Q&A - ALTERNATIVE PROTEINS

BALANCING THE NARRATIVE WITH FACTS ON THE RED MEAT INDUSTRY

What is the value of the red meat and livestock sector to the Australian economy?

In 2018–19, Australia's red meat and livestock industry value add totalled $17.6 billion, up 1% on the prior year and 89% higher than 2013–14 levels, driven by increasing demand for high quality protein in global markets. The production sector accounted for 70% ($12.3 billion) of overall industry value add, followed by processing at 20% ($3.5 billion) and sales at 10% ($1.7 billion).

The Australian red meat and livestock industry employed approximately 434,000 people in 2018–19, stable on levels from the previous year and 5% higher than 2013–14. Of these, 189,000 people were directly employed, with a further 245,000 people employed in businesses servicing the industry indirectly. Beef cattle farming continued to provide the largest employment levels in the red meat and livestock industry at 77,000 people, while 40,000 people were employed in mixed farming enterprises in 2018–19, demonstrating increasing interest in the sector.

The red meat and livestock industry's turnover totalled $72.5 billion in 2018–19, accounting for approximately 2% of Australia's total key industry turnover.

In comparison to other industries, the red meat and livestock industry turnover is only 18% below the entire 'Information, media and telecommunications' industry and is larger than both the 'Arts and recreation services' and 'Education and training (private)' industries

Ref: MLA, Fast Facts - https://www.mla.com.au/prices-markets/Trends-analysis/fast-facts/

Ref: MLA, State of the Industry Report 2020 - https://www.mla.com.au/globalassets/mla-corporate/prices--markets/documents/trends--analysis/soti-report/mla-state-of-industry-report-2020.pdf

Ref: MLA, Cattle projections - https://www.mla.com.au/prices-markets/trends-analysis/cattle-projections/

Ref: MLA – Sheep projections - https://www.mla.com.au/prices-markets/Trends-analysis/sheep-projections/

What is the value of the plant-based fake meat sector to the Australian economy?

The plant-based fake meat advocates talk of jobs and growing demand for Australian plant protein from farmers – but with such a heavy reliance on imports, the value is not being created in Australia for Australians. Most of the well-known plant-based fake meat manufacturers are overseas companies, producing ingredients or consumer ready products which are imported into Australia.

In stark contrast to the red meat sector, the plant-based meat sector generated only around $150 million in Australian retail sales and supported only 265 jobs in 2018-2019.

Ref: Food Frontiers, Media Release (March 2021) - https://www.foodfrontier.org/wp-content/uploads/2021/03/Media-Release_Alternative-Proteins-Council_310321.pdf

Ref: Food Frontiers, Meat the Alternative Report - https://www.foodfrontier.org/wp-content/uploads/2019/09/Meat_the_Alternative_FoodFrontier.pdf

Australian red meat is 100% homegrown in Australia. What about plant-based fake meats, where are they grown and manufactured?

Soybeans and wheat are the main raw material for plant-based fake meats. Pulses account for around 4% but are making rapid inroads due to their positive aspects of being non-GM and non-allergenic.

If soy protein-based products drive consumption growth in the future, the capacity of the Australian grains and oilseeds sectors to capitalise will be limited.

Australia is only a small producer of soybeans – just an average of 26,000 metric tons over the last five years, while New Zealand does not grow soybeans commercially. The 26,000 metric tons grown in Australia are almost entirely consumed in the domestic alternative milk, tofu/tempeh, and edamame markets. Capacity to increase production is limited by the climatic needs of soybeans, and higher prices that might encourage more production cannot typically be sustained over time due to competitively priced soy products that can be imported from countries like India and China. For the opportunities of increased plant-based meat substitutes consumption to be captured in Australia, not only would local processing capacity need to be developed, but also the respective crop production (i.e. the soybean production base) would need to significantly increase.

Currently, around 50% of Australian consumption of plant-based fake meat products is accounted for by imported consumer-ready product, meaning there are no local plant proteins included. In addition, for those plant-based fake meats that are produced in Australia, the majority of the plant-based proteins used are imported already in the form of isolates, concentrates, textured proteins or partially transformed ingredients.

There is currently limited processing and manufacturing capabilities for pulse protein in Australia and the plant-based protein industry is reliant on imported ingredients.

Ref: Ref: Rabobank, Getting granular with plant based meat substitutes - https://research.rabobank.com/far/en/sectors/grains-oilseeds/getting-granular-with-plant-based-meat-substitutes.html

Ref: Farm Online, Protein CRC plans pulsing for growers, scientists, food industry (April 2020) - https://www.farmonline.com.au/story/6715926/pulse-opportunities-racing-as-protein-demand-prompts-170m-initiative/?cs=4698

Are plant-based fake meats ultra-processed?

Yes. Plant-based fake meats are products that are made from combinations of plant proteins, oils, spices, seasonings and other plant derivatives, including starches and common food additives. Generally, these products use plant proteins (most often in the form of protein isolates, concentrates and flours) or mycoprotein (protein derived from certain varieties of fungi) produced with the use of fermenters similar to those found in a brewery. The fungi are grown in a nutrient solution in the fermenters, and the final product is heated, seasoned, steam cooked, chilled and shaped into the final meat-like texture. This is significantly different to harvesting cuts and trimmings from natural whole muscles from animals.

Ref: Food Frontiers: State of the Industry Report, p43 - https://www.foodfrontier.org/wp-content/uploads/dlm_uploads/2021/03/Food-Frontier-2020-State-of-the-Industry.pdf

Why do plant-based fake meats have so many additives?

Many plant-based fake meats have issues in meeting consumer's taste expectations. To hide some of the negative characteristics of plant-based fake meat, there are imitation flavour and perfume manufacturers (such as Firmenich) who produce additives for plant-based manufacturers.

Firmenich says there is a need to mask sensory off-flavours, off aromas, bitterness, dryness, astringency, and mask the earthy flavours of green vegetable, cereal, and beany notes. They do this by further processing and adding of flavours and perfume additives to remove, replace, mask almost every ingredient in the product to try to get it a bit closer to the texture and taste of meat.

Whilst salt is a basic ingredient in many meals, most plant-based products are high in potassium chloride to try and reduce their sodium levels where traditional meat burgers use salt (sodium chloride and pepper to season, not to bind with other cereal starches).

Ref: Food Frontiers State of the Industry Report, p33 - https://www.foodfrontier.org/wp-content/uploads/dlm_uploads/2021/03/Food-Frontier-2020-State-of-the-Industry.pdf

Ref: MLA, Baseline consumer sensory testing of alternate protein burgers (V.RMH.0111) - https://www.mla.com.au/globalassets/mla-corporate/research-and-development/final-reports/2021/v.rmh.0111-final-report.pdf

Are there genetically modified ingredients and gluten in plant-based fake meats?

Many of the plant-based fake meat products currently sold in Australia contain genetically modified soy and / or wheat. Both these ingredients are known to be a cause of allergies, with wheat of concern to consumers who may have gluten intolerance or a celiac trigger.

Ref: Rabobank, Getting granular with plant based meat substitutes p4 - https://research.rabobank.com/far/en/sectors/grains-oilseeds/getting-granular-with-plant-based-meat-substitutes.html

Are plant-based fake meats as naturally healthy and nutritious as red meat?

As long as we can compete on a level playing field, we're confident our product quality, safety, nutrition and taste will always surpass imitation manufactured plant-based proteins.

We also know that plant-based fake meats need to be ultra-processed with nutritional additives in an effort to make them even try to come close to red meat!

Australian red meat is naturally nutritious and a great source of 12 essential nutrients required for good health - iron, zinc, Omega 3, magnesium, selenium, Niacin, Riboflavin, potassium, Phosophorus, Vitamins B5, B6 and B12. These nutrients in red meat support brain function, muscle and bone development, immunity, energy, and are also important for fertility. All this without any additives – a naturally nutrient dense product that is recommended to be consumed 3-4 times per week by the Australian Dietary Guidelines to meet nutritional requirements.

Ref: MLA Healthy Meals - https://www.mlahealthymeals.com.au/

Ref: Red Meat, Green Facts - https://www.redmeatgreenfacts.com.au/nutrition/

Ref: Composition of Australian red meat 2002. 3. Nutrient profile (uow.edu.au)

Why is clearer labelling needed?

Since the nutritional benefits of plant-based products are different to those of meat, separate branding is recommended to inform choices in line with Australian Dietary Guidelines consistent with the Ministerial Forum's Policy Guidelines on Food Labelling.

The Ministerial Forum's Policy Guidelines expects food labels to provide adequate information to enable consumers to make informed food choices to support healthy dietary patterns recommended in the Australian Dietary Guidelines. Policy principles indicate that information "is easily accessed and understood by consumers; supports consumers to manage energy intakes to assist with achieving and maintaining a healthy body weight; supports consumers to compare foods; does not promote consumption of foods inconsistent with Dietary Guidelines (such as those high in saturated fat, added sugars, added salt and/or foods with little or no nutritional value); and takes into account the nutritional content of the whole food, particularly risk nutrients identified in the Australian Dietary Guidelines i.e. added sodium, added sugars and saturated fat." Of relevance to plant-based labelling are levels of risk nutrients since these are manufactured foods and levels vary according to the formulation of the product.

Consumers need to understand that plant-based foods are not nutritional substitutes and are certainly not replacements for red meat as part of a balanced diet. Haem iron, vitamin B12 and long chain omega-3 are not naturally found in plant foods and high levels of phytate, found only in plant foods, inhibits absorption of zinc, nutrient requirements. Consequently, iron and zinc requirements are 50% and 80% higher, respectively for vegans and vegetarians. Meat is the only dietary predictor of iron and zinc deficiency and adverse developmental outcomes in early childhood have been reported from diets lacking in vitamin B12. The Australian Dietary Guidelines recognises these differences and provides dietary recommendations that ensure vegans and vegetarians are able to follow a nutritionally adequate diet. Similarly, food labelling should ensure relevant nutrition information required to inform choices for a nutritionally adequate diet is easily accessible to consumers eating little to no meat, especially in vulnerable groups such as young women who have high iron requirements.

To summarise, branding plant-based products differently to that of meat is consistent with the fundamental objective of food labelling to inform healthier choices in line with Australian Dietary Guidelines.

Current branding of plant-based meat products focuses on their functional role as an alternative protein choice – it does not inform consumers of the nutritional differences between animal and plant foods, important for following a nutritionally adequate diet in line with Australian Dietary Guidelines.

Ref: ANZ Ministerial Forum, Policy Guideline on Food Labelling to Support Consumers Make Informed Healthy Choices - https://foodregulation.gov.au/internet/fr/publishing.nsf/Content/Policy-Guideline-on-Food-Labelling-to-Support-Consumers-Make-Informed-Healthy-Choices

Ref: Australian Dietary Guidelines - https://www.eatforhealth.gov.au/sites/default/files/content/n55_australian_dietary_guidelines.pdf

Is there any recent research comparing plant-based meat and grass-fed meat?

New research from Duke University was recently published which shows plant-based meat alternatives are not substitutes for real beef in nutritional terms. The study examined the nutritional content of plant-based and grass-fed meat using 'metabolomics'.

Some findings from the scientific paper include (direct excerpts):

- The plant-based meat alternative and grass-fed, beef studied in our work, have largely similar Nutrition Facts panels and may appear nutritionally interchangeable to consumers
- Despite these apparent similarities based on Nutrition Facts panels, our metabolomics analysis found that metabolite abundance between the plant-based meat alternative and grass-fed ground beef differed by 90%
- The new information we provide is important for making informed decisions by consumers, and to inform dietary advice by health professionals.
- Just as a peanut is not really an egg, we conclude that a plant burger is not really a beef burger.
- Thus, our work adds to the notion that caution is warranted when categorizing foods as equivalent for consumers simply based on their protein content ("protein foods"), which is typical in dietary recommendations
- Future studies are needed to better understand how the presence and absence of metabolites and nutrients in plant-based meat alternatives and meat impacts short- and long-term consumer health.

Other studies have explored the 'dangers of a vegan diet for infants' - see reporting *https://www.news.com.au/lifestyle/health/diet/a-new-study-looks-at-the-dangers-of-a-vegan-diet-for-infants/news-story/6a30cb922c79ed197334b488c7ff0e87*

Ref: A metabolomics comparison of plant-based meat and grass-fed meat indicates large nutritional differences despite comparable Nutrition Facts panels - https://www.nature.com/articles/s41598-021-93100-3

Has MLA completed any relevant research?

MLA has recently completed sensory testing of several alternative burgers purchased from the market and compared against seasoned beef patties – see V.RMH.0111.

Given the low to moderate sensory results for non-meat products the project found it is likely that premium priced marketing of these products will be based on unsubstantiated claimed benefits relating to human health and diet, animal welfare and climate impact.

One of the recommendations from this study was to undertake more detailed lab analysis of the nutritive values and evaluation of trace elements and compare them against the label description.

Ref: MLA - https://www.mla.com.au/globalassets/mla-corporate/research-and-development/final-reports/2021/v.rmh.0111-final-report.pdf

Is red meat bad for your health?

A synopsis paper on the positive health impacts of red meat recently released by The Scientific Council of The World Farmers Organisation (WFO) indicates that "there is no convincing scientific evidence for assertions about the harmful health effects of unprocessed red meat intake".

The paper also shows the positive contribution of unprocessed red meat intake to balanced diets, finding that consumption of unprocessed red meat at today's common levels "should be encouraged as a significant source of dense and readily bio-available proteins, essential micro-nutrients and critically important bioactive substances and as part of an overall balanced diet combining different food groups".

Ref: WFO Scientific Council, Consumption of Unprocessed Red Meat Is Not a Risk to Health Synopsis Paper

- *https://www.wfo-oma.org/wp-content/uploads/2021/07/SC-WFO-Synopsis-Paper-on-Unprocessed-Red-Meat-Consumption_final.pdf*
- *https://www.wfo-oma.org/wfo_news/consumption-of-unprocessed-red-meat-is-not-a-health-risk/*

Is there actually an increase in vegetarianism in Australia?

The plant based fake meat sector would love us to believe that vegetarianism is on the rise. However, over the past decade, there has not been much change in the percentage of metropolitan consumers who claim to be vegetarian. The latest data indicates that only 7% are vegetarian, and of those who do claim to be vegetarians, around 39% occasionally eat meat. This means that vegetarians, using the true meaning of non- meat eaters, is a far lower percentage at just over 4% of all metropolitan consumers.

What's even more interesting is that of those who are claimed vegetarians, 15% return to meat at some stage in their life.

Ref: MLA & Pollinate - https://www.mla.com.au/news-and-events/industry-news/positive-perceptions-of-red-meat-growing-among-consumers/

https://www.mla.com.au/contentassets/159edd20f0e44ebda80ae8377e786928/mla_consumer-sentiment-research_summary-deck_2020_external.pdf

Will plant-based fake meat global sales impact demand for Australian red meat?

Consumers want the real deal, heavily processed plant-based proteins manufactured overseas will never replace true Australian red meat.

Global demand for protein has been forecast to increase as population and incomes continue to grow – and there continues to be a protein shortage. Australian red meat is consumed in over 100 countries around the world, and has a global reputation for quality, safety and taste, all key attributes that drive this strong demand.

Hence, as demand for proteins increase globally, whilst the large majority of that increased demand will be for real meat proteins (e.g. red meat, chicken, pork, seafood), it is likely plant-based fake meat sales will also increase as global total consumption of protein increases.

Ref: MLA Industry projections 2021 - https://www.mla.com.au/globalassets/mla-corporate/prices--markets/documents/trends--analysis/cattle-projections/feb2021-mla-australian-cattle-industry-projections.pdf

Who are the plant-based fake meat companies targeting?

Many of the companies moving into Australia with plant-based fake meat products started in the US. There, demand is being driven by meat-eating consumers who wish to occasionally reduce their animal meat intake – also known as flexitarians. Novel plant-based burger analogs in the form of patties, sausages, chicken-like nuggets, ground beef, meatballs, and even deli cuts are designed to try and look and taste like red meat, leveraging off billions of dollars the red meat sector has invested in marketing and positioning over many years.

The fake products have higher pricing and sales growth than traditional vegetarian products (such as tofu, tempeh, and veggie burgers) that don't intend to mimic the taste and texture of the real meat.

Branding and developing products that attempt to eat, taste, and look like real meat products have been key to companies' successes in the US, along with a fast expansion of the distribution channels.

Going forward, the industry in the US and also here in Australia will become increasingly competitive, as consumer awareness grows and businesses try and attract investment into developing new products and high-protein crops as ingredients for these products.

Ref: Rabobank, Getting granular with plant based meat substitutes - https://research.rabobank.com/far/en/sectors/grains-oilseeds/getting-granular-with-plant-based-meat-substitutes.html

Is meat consumption lower because consumers are moving towards environmentally conscious diet habits?

Whilst it's highly subjective as to what constitutes an "environmentally conscious diet", the evidence doesn't support a move away from meat. While it's true that domestic consumption of beef and lamb has been declining slowly over time, other proteins, particularly chicken and to a lesser degree pork reflect increases in per capita consumption and frequency in consumption. So rather than a migration to other alternatives, any shift in protein choice is primarily driven by switching between the animal proteins available. The primary drivers being price differential and for some, considerations of health, rather than environmental consciousness, as reflected in our research amongst red meat reducers in 2020, where the reasons for reducing their red meat consumption were; (A) 31% red meat too expensive, (B) 29% health concerns, (C) 15% environment concerns, (D) 12% animal welfare concerns.

Ref: MLA & Pollinate -

https://www.mla.com.au/contentassets/159edd20f0e44ebda80ae8377e786928/mla_consumer-sentiment-research_summary-deck_2020_external.pdf

Is red meat and livestock harmful for the environment?

Caring for the environment is essential for sustainable, profitable red meat businesses now and into the future. Five quick facts:

- The Australian beef industry has more than halved its GHG emissions since 2005. This reduction in GHG emissions is greater than any other industry in Australia.
- Most of Australia's land mass cannot support any other food production - only 8pc of Australia's land mass is suitable for cropping. Cattle convert grass and other plants with low nutrient value to humans into high quality protein, fatty acids, vitamins and minerals that we can digest.

- CSIRO analysis shows it is possible for the beef industry to achieve net zero GHG emissions by 2030 by increasing productivity, increasing soil carbon and reducing emissions, without reducing herd numbers below current levels.
- Research has demonstrated that raising cattle combined with certain land management practices increases biodiversity on farms.
- It takes 68pc less water to produce a kilogram of beef than it did 30 years ago.

MLA has also has a broad program of work and investments around sustainability across the red meat supply chain as aligned to industry's priority areas as outlined in its Sustainability Update 2021. This report demonstrates our investments in sustainability, our commitment to transparency of our production systems, and our unwavering focus on continuous improvement through proactive adoption and practice change.

Ref: Op-Ed by CCA CEO Travis Tobin, The Land 'Australian beef a leader in environmental credentials' - https://www.theland.com.au/story/7281417/why-you-can-trust-australian-beef/

Ref: MLA Sustainability Update - https://www.mla.com.au/about-mla/how-we-are-governed/Planning-reporting/corporate-documents/sustainability-update/

Ref: Red Meat, Green Facts - https://www.redmeatgreenfacts.com.au/

Are plant-based fake meats better for the environment?

Some experts have warned plant-based fake meat may not be better for the environment. The segment is also very new and there is limited scientific evidence of the sustainability footprint of manufactured plant proteins.

The fact is all foods have an environmental impact, whether you choose an omnivorous, vegetarian or vegan diet.

But although foods vary in greenhouse gas emissions, it's also important to look at the bigger picture – the nutritional value of foods as well as the greenhouse gas emissions. For example, lettuce may have a lower carbon footprint per kilo than beef, but beef provides far more nutrients per unit of mass. We also need to consider the bigger environmental picture – biodiversity, water use, and land use, not just greenhouse gases.

In 2020, the largest ever global opinion poll on plant-based diets concluded that they are the least favoured solution to climate change.

A study of more than a million people in 50 countries by the United Nations Development Programme (UNDP) and Oxford University found that land and forest conservation was the most popular solution for protecting against climate change. The study found that the least popular solution of the 18 suggestions was switching to a plant-based diet.

Ref: SMH, 'Plant-based meat sales are soaring, but experts warn it may not be better for you or the environment' (March 2021) - https://www.smh.com.au/business/companies/plant-based-meat-sales-are-soaring-but-experts-warn-it-may-not-be-better-for-you-or-the-environment-20210317-p57bi2.html

Ref: Food Navigator, 'Plant-based diets the 'least favoured solution to climate change', according to UN poll' (Jan 2021) - https://www.foodnavigator.com/Article/2021/01/27/Plant-based-diets-the-least-favoured-solution-to-climate-change-according-to-UN-poll#

Are total livestock production emissions less than total crop production emissions?

All food production has some level of impact on the environment – such as global warming from greenhouse gas emissions, water use, and /or biodiversity.

According to the world data on Greenhouse Gas Emissions, the total emissions from the production of food crops and crop burning (6.2%) is higher than the total emissions from livestock and manure (5.8%). A major reason for the reduction in the emissions from the livestock sector is due to the change in production practices in key red meat suppliers, such as Australia, to reduce emissions and increase productivity in the raising of livestock and production of red meat.

Ref: Our world in data report – combined cropland (1.4%), crop burning (3.5%) and rice cultivation (1.3%) total 6.2% globally, whereas total livestock and manure are 5.8%

Ref: Australian Beef Sustainability Framework

Ref: The Australian Red Meat Industry's Carbon Neutral by 2030 Roadmap