Submission No 29

FOOD PRODUCTION AND SUPPLY IN NSW

Organisation: Food Frontier

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Manager, Committee on Environment and Planning

Re: Food production and supply in NSW

Food Frontier thanks the Committee for the opportunity to provide a submission to this Inquiry. Our submission comprises insights and data on the opportunities that alternative proteins present NSW: as a sustainable food source that can improve food security and be produced with fewer environmental resources, and a growing food category that opens new export opportunities for NSW producers.

Who we are

To start, we'd like to introduce Food Frontier. We are the independent think tank and expert advisor on alternative proteins in Australia and New Zealand. We are a not-for-profit funded by grants and donations, which allows us to engage in our work without external influence.

Our work focuses on building understanding about the economic, environmental and public health benefits of alternative protein industries such as plant-based meat and cellular agriculture, and enabling leaders to engage with them. Our team of food, agriculture, research and policy professionals has worked across meat and livestock sectors, organisations empowering millions of farmers worldwide, global FMCG and retail companies. This collective experience brings a detailed understanding to our work of the important role agriculture plays in Australia and around the world.

About the sector - nationwide and in NSW

Alternative proteins represent a growing agri-food sector worldwide, and broadly the category includes plant-based meat and dairy alternatives, and products of cellular agriculture such as cultivated meat, or dairy products created via precision fermentation.

Many plant-based alternative products have been sold in our nation for decades. In Australia, soy milk has been available for over 50 years, while Sanitarium's 'nut meat' has been on shelves since 1912.

In particular, the newer category of plant-based meats - the products designed to look, cook and taste like conventional meat - is growing in response to rising consumer demand amongst those seeking meat-free alternatives. A 2021 University of Adelaide study found that 19.8% of

Australians are consciously reducing their meat consumption and a further 5.9% do not consume meat at all.[1]

This may also include those seeking to eat more plant-based proteins to meet the recommendations of the Australian Dietary Guidelines or the Australian Heart Foundation, which revised its dietary guidelines in 2019 to recommend Australians get most of their protein from plant-based sources, as well as fish and seafood.[2] Australians may also be considering the advice of global health authorities in choosing to consume more plant-based proteins as an alternative to certain conventional meats, particularly related to the association between high consumption of red meat and the development of non-communicable diseases (NCDs).[3, 4,5,6,7,8,9,10,11,12,13,14,15]

Nationwide sales of plant-based meat products grew 46% in FY20, while the volume of plant-based meat manufactured locally increased 70% from FY19 to FY20. Products made by Australian companies now make up more than half (56%) of the category in major retailers.[16]

NSW is already home to many leading alternative proteins companies - 12 of the 27 Australian companies. These NSW based companies raised over $106 million in 2021 alone. V2food, maker of the plant-based patty featured in Hungry Jack's Rebel Whopper, is headquartered in Sydney, and other plant-based meat companies including ProForm Foods, All G Foods, Life Health Foods, Coco & Lucas, Suzy Spoon's Vegetarian Butcher and Cale and Daughters produce plant-based meat products in the state under various brand names, for sale in major supermarkets within Australia and overseas. In November 2020, Proform Foods opened its new $11 million facility at Mount Kuringai, with plans to triple its growth in the next year.[17]

Growing start-ups Harvest B and Eighth Day Foods are two additional local B2B companies producing ingredients for alternative protein supply chains using Australian-grown ingredients like wheat and lupins.

Sydney is also home to three cellular agriculture start-ups: Vow is working to produce cultivated meat, while All G Foods and Eden Brew are working to commercialise animal-free dairy products made with precision fermentation technology. More on these companies is included in the later part of this submission.

Why alternative proteins? Growing global demand for protein requires sustainable alternatives

There is overwhelming evidence from the the world's top agribusiness,[18,19] sustainability[20,21,22,23,24] and economic development authorities[25,26,27] showing that as the global population grows the diversification of global protein supply is necessary and inevitable to meet rising protein demands.

If consumption patterns of nations such as Australia (typified by high consumption of meat and low intakes of fruits, vegetables and grains) were adopted around the world, experts have warned by 2050 we would require the resources of up to seven planets.[28]

Alternatively, new protein sectors, comprising meat and dairy alternatives including plant-based meat, and cellular agriculture products such as cell-cultivated meat and dairy products created by precision fermentation, can offer consumers a centre-of-plate protein option with a lesser impact on the environment.

Global data demonstrates that even with large variances in production methods and climates, plant-based protein substitutes had the smallest carbon footprint when compared to animal proteins.[29] In an Australian context, beef produced in Northern or Eastern Australian systems, emits between 20-26kg CO2e emissions per kg of boneless beef.[30,31,32] However a plant-based meat alternative produced locally in QLD creates only 2.72kg CO2e emissions per kg of product.[33]

Although cultivated meat is not yet produced at scale, early analyses have shown it has the potential to be produced more efficiently than conventional meat, using fewer environmental resources. Cultivated chicken has been estimated to use 35-67% less land per kilo than conventional chicken, while cultivated beef would use 95% less land and produce 74-78% fewer carbon emissions per kilo than conventional beef.[34]

Commercial and government response to the alt-proteins opportunity

Companies around the world have recognised the requirements for a greater diversity of protein sources in our food supply. Leading FMCG corporations, small local start-ups and global meat conglomerates from Nestlé to JBS to Monde Nissin have joined the alternative proteins sector through acquisitions of existing companies, new brand launches and investments in the plant proteins supply chain and future food technologies.

Around the world, forward-thinking governments have continued to engage at all levels with alternative proteins. Policymakers are recognising the value of becoming first-movers in the growing plant protein sector and investing in cellular agriculture sectors, that with their environmental, public health and food security benefits, will play an increasingly significant role in the evolving global food supply.

In the UK, the recently launched National Food Strategy recommends substantial changes to UK food policy, including positioning the country at the forefront of the alternative proteins industry. The UK is seeking to garner the sustainability and economic benefits alternative proteins offer, with the strategy noting that a thriving local alternative proteins industry would generate a projected 16,500 jobs (6,500 in agriculture).[35]

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In Singapore, the government has proposed alternative proteins including cultivated meat, precision fermentation and plant-based protein. as one solution to increasing the island nation's food security as part of its '30 by 30' initiative.[36] Singapore currently imports 90% of its food supply; by 2030, it intends to produce 30% of its food onshore through new food technology innovations, such as local production of alternative proteins and vertical farming in urban areas.[37] The government has since invested over US$250 million in alternative proteins, with Singapore also being the first jurisdiction in the world to approve the sale of cultivated meat - now sold at multiple restaurants across the country.[38]

Government support for alternative proteins is also accelerating developments in Israel and the Netherlands. Both countries have established food innovation hubs, such as Foodvalley in Wageningen and The Modern Agriculture Foundation in Israel, and are home to market leaders in both plant-based meat and cultivated meats. Israeli government ministers have attended cultivated meat tastings at start-up Aleph Farms[39] and the European Commission has awarded the first EU grant to dutch cultivated meat company, Mosa Meat.[40]

New economic and agricultural opportunities for Australia, driven by exports

Increasing global demands are fueling growth in the alternative proteins sector. In the global market, alternative proteins offer a largely untapped economic opportunity for countries that move swiftly to capture market share. Investment in alternative proteins is being made at all levels – from governments[41,42,43] to meat giants[44] to investors including Bill Gates and Jeff Bezos tipping investment in plant-based meat in 2020 to US$1.54 billion globally.

Australia has the right mix of agricultural capacity, commercial appetite, research capability and infrastructural know-how to be an international leader in emerging proteins. Our nation is a global leader in food and agriculture, boasts world-class R&D capabilities, and enjoys close proximity and direct trade channels to the world's most populous region - Asia.

It is Asia where the greatest rise in demand for meat is coming from, driven by population growth and rising disposable incomes. While Western countries reduce meat consumption, globally, demand for meat is projected to increase 73% by 2050.[45] Demand for plant-based meats in key export markets like China and Thailand is also projected to rise significantly by 2025,[46] while

China's Ministry of Agriculture & Rural Affairs latest Five Year Plan has for the first time, named cultivated meat and other future foods as a specific area of interest to the country.[47]

As a net-exporter of premium, sought-after agri-food products, Australia and New South Wales specifically, are in a prime position to grow new protein industries and exports alongside existing ones. There is strong evidence of the continual and growing appetite for Australia's high-quality protein products in international markets, as we have seen demonstrated over the 50+ years since Australian agricultural exports overtook domestic consumption, largely driven by the traditional meat industry.

As a net exporter along with our neighbours in New Zealand, each Australian state can and should leverage existing trade channels and the strength of our premium reputation to increase the overall volume and value of our protein exports with new, value-added products like plant-based meats.

Plant-based meat products alone are projected to generate nearly $3B in Australian sales by 2030 and provide 6000 full-time jobs (Deloitte Access Economics), while the CSIRO has demonstrated plant proteins represent a $6B opportunity for Australia.[48] From across the supply chain through to the potential finished products to be sold in our domestic and export markets, emerging proteins represent a potential multi-billion dollar contribution to the Australian Government's industry-led goal of a $100B food and fibre sector by 2030.

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Australia's emerging alternative proteins sector is still relatively young but is growing steadily. Deloitte Access Economics notes that the geographic growth of plant-based meat manufacturing is currently centred in New South Wales, with 68% of the overall economic contribution to the sector in 2020. As it continues to develop, the sector will provide new opportunities in manufacturing, with facilities expanding and being commissioned as consumer demand continues to grow.

> **As it continues to develop, the sector will provide new opportunities for Australian farmers to supply their crops into this value-added supply chain, rather than more volatile global commodity markets. Cropping accounts for more than half (53.2%) of the value of Australia's agricultural production– or $35B – which new protein industries will help grow."**

Outside of urban centres, there are thousands of Australian farmers and many regional communities that stand to benefit from the growth of the plant-based protein sector and from research into plant-based proteins such as the kind previously mentioned at University of Sydney. The sector is already creating new jobs in regional communities like Wodonga and Horsham in Victoria, where multi-million dollar plant protein processing and product manufacturing facilities have recently been built, in scenarios that can be replicated across NSW agrifood clusters such as in Moree.

Leading domestic plant-based meat companies - from those founded by chefs, to food industry pioneers to traditional butcher families - have also spoken about their desire to use more Australian plant protein ingredients in their products. This represents a significant opportunity to add value to Australia's agriculture sector, alongside traditional animal protein industries.
Farmers can supply their crops into this value-added supply chain, rather than more volatile global commodity markets. Cropping accounts for more than half (53.2%) of the value of Australia's agricultural production[49] – or $35B – which new protein industries will help grow.

One example of this is Harvest B, a company based in Western Sydney with the mission to "accelerate the world's transition to a sustainable food system." The company provides a B2B plant-based ingredient system for brands to create their own bespoke plant-based products, using agricultural inputs such as sustainably grown Australian wheat. Harvest B recently raised $3.2M from backers such as Woolworth's venture capital arm, as well as a $1M grant from the Advanced Manufacturing Growth Centre Commercialisation Fund.[50] These investments enable the company to scale its research and production facility in Condell Park, as well as to undertake further R&D to identify other Australian crops that can successfully be used as enhanced protein ingredients.

Considering future proteins: cultivated meat and precision fermentation dairy products

Entrepreneurs, scientists and chefs worldwide and in Australia are working to develop foods such as meat cultivated from cells and 'animal-free' dairy proteins produced via precision fermentation. The science behind cultivated meat and precision fermentation creates the same animal products consumed around the globe for thousands of years in a new way, with the potential to have a lesser impact on the environment.

While these products are still in the R&D phase and are not available on the commercial market in Australia, work in this sector is underway at several NSW-based companies, including:

- Vow - Sydney start-up Vow is creating meat cultivated from animal cells, and has already hosted successful tastings of prototype products in collaboration with chef Neil Perry, creating dishes such as cultivated-kangaroo dumplings.[51]
- All G Foods - This Sydney alternative proteins company currently produces plant-based meat products under the Love BUDS brand, but is also developing animal-free dairy products through precision fermentation. The company recently raised over $16M and is

currently determining a NSW location for its pilot production facility to produce its animal-free dairy products at scale.[52]

- Eden Brew - Backed by Norco, Australia's oldest dairy cooperative together with venture capital firm Main Sequence and the CSIRO. Sydney based Eden Brew hopes to have its animal free dairy made via precision fermentation methods on sale by the end of this year.[53]

Australia's investment in the alternative proteins sector

Many leading voices in Australia across science, research, food and agriculture have highlighted the critical role alternative protein industries will play in the future, and the need for our nation to make new investments to reap the benefits of a changing global protein market. This shared understanding has led to investment in research, initiatives and policies that demonstrate the need for protein diversification, such as:

- **CSIRO's Future Protein Mission** focusing on helping Australia capture a share of high-growth global protein markets to expand the domestic protein industry by $10 billion over five years;
- **NSW Farmers** internal policy position identifying alternative proteins as 'a new opportunity';
- **The Australian Farm Institute** reinforcing the complementarity and necessity for protein diversification in its 2020 report commissioned by Agrifutures.
- **Future Food Systems Cooperative Research Centre** supporting innovation across the food chain including projects such as exploring the local production of alternative proteins with research partners like University of New South Wales, University of New England and Western Sydney University.
- **University of Sydney** partnering with the plant-based sector to explore varietals of locally grown pulses and proprietary extraction techniques for application in the plant-protein market.

These leading Australian organisations recognise that thousands of Australian farmers and regional communities stand to benefit from the growth of the plant-based protein sector.

Rising investment in plant proteins generates opportunities for legume and grain growers, as well as those farmers with mixed livestock and cropping operations. These investments are already bringing jobs to regional Australia, but our nation has yet to harness the full potential of these industries.[54,55]

It's important to note this emerging sector can co-exist with traditional livestock industries. It's encouraging that many across our national science, research, agriculture and food agencies understand new protein sectors are complementary to existing protein sectors, and are well informed about the critical role these industries will play in the future, and the need for Australia to make new investments to remain competitive in a changing global protein market.

There are various discussions currently underway among state and federal governments and the private sector to enable investment in regional areas to build this infrastructure. There is also R&D happening across academic institutions to understand the scope of protein-rich crops currently being produced (or with potential to) in Australia that can be future inputs in a high-value plant protein supply chain.

Closing

The global expansion of new protein markets will continue, as countries around the globe seek to feed growing populations and shore up food security.

NSW, as the leading jurisdiction for economic contribution to the sector, has the opportunity to see farmers, regional communities, researchers and businesses all reap the economic benefits of these new sectors, if the sectors' potential is supported and championed by governments at all levels.

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Founder, Food Frontier

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