



Alternative Protein: Why Singapore Is More Than Meat-ing Expectations

INTRODUCTION

In late 2020, Singapore became the first country in the world to approve the sale of cultivated meat – meat produced from animal cells instead of slaughtered livestock.¹ At first glance, this seemed an uncharacteristic deviation for the Singapore Food Agency (SFA), and may have surprised many, especially those familiar with the strict regulations enforced by SFA and demanded similar prudence before adopting such novel food products. This Policy Explainer will illustrate why it was, in fact, prudence that counterintuitively compelled Singapore to become an unlikely frontier for alternative protein.

FOOD SECURITY IN THE BACKSEAT

Since independence, emphasis has often been placed on the criticality of water security. Students are taught from primary school that Singapore lacks natural resources, with Learning Journeys organised to the NEWater Visitor Centre and Marina Barrage to emphasise the success of the ‘Four National Taps’ initiative. There is good reason for the initial focus towards water self-sufficiency. The terms of the 1962 Water Agreement have been a persistent source of dispute with Malaysia that has become enshrined in the public consciousness.²

However, emphasis on food security had, arguably, been lacking, with Professor Teng, an adjunct senior fellow at RSIS, stating in 2017 that “Singapore securitised water... many, many decades ago... (But) with food, I would argue that we have not securitised food at all”.³ This is intuitive since the high diversity of food types and our limited land area would have made achieving food security a more complex endeavour than water security.

IMPETUS FOR POLICY ADOPTION

Recognising that food self-sufficiency was an overly ambitious goal for a fledgling nation, Singapore’s key strategy has always been focused on the diversification of import sources. However, supply chain shocks from the COVID-19 pandemic and the Russian invasion of Ukraine, as well as Malaysia’s recent chicken export ban, have only served to underscore this vulnerability, especially since Singapore imports more than 90% of her food supply.⁴

To that end, SFA had announced in 2019 its ‘30 by 30’ goal of developing the local agri-food industry to sustainably produce 30% of Singapore’s nutritional needs locally by 2030.⁵ This is where alternative protein comes in.

¹ Tan, Audrey. “In a World First, Cultured Chicken Meat Approved for Sale in Singapore.” The Strait Times, December 7, 2020. <https://www.straitstimes.com/singapore/environment/worlds-first-cell-cultured-chicken-likely-to-be-at-restaurants-in-singapore>.

² Jumrah, Wahab. “The 1962 Johor-Singapore Water Agreement: Lessons Learned” September 30, 2021. <https://thediplomat.com/2021/09/the-1962-johor-singapore-water-agreement-lessons-learned/>.

³ Ming En Siau, “The Big Read: Far from People’s Minds, but Food Security a Looming Issue,” TODAY Online, May 26, 2017. <https://www.todayonline.com/singapore/big-read-far-peoples-minds-food-security-looming-issue>.

⁴ “Singapore Food Statistics 2021.” Singapore Food Agency, April 2022, <https://www.sfa.gov.sg/publications/sgfs>.

⁵ Ibid.

THE RISE OF ALTERNATIVE PROTEIN

Alternative protein is an umbrella term that encapsulates all foods derived from plants, insects, fungi or cell cultures that are alternatives to animal-based protein. Their production often involve the use of leading technologies such as advanced fermentation, biomass agriculture and stem cell lab processes – the latter of which describes cultivated meat. Fuelled by changing consumer preferences, alternative protein has been hailed by industry leaders as a panacea to the rising ethical, health and environmental concerns surrounding animal-based protein from slaughtered livestock.

ARE WE THE NEXT GLOBAL HUB FOR ALTERNATIVE PROTEIN?

With at least 36 alternative protein companies based in Singapore, Mirte Gosker, managing director of the thinktank Good Food Institute Asia-Pacific (GFI APAC), says Singapore is “without question the leading alternative protein hub in Asia – and arguably the world”.⁶ This is due to the confluence of two factors: (1) high government support due to its ability to improve food security, and (2) a conducive start-up environment with the proper infrastructure and technology in place.

1. High Government Support & Investment

Recognising the multifold benefits to Singapore, multiple public sector agencies have worked in tandem to attract multinational companies and startups to set up operations within our agri-food ecosystem. For example, EnterpriseSG, in conjunction with A*STAR, the Economic Development Board (EDB), SFA and other partner organisations, had launched FoodInnovate in 2018 with the vision of making Singapore the leading food and nutrition hub in Asia by providing shared infrastructure and cultivating disruptive technologies.⁷

Furthermore, by granting regulatory approval to Californian start-up Eat Just to sell their cultivated chicken nuggets using animal serum in 2020, Singapore has – quite literally – put our money where our mouth is.⁸ This multi-ministry initiative appears to have succeeded, with international food business giants such as Oatly, ADM and Firmenich setting up operations.

2. Status as Technology Hub & Conducive Startup Environment

As a tech hub, Singapore has also uniquely leveraged its research infrastructure and world-class research talent to build a dynamic agri-tech ecosystem. Research from GFI APAC highlights the remarkable 61 business-to-business entities, such as pilot production facilities to local ingredient sourcing and other essential services, that help to support the industry.⁹ To reduce friction for companies setting up their base of operations in Singapore, the SFA also organises Novel Food Virtual Clinics to increase ease of grant applications.¹⁰

⁶ Lu, Donna. “All sizzle, no steak: how Singapore became the centre of the plant-based industry” The Guardian, November 5, 2022. <https://www.theguardian.com/environment/2022/nov/06/all-sizzle-no-steak-how-singapore-became-the-centre-of-the-plant-based-meat-industry>.

⁷ Keok, Felicia. “Alternative Proteins: ‘Impossibly Real’ Plant-Based Meat.” Challenge, August 17, 2022. <https://www.psd.gov.sg/challenge/ideas/trends/alternative-proteins-impossibly-real-plant-based-meat>.

⁸ Ibid.

⁹ “Mapped: Singapore’s Plant-Based Meat B2B Ecosystem.” Good Food Institute Asia-Pacific, June 2022. <https://gfi-apac.org/mapped-singapores-plant-based-meat-b2b-ecosystem>.

¹⁰ Ibid.

Singapore also offers multiple funding opportunities for food-tech startups, with big alternative protein accelerators such as Big Idea Ventures and Innovate360 located here to provide mentorship and guidance. This has resulted in multiple startups flocking to Singapore to reap the shared benefits.

FUTURE CHALLENGES FOR ALTERNATIVE PROTEIN

While the future is promising for alternative protein, the industry will need to overcome two major hurdles: (1) high production costs leading to higher prices than conventional animal-based products, and (2) changing consumer preferences to increase the proportion of alternative protein in their diet.

1. Reaching Price Parity with Animal-Based Protein

Compared to animal-based protein, the price of alternative protein is still substantially higher due to their high production costs. This is perhaps the most critical hurdle for the industry – a research survey by Blackbox found that the percentage of Singaporeans willing to switch at least 10% of their meat consumption to plant-based meat substitutes decreases substantially from 77% to 24% if the substitute is more expensive.¹¹

While the growing industry is ramping up production, it will not be able to reap massive economies of scale for some time. A report published by Boston Consulting Group and Blue Horizon found that while plant-based substitutes will achieve price parity in 2023, alternative proteins made from microorganisms and cultivated meat produced by cellular agriculture will only reach parity in 2025 and 2032 respectively.¹²

2. Reaching Taste Parity and Switching Consumer Preferences

Despite heavy investment into the sector, demand for plant-based meat in Singapore remains low, with a market penetration of only 0.056% of total meat sales in 2020. This is almost 25 times smaller than the U.S., suggesting that consumer preferences in Singapore have not yet shifted substantially.¹³ With food a big part of our culture and heritage, the difference in taste and texture might be the reason for the slow uptake.

Technological progress will inevitably reduce this gap, but this is only one half of the solution; consumers must be convinced to switch part of their diet to alternative protein in the long run. To that end, the industry has recognised the importance of breaking stereotypes, with Eat Just partnering with renowned Singaporean hawkers to incorporate their cultivated meat in local dishes.¹⁴

CONCLUSION

Ultimately, the rapid growth of the alternative protein industry – with Singapore as one of, if not the, leading global hub – will only serve to strengthen our food security and bring us one step closer to achieving our ‘30 by 30’ vision.

Authored by Jason Lam. Published on 15 March 2023.

¹¹ Xavier Xin, “Plant-Based Meat Sprouts in Singapore,” Blackbox Corp, October 31, 2022, <https://blackbox.com.sg/everyone/plant-based-meat-sprouts-in-singapore>.

¹² Benjamin Morach et al., “Food for Thought: The Protein Transformation,” BCG Global, March 24, 2021, <https://www.bcg.com/publications/2021/the-benefits-of-plant-based-meats>.

¹³ Ibid.

¹⁴ Amy Buxton, “Eat Just Partners with Singapore Hawkers to Bring Heritage and the Future of Food Together,” Green Queen, March 2, 2022, <https://www.greenqueen.com.hk/eat-just-singapore-hawkers/>.

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This Policy Explainer was written by members of MAJU. MAJU is an independent, youth-led organisation that focuses on engaging Singaporean youths in a long-term research process to guide them in jointly formulating policy ideas of their own.

By sharing our unique youth perspectives, MAJU hopes to contribute to the policymaking discourse and future of Singapore.