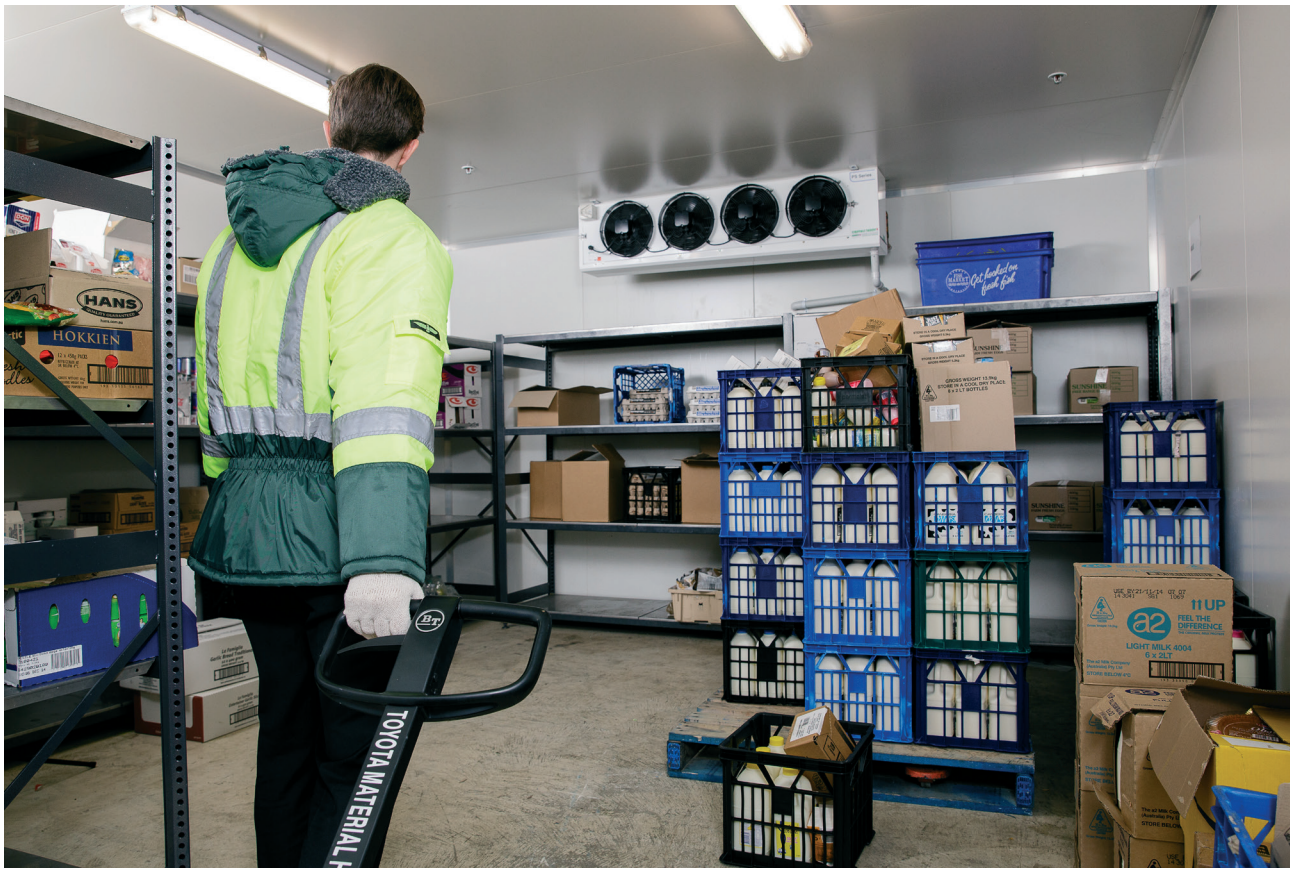
These approaches apply irrespective of what link of the cold chain is involved as they are common conditions covering all stages of refrigerated preservation. The greatest risks for perishable food to suffer damaging conditions are during transportation and handling between mobile and stationary refrigeration points.

The impact of losses from sub-optimal practices or inadequate technology could be better predicted, avoided, or reduced by improved chain-of-custody documentation. In the cold food chain, this involves a mix of improved practices and technology to monitor and report conditions experienced.

Changes to technology and practices that improve refrigerated preservation in the cold food chain have tremendous potential to improve shelf life and reduce food losses in the hands of consumers, and to reduce energy use.

Climate control systems are increasingly being used to increase agricultural productivity by providing optimal soil and ambient growing temperatures. For instance, climate-controlled production and root zone cooling systems are becoming more common in Australia.

The efficiency and resilience of the cold food chain, and the breaks in the cold food chain that cause food loss, are important areas of analysis. Action in this area offers the possibility of cost-effectively improving to Australia's food security and delivering marked improvements in environmental and economic outcomes.



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