THE APAC ALTERNATIVE PROTEIN INDUSTRY REPORT 2021

APAC ACCELERATION

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INTRO & EXEC SUMMARY

Plant-Based Sausage Curry by v2food
THE AMAZING ACCELERATION OF THE APAC ALT PROTEIN INDUSTRY

ACKNOWLEDGEMENT

Green Queen Media would like to thank everyone who contributed to the report at different stages and in various ways. Their sharing and expertise contributed to the breadth and depth of this report, and their insights into Asia-Pacific’s alternative protein market are invaluable. For a full list of contributors, kindly refer to the report’s Appendix. We would also like to express our deep gratitude to our many sponsors, who generously supported the creation of this report, without whom it would not have been possible to maintain the report quality and continue to offer it as a free resource to help inform the industry, educate consumers, inspire aspiring founders and advance the sector’s wider research and development efforts.

REPORT METHODOLOGY

This report is authored by Nicola Spalding, edited by Sonalie Figueiras, designed by Ana Perez and published by Green Queen Media, the Hong Kong-based global independent impact media platform whose online magazine Green Queen offers original news reporting on a wide range of sustainability and global health topics with an Asia-Pacific lens, with a focus on documenting the growing alternative protein industry.

The analysis in the report draws on both primary and secondary data collected by the Green Queen Media team including lead researcher Nicola Spalding, who conducted over 50 one-on-one interviews and extensive discussions with stakeholders, industry experts, entrepreneurs, investors, connectors, accelerators and government officials. Special thanks to Alessandra Franco, whose tireless efforts with our sponsors have resulted in a report that, we hope, you will find even more inspiring than our last.
AUTHOR’S NOTE

Asia-Pacific’s Alternative Protein industry has evolved dramatically since our last award-winning report. We have done our best to make the report as up-to-date as possible, but we underline that this report is reflective of the industry as of August 31, 2021.

This year, we have extended our geographic focus to also include Australia and New Zealand. Regarding the alternative protein players that make up the subject matter of this report: our focus is on companies, both startups and majors, that are highly innovative, are pioneering disruptive technology and whose model is highly scalable, commercially viable in the medium term and whose mission is to fundamentally change existing global food systems. Note: This report does not cover insect protein as it is not a slaughter-free choice.

A NOTE ABOUT CELL-BASED TERMINOLOGY

As is normal for a nascent food sector where products have not yet reached mass production or retail consumers, there is still some confusion and disagreement over what to call cell-based products. Different companies use different terms. On their respective websites, sector leaders such as Shiok Meats uses ‘cell-based’, while Upside Foods (formerly Memphis Meats) prefers ‘cell-cultured’, Eat Just’s GOOD Meat describes their product as ‘cultivated’ and early pioneer Mosa Meat calls it ‘cultured’.
The Good Food Institute told FoodNavigator that they “continue to believe that ‘cultivated’ is the optimal modifier for seafood and meat made from animal cells”, and that “of course, plant-based meat products and traditional meat products are also cell-based, so the term does not necessarily distinguish or provide consumers with clear information about the product”. A 2020 study by Rutgers University researchers concluded that ‘cell-based’ and ‘cell-cultured’ tested best with consumers when it came to seafood produced via cellular agriculture.

Interestingly, Google Trends data (Worldwide, Past 12 Months) shows that ‘cultured meat’ is by far the most searched term as compared to ‘cell-based meat’, ‘cultivated meat’, ‘cell-cultured meat’ and ‘cell based meat’ (no hyphen) - see below graph dated 16 August 2021.

For the purposes of this report, we will use cell-based meat as our generic term to remain consistent with our 2020 report, and we will use each company’s preferred terms in their respective case studies.

![Google Trends data comparing global search volumes for various terms - past 12 months.](image)
EXEC SUMMARY

In our last report we declared that Asia’s alternative protein industry was nascent, but growing. In the mere 18 months since our last publication so much has changed, even outside the small matter of a global pandemic. Certain markets within Asia-Pacific are now mature, some even classed as alternative protein hubs, at the forefront of global innovation in the space. Others, which had little or no representation in the sector 18 months ago, are now growing their presence, through both startups and major industry players determined to be a part of the seismic shift that is taking place in our world.

In this report, we explore the driving factors behind APAC’s acceleration. COVID-19 has been undeniably important in terms of changing consumer behaviours, hopefully irrevocably, acting as a wake up call regarding health, sustainability, and the fragility of our food systems, yet this uprising has been building for some time.

The past 18 months have seen new technology, more funding in one year than all the years before it combined, and a true appetite from industry players to make change happen. Where previously only major Western plant-based brands had made their mark on Asia, aggressively pursuing China in particular as a key market, now Asian homegrown brands are making their mark on the rest of the world, particularly in the case of Hong Kong’s Green Monday, whose rapid global expansion is testament to its founders’ appetite and determination for change. In fact, for APAC pioneers such as Green Monday, Next Gen and v2food, who are expanding their global presence at lightning speed, and are more than holding their own on the world stage, we foresee coveted unicorn status in the not-too-distant future, and exits like IPOs on the horizon.

Asia is home to over half of the world’s population and, as a result, faces the greatest threat in terms of food insecurity and its associated social, environmental and economic challenges. Asia-based entrepreneurs are doing their part to address the growing need for meat, seafood, egg and dairy alternatives in the region, and are meeting local needs with products designed for Asian palates. Asian consumer appetites, cuisine preferences and food safety priorities in terms of protein consumption are vastly different to their Western counterparts, something we flagged in our last report, and startups and majors alike are seizing the opportunity to develop product ranges which suit the region. Some industry behemoths are going so far as to pivot their operations, recognising that a plant-based diet is no longer a fad, but an indisputable global consumer behaviour shift.
Across many countries, Big Food has jumped into the alternative protein sector feet-first, underlining that alternative protein is now a business portfolio must-have if you want to stay ahead, or even be a part, of the game.

It is the view of this report’s authors that homegrown Asian alternative protein companies will soon overtake US and European brands in the region. Rising middle-class consumers have more disposable income than ever before, and are looking to make healthier, more sustainable choices via new technology. Asia-Pacific consumers have been exceptionally fast to adopt new, sustainable habits. Demand for alternative protein is growing across the region, proving that consumers are woke to environmental and animal welfare concerns. The “no-meat, climate-first’ Gen Z phenomenon is global, and it is especially prevalent in younger APAC citizens. Local companies are already, on the whole, more price competitive than Western counterparts, with news of alternative proteins reaching price parity with animal-based products now a regular occurrence.

At the time of writing our last report, no Asian government had deemed cultivated animal protein safe for human consumption, but we predicted that Asia would likely be the first geography where cell-based meat would launch on a large-scale basis and that there was a strong possibility that the first regulatory approval would come from Asia. Our prediction proved correct, thanks to the landmark, game-changing regulatory approval for Eat Just’s Good MEAT cultivated chicken by Singapore’s government in November 2020, making it the first company in the world to commercialise cultivated meat, for sale first to select restaurants, and later to retail stores. While Eat Just’s cultivated chicken is available to consumers at a price comparable to conventional chicken, its production cost still has a way to go to reach parity with farmed meat. However, many startups in the region are working hard to bring their production costs down, and we have seen a much more collaborative approach to cellular agriculture, through defined frameworks and infrastructure, and strategic partnerships to share knowledge and technology, resulting in important milestones, such as Avant Meats’ more-than-90% cost reduction for its cell-cultured seafood, a result of its partnership with Chinese biotech firm QuaCell.

New technologies and ingredients are popping up throughout the industry, as startups pioneering precision fermentation, microalgae and others revolutionise the space and bring us ever-closer to parity with animal-based proteins. We didn’t address fermentation at all in our last report because it was such a nascent sector. This is now changing, but we still consider Asia-Pacific to be underweight on fermentation in comparison to the sector globally.
Where investment has exploded, support across the ecosystem lags behind, and this could be a not insignificant risk when it comes to the industry's continued acceleration. This report explores every aspect of the space to date, and the potential growth accelerators and limiters of which industry players need to be mindful. While we are off to a promising start, we cannot stop now.
COVID AND HOW IT AFFECTED THE INDUSTRY

*Plant-based Chick_n Steak by Green Rebel Foods
The coronavirus pandemic introduced uncertainty in food production and consumption. It disrupted food supply chains, as worldwide closures limited transport and led to unprecedented food shortages. Consumer attitudes and purchasing habits changed, particularly at the very beginning. The pandemic also sparked the biggest fall in meat consumption in decades all around the world as consumers turned to alternative proteins as the healthier, safer option. According to figures from the United Nations Food & Agriculture Organization released in June 2020, per capita consumption of meat fell 3% from 2019, representing the biggest jump since at least 2000. In the U.S., where the worst slaughterhouse outbreaks were recorded, per capita meat consumption isn’t projected to return to pre-coronavirus levels until at least five years into the future. In China, where an outbreak in Beijing was reportedly linked to imported animal protein, consumers lost some confidence in the safety of meat and instead began to opt for more plant-based options. Fears were further stoked by news of a novel swine flu with pandemic potential and a deluge of livestock diseases.
Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness from the coronavirus, so protecting one’s health has become a major consideration through the pandemic, which has become clear in consumer behaviour, as Emily Dothe, Data Scientist at abillion, explains: “We saw that reviews tagged with health-related hashtags, such as #healthyvegan or #healthyeats, quadrupled since the start of last year, which tells us that health is a big factor for people deciding to eat plant-based foods.” A study of 5,000 consumers across seven Asia-Pacific countries - Australia, China, India, Indonesia, Japan, South Korea, and Thailand - revealed that consumers paid more attention to their health during the pandemic. More than 75% of respondents to the survey stated their desire to strengthen their immune systems by doing more exercise and eating a healthier diet. Consequently, the consumption of eggs, dairy products, and bottled water increased, while alcohol and snack consumption declined in these countries.

Retail sales of meat alternatives in Asia-Pacific grew to an estimated US$1 billion in 2020. There was robust sales growth in this category, with a projected CAGR of 9.1 percent by value and 8.65 percent by volume forecasted for the period 2019 to 2022. In the main, this increase was driven by consumer values around health, taste, and sustainability, and data showed that 75% of APAC consumers are willing to pay a similar price for meat and meat alternatives, with 83% rating protein as the most important ingredient in any meal.
The economic downturn caused by the pandemic is expected to wipe out as many as 2.2 million restaurants globally, so it’s also likely that populations everywhere will be consuming far less meat simply because they are cooking more of their own meals. Of the remaining food service outlets, many have begun offering more dishes made using vegan alternatives, to target consumers newly concerned with their health and food safety. For example, Great Lakes Tokyo, a burger restaurant in Tokyo, revamped into a 100% vegan restaurant in July 2020. For restaurant owner John Penny, the decision was made after realising how the animal industry contributed to the current pandemic and will continue to drive the emergence of future health crises: “As the virus was directly caused by animal exploitation there was simply no way we could move forward contributing to something that nearly killed our business, has literally killed hundreds of thousands of people, and, of course, trillions of animals each year.”

MAJOR BUSINESSES THAT PIVOTED AND HOW

All across Asia-Pacific, food giants have been pivoting their operations to include alternative protein options. From Vinh Hoan Corporation, the world’s largest pangasius fish producer, based in Vietnam, which announced its strategic partnership with Hong Kong cell-based seafood startup Avant Meats in January 2021, to Singapore-based agricultural commodities company Agrocorp International’s announcement of its new plant-based brand in April 2021, these changes are a sign that there is a seismic shift in our food systems.

Plus, many popular foodservice outlets have incorporated plant-based food products into their menus through the past 18 months, many of them for the first time. From McDonald’s’ partnership with OmniFoods and Burger King’s introduction of The Vegetarian Butcher and v2food’s plant-based patties in its Rebel Whopper to Starbucks’ menu overhaul to include Oatly, OmniFoods and Impossible Foods products, which saw a significant spike in earnings, there is no doubt that the coronavirus pandemic has caused a major shift in consumer demand and brand operations. Let’s hope that these behaviour changes are long term.
THE EXPLOSION IN PLANT-BASED
THE EXPLOSION IN PLANT-BASED

Plant-based protein alternatives have existed for a long time, especially in Asia where tofu, seitan and tempeh have been culinary norms for centuries and where mock meats have been a staple at Buddhist restaurants around the region for decades. But the new generation of tech-powered startups are creating alternative protein products that mimic meat, seafood, eggs, and dairy far more accurately, and all without any animal ingredients, offering delicious and realistic alternatives with a lower carbon footprint and free of cruelty. For Mirte Gosker, Managing Director at the Good Food Institute APAC, regional food tech startups are creating world class products in response to a burgeoning consumer demand: “Homegrown Asian brands like Green Rebel Foods and OmniPork have proven that meat made from plants can deliver all the familiar flavours that consumers expect, with a tiny fraction of the climate footprint. Major fast-food companies like KFC, McDonald’s, Burger King, and Starbucks have already begun offering alternative proteins in Asia. Now that high-quality plant-based meats are increasingly available, the race is on to scale up operations and invest in equipment to make larger volumes of product, which will deliver further cost savings to consumers — a critical factor, since taste, convenience, and cost are three of the most decisive elements that determine what consumers choose to eat.”

Gosker says that going forward, the key barrier is price. “Consumer studies suggest that the local market is primed for a continued surge as plant-based products increase in quality and decrease in price. When multinational public-opinion research consultancy firm GlobeScan surveyed 27,000 people in dozens of countries, a majority of participants from Vietnam, China, India, and Thailand said that, if taste and cost are equal, they want their meat to come from plants, not animals. This suggests that the potential consumer base for plant-based meats cuts across all socioeconomic groups, if companies can make high-quality products available on a mass scale at a reasonable price.”
Certain parts of Asia have long been home to meat-intensive diets, but the last few decades have seen both production and consumption increase dramatically, and consumption especially is increasing in Asia at a faster rate than the rest of the world, largely due to changing demographics: as incomes rise, so does meat consumption per capita. China, Japan, Korea and Vietnam have all seen growth in meat production to meet local demand, leading to a greater reliance on industrialised factory farming systems dependent on imported animal feed and mired in animal cruelty.

Asia needs sustainable solutions if it is to continue to thrive, and plant-based meat alternatives play a key role.
Chicken is, arguably, the most versatile meat in the world. Broiler chickens are farmed for their meat, and generally kept in unsavoury or downright dangerous conditions. It is tricky to replicate with plant proteins, not least because the various parts of a chicken are all so different from each other. Globally, many startups have tackled plant-based chicken nuggets, including China’s Haofood which has developed nuggets and popcorn chicken from peanuts, but there are few working on whole cut chicken analogues. Singapore’s Next Gen Foods is one such startup, and its TiNDLE plant-based chicken alternative has become a regional sensation within a few short months of launch.
“We always planned to be global from the get-go,” says Andre Menezes, Co-Founder and CEO at Next Gen Foods, the company behind plant-based chicken sensation TiNDLE. “When we started on this journey we were not first-timers, and through our experience we strived to build a global company, without barriers to success. And we saw this in three ways: first, we wanted to build a brand identity that was recognisable around the world. Second, recognising that chicken is a global protein present in many cuisines, unlike a beef burger, we designed TiNDLE with a short list of non-GMO ingredients so that it could scale globally without regulatory barriers. Third priority was to secure production capacity through partners that could allow us to grow very quickly; we have at least 2-3 years covered in terms of production capacity.”

NO BORDERS: A NEW KIND OF FOOD TECH COMPANY

As Bill Gates writes in his Book *How to Avoid a Climate Disaster*, “It is a mistake to think of innovation only in the strict, technological sense. Innovation is not a matter of inventing a new machine or some new process; it’s also coming up with new approaches to business models, supply chains, markets, and policies that will help new inventions come to life and reach a global scale. Innovation is both new devices and new ways of doing things.” This is exactly the ethos that the co-founders, Timo Recker and Andre Menezes, have seeded deeply into the company from day one, as they understood that only by developing a highly scalable and innovative business model could they maximise their impact.

Next Gen was founded in 2020 and has scaled up fast. Born during the pandemic, COVID-19 restrictions meant that the founders were forced to work in a different way, without being able to travel, but this gave them a novel outlook on ways of working: “We are actually a tech company, Next Gen does not touch the product at any moment in time. We only do R&D, but obviously after R&D when it comes to actual flow of goods, from the ingredients that we select and develop, to the manufacturer, to the distributor, the product does not cross our hands, we manage the entire process remotely and digitally. And the beauty of this way of working is that we can be anywhere. So that has forced us to be creative, to think digitally, to think outside of borders.” Currently, the startup has 24 staff, with plans to grow to 100 by the end of 2022. It has offices in Singapore, Hong Kong and Malaysia at the moment, and Dubai, the USA and Europe will be next.
In July 2021, the company raised another US$20 million in an extended seed round, bringing its total seed round to US$30 million and a valuation of US$180 million. According to Pitchbook, Next Gen's initial US$10 million seed round was already hailed as the largest seed round for a vegan food tech company globally. The latest financing round witnessed the participation of Global Fund GGV Capital; China-based agriculture and food tech venture fund investing in the alternative protein space, Bits x Bites; a major Asian food and beverage player in the plant-based dairy sector, Yeo Hiap Seng; co-author of 'Blitzscaling (how tech companies can scale quickly)' Chris Yeh; and a group of athletes including the England national team footballer Dele Alli. This new group joined the company's existing investors, including the Singapore-based Temasek and Asia-based venture capital fund K3 Ventures, both of whom participated in the extension. It plans to use the funding to launch in the U.S. market within the next twelve months.
A WHOLLY CONSUMER-FOCUSED MARKET APPROACH

One of the things which makes Next Gen’s approach unique is that it is wholly consumer-focused: “We started our TiNDLE journey learning what chicken means to a consumer. Beyond taste alone, we sought to understand what consumers’ expectations are for mouthfeel, nutrition, and cookability. It is a highly innovative protein, one that allows consumers to go to a QSR chain and have one experience and then to an Indian restaurant and eat a chicken curry, and have a completely different experience but with the same protein. Then we took it one step further to truly understand the chef’s perspective, to learn what it is about chicken that they really like - it was the texture and versatility across cuisines and preparation methods.”
Next Gen has applied these learnings to its technology. The company mastered its extrusion processes to get the right fibrous texture, incorporated proprietary Lipi™ (chicken fat made from plants) to mimic how it behaves within chicken from birds and, most importantly, ensured the product delivered on the versatility and cookability that chefs and consumers demand from this type of protein. Jean Madden, CMO at Next Gen Foods, explains: “Our core brand objective for TiNDLE is that we not only deliver on the taste and the texture of chicken, which is what consumers demand, but we also deliver on the versatility and the cookability that chefs are looking for. And while there are other plant-based chicken players out there, they tend to be pre-battered, pre-seasoned, pre-fried, or in nugget format, which is very difficult for a chef to take on and make their own. So we went about it in a different way, and really listened to the chef on what it is that they’re looking for. What are the key pain points when it comes to chicken from birds? How can we overcome that with our product? So a lot of thought has gone into the portion size, the product, how it performs in different cooking applications, how it can be moulded, how it can be better than chicken from birds, and ultimately how it can ignite a new wave of innovative, delicious experiences.”

TiNDLE chicken comes as a mini patty of 50 grams, so it’s very easy to scale. It’s designed that way, after Next Gen took feedback from chefs that they require a product which is easy to combine to create a larger portion. Plus, its portion size makes it simple to manage and reduces waste, far preferable to defrosting a larger portion and hoping to service enough customers before its expiration date. TiNDLE is very malleable, and can be used to create any shape while still retaining its unique texture and flavour.
“WE’RE A CULINARY EXPERIENCE, NOT A ONE-SIZE FINISHED PRODUCT”

Next Gen also approached its product development with the mindset of converting flexitarians and meat eaters to a plant-based diet, via products that most accurately replicate conventional meat. The market for finished products, such as burgers and nuggets, is arguably fairly saturated, partly perhaps because chicken has been, historically, one of the most difficult foods to replicate with plants, all while being the most-consumed protein in the world. It is incredibly versatile, used in all kinds of dishes globally, and converting consumers takes more than one food group; it is important to integrate plants into all the foods that consumers want to eat.

Where TiNDLE differs from other major plant-based meat brands is that it is a culinary experience, not a one-size finished product. Unlike other pre-seasoned, pre-battered, and shaped products that have very limited applications and culinary freedom, chefs can use TiNDLE in a multitude of ways, across multiple cuisines and cooking applications. “Consumers can eat it almost every day in a completely different experience in an entirely different dish. Because we have that breadth of cuisine options, we’re able to connect with people in a much more meaningful way. TiNDLE has been designed as a global food innovation. This is not just another plant-based protein – it is a versatile and limitless innovation. One that can manifest itself in any global cuisine, mind blowing chef creations, and grandma’s secret recipes. Food is highly personal to each individual and culture – there is no one size fits all.”

“"This is not just another plant-based protein - it is a versatile and limitless innovation. One that can manifest itself in any global cuisine, mind blowing chef creations, and grandma’s secret recipes. Food is highly personal to each individual and culture - there is no one size fits all."

Jean Madden, CMO, TiNDLE

A CHEF-CENTERED GO-TO-MARKET STRATEGY THAT DELIGHTS CONSUMERS

Next Gen’s go-to-market strategy for TiNDLE is different, too. Rather than a direct-to-retail approach, which can arguably be difficult given that gaining shelf space and raising consumer brand awareness are tricky, the company made the consumer dining experience a cornerstone instead. Next Gen partners with world-class chefs, including four-time Michelin Star Chef Mural Manjunath of The Song of India and two-starred chef Alvin Leung of Bo Innovation, to celebrate TiNDLE’s attributes through exceptional restaurant dishes, in a B2B2C model.
Says Madden: “We feel that chefs, ultimately, they are the magicians, they are the unsung heroes of the culinary realm. And we really wanted to showcase their creativity, the immense power that they have in transforming ingredients into delicious dishes and incredible experiences for the end consumer. And they are arguably the hardest critics, so they’re looking for the best quality. And if the chef loves it, then I’m confident that consumers will love it too. But also, if the chef is able to do something really magical and consumers get to experience that, then it really elevates our brand to a completely different positioning rather than simply a ‘buy our product’ message.”

“TiNDLE has been built to be a global brand that speaks to our global audience in a one-to-one way.”

Jean Madden, CMO, TiNDLE

WHY BRANDING MATTERS

The branding itself is distinctive and plays a key role in generating maximum impact. Madden adds: “TiNDLE has been built to be a global brand for our global audience. We’ve worked with specialists, creatives and agencies from all over the world: USA, Europe and APAC. But having universal appeal is not enough – at TiNDLE, we communicate and engage with our audience in a very personal one-to-one way.

We have focused on developing deep connections with chefs and with consumers. We’ve created intimate experiences, exclusive partnerships, personal touches, and direct engagement on social media. Through our social media and branding, we’re creating a place, a destination that the community can foster, where we can build these genuine advocates and fans of the brand.”
Starting out in Singapore was important for Next Gen, because, as Menezes explains: “Singapore has for a long, long time been considered a global business hub due to its access to talent, connectivity, ease of doing business and access to capital. More recently, Singapore has set itself to become a hub specifically for the food tech sector, making it even more attractive, with access to MNCs and research and development centers. All of that comes on top of being a great test market, with the highest level of global players, a great gastronomy scene and an educated population that is becoming more aware of sustainability and the impact of our food choices in our environment.”

Next Gen initially launched with 11 iconic restaurant brands in Singapore, reaching more than 40 outlets within its first month. TiNDLE also launched in 16 restaurants in Hong Kong, three in Macau in June 2021 and, as of August 2021, has landed in Kuala Lumpur, Dubai and Abu Dhabi, going from one to six cities in just six months and working with over 50 chefs. The brand has big expansion plans, as Menezes confirms: “There will definitely be more places coming in Asia-Pacific, and even more cities outside the region. The Middle East is a growing market, and we know that for the long term the U.S., Europe, Brazil and China are what we believe to be the four biggest markets, and we will definitely accelerate as much as possible to be in each one of them.” So far, sales are strong. Despite five weeks of COVID restrictions in Singapore, the number of outlets serving TiNDLE have more than tripled since the launch in March.

Next Gen already has other alternative proteins in its sights. Designed as a corporate umbrella to undertake R&D and activate brands globally, the infrastructure that it has established for TiNDLE can easily be used for other products. In this case, the chicken came before the egg, but we may not have to wait that long for more.
Beef consumption in Asia-Pacific is expected to grow by 2.7 million tonnes over the next ten years, the largest acceleration across any global region, according to a report released by FAO/OECD. Chinese demand, especially, is already boosting Brazilian beef sales, as Brazil supplied 43% of China’s meat imports in 2020, but this comes at a high environmental cost. Malaysia’s Green Rebel Foods, Japan’s Next Meats and Korea’s Unlimeat are all working on vegan beef alternatives to meet some of this demand.

Per the above FAO/OECD report, while Australia will continue to represent a fraction of global production, Australian beef exports are forecast to remain steady and should contribute approximately 16% to global beef trade in 2029. Australia-based startup v2food is looking to change that.
v2food first launched in 2019, a startup born out of a partnership with Australia’s national science agency CSIRO, its innovation fund Main Sequence Ventures and Competitive Foods Australia, one of the country’s largest private companies that owns Hungry Jack’s, the Burger King franchise in the country. Today, the company is the most funded and most successful alternative protein firm in Oceania.

A VENTURE SCIENCE ORIGIN STORY

v2food’s story is non-traditional; it was built using an investment model called ‘venture science’ pioneered by deep tech venture capital firm Main Sequence in Australia, meaning that the company founders reverse-engineered a solution based on a problem that they had identified in the market. Jack Cowin, CEO of Competitive Foods Australia, expressed to Main Sequence and CSIRO that he was looking to bring more plant-based options into Hungry Jack’s in Australia, but wasn’t able to import any products that he felt were suitable for his franchise.

At the time, CSIRO had been researching alternative proteins and extracting proteins from different legumes and plants, and Main Sequence saw the market opportunity to work with Competitive Foods Australia, an industry partner, to commercialise a solution. The three entities then worked together to find a founder, and brought in Nick Hazell, whose FMCG R&D background was a perfect fit.

10 MILLION

Products sold by v2food so far at over 2,000 locations

FROM ZERO TO SCALABLE COMMERCIAL PRODUCT IN 9 MONTHS

The way in which it was founded is one of the reasons behind why v2food was able to go from zero to a scalable commercial product within 9 months. Speaking about its speed to scale, v2food’s CEO Nick Hazell says: “We’ve designed to scale quickly because, reading about the sustainability crisis that we’re almost sleepwalking into, we don’t have a lot of time. We’re going to be reaching some pretty fundamental tipping points really quite quickly. So we don’t have until 2050. We don’t really even have until 2030, we have to get moving quickly, and have to scale at an extraordinary rate to get mass adoption.
One of the advantages of not being morally vegan, even though our products are vegan, is that we don’t have a problem working with the meat industry, and that’s key to scaling. The world is already supplied by a meat industry. Our job is to use whatever there is, to reinvent as little as possible, and to make sure that our protein works in the existing supply system. Then, we just need to find some technology to make it cheaper and more delicious, which is not a trivial thing. But the reason why we’re prepared to take on that task is because we have thousands of scientists available to us through our relationship with CSIRO, which means that we can take on stuff that normally as a startup you wouldn’t dare take on. We’ve got 18 projects going on right now with CSIRO, spanning nutrition, protein extraction technology, plant breeding technologies, soil carbon sequestration work, as well as a lot of flavour work and structure work to create delicious meat. So I guess the answer to scalability is by design. We just refuse to go slow, we take huge risks. We’re giving you everything we’ve got. Everyone in the business is totally signed on to try and do everything we can to stop the increase in meat consumption, which is leading to the destruction of ecosystems.

"We have to get moving quickly, and have to scale at an extraordinary rate to get mass adoption."

Nick Hazell, CEO, v2food

v2food’s first product launch was the Rebel Whopper in Australia, and from there it saw commercial success with its v2burger patties and v2mince via Australian supermarket chains Woolworths and Coles. Once product market fit had been established, the company began rolling out across the rest of the world in a foodservice capacity. Over the last year, v2food has partnered with Burger King across the Philippines, Japan, South Korea and Thailand, and has rolled out new plant-based sausages and bolognese v2sauce in Australia. For the moment, its products are restricted to the vegan and plant-based sections in supermarkets, but Hazell sees a huge opportunity to market plant-based products alongside meat products given the growing trend of meat reduction behaviour. Offering consumers a plant-based alternative to a conventional meat favourite should drive sales and help flexitarian consumers to adopt a plant-based diet. v2food has so far sold more than 10 million of its products at over 2,000 locations.
The company’s key mission throughout has been to target meat-eaters with a sustainable ‘version 2’ of meat, collaborating with the grain and meat industries to add plant-based protein to the Australian agricultural story, an industry which CSIRO predicts will be worth $6 billion+ by 2030 in Australia.

All of its products are currently sold at a similar price point to comparable beef products, which the company believes offers consumers the freedom to enjoy plant-based alternatives without having to pay a sustainability premium, and so far it has sold well into the tens of thousands of its plant-based burgers. For Hazell, it’s v2food’s inherent commerciality which will lead to its global success: “We are price competitive, which is a very important factor in getting our products on shelves. Our job is to have a proposition which is compelling, which consumers love. We will live and die by our rate of sale, and by consumers loving our product and telling their friends and buying more. We are driving the category and our mission to be number one in Australia so that we can export to the rest of the world and actually be part of the Australian meat industry. Our product is a continuous evolution: we launched version 80 or something in retail, in Hungry Jack’s it was version 57, I think, so that was six months of insanely fast product development. But it’s getting better all the time. The technology here never stops. We’re not limited by the genetics of a cow. We will get better and better, and we will be getting more affordable and more available. So it’s all upside potential.”

$6 BILLION+
How much the Australian agricultural market will be worth by 2030 according to a CSIRO prediction
ASIAN MARKETS “NUMBER ONE FOCUS” OUTSIDE OF AUSTRALIA

v2food’s US$57 million Series B round in October 2020 – the biggest in Australia’s plant-based meat sector so far, and one of the largest rounds globally – saw the participation of existing and new investors from around the world, including Li Ka-shing’s Horizons Ventures, Singapore-based Temasek and Sequoia Capital China. Its Series B Plus round, in August 2021, attracted more Asian investors and brought in an additional US$54 million, elevating v2food’s valuation to over AU$500 million, a jump from the AU$2 million figure from two and a half years ago. The funds are enabling the company to complete its production facility in Wodonga, grow its team, establish its full supply chain within Australia and continue to launch products into new markets, including the lucrative mainland Chinese market.

Asian markets, in particular, are v2food’s “number one focus outside of Australia”. Hazell is bullish on their global opportunity: “We’re continuing to use QSR as a way of getting our brand out there. But particularly in China, the bulk of meat is not actually being eaten in QSR; it’s not burgers, it’s pork going into dumplings and meatballs. And that’s where our focus is in China and where we’re looking forward to some extraordinary growth by making sure that our meat works in local cuisines. We’re not going to win this by trying to convert Chinese consumers to eat beef burgers. The meat supply problems that China has are not going away, they are chronic, and so that’s going to be a tailwind for plant-based meat in China, we think, for the coming decade.”
LISTENING, LEARNING, LOCALISING

v2food’s approach is to always fully understand the local market really well before launching operationally. Hazell adds: "We’re very wary of coming in as though we know better. We need to go in and find out what people are eating. What is the meat supply chain? How do people buy their meat? What do they believe about it? What is aspirational for the consumer when it comes to meat, because meat is aspirational in developing countries. The moment they get an extra dollar in their income, they will buy more meat. We need to really understand what’s happening, and formulate our product, and our business model, so that it fits. We take the design of the whole system very seriously. We also work to understand our nutritional credentials, making sure that we’re relevant for the market, because different markets have different nutritional requirements. In Australia, you’d be focusing on obesity, which, when you make your meat with a fair amount of fibre, means you actually have a really interesting story to tell. But in developing markets, there are other nutritional needs you’d want to focus on. So we’re doing the work to understand that, and make sure that we’re locally relevant in all the markets that we operate in.”

Hazell has big plans for future products: “There are other other meats that we will mimic; pork clearly is important. And we can do pretty much all of the others, and they’re all there, ready for execution, depending on what the opportunity is. Our priority was beef because of the environmental aspects. And then it will be pork, and then it will be chicken. And lastly, it will be fish, in terms of just pure efficiency and environmental issues. Though having seen Seaspiracy recently, I wonder whether I should change our priorities.”

"We’re not limited by the genetics of a cow. We will get better and better, and we will be getting more affordable and more available."

Nick Hazell, CEO, v2food
PLANT-BASED PORK

Pork is the most-consumed meat in the world, and the majority of it is consumed in Asia-Pacific. According to the OECD, on average, Koreans eat 31.2 kilograms of pork per year, while people in mainland China eat 24.4 kg, both significantly higher than the international average of 11.1 kg. Pork is used across many cuisines and in many different formats, luncheon meat being a prime example. Known in the West by its Hormel brand name Spam, recent market research showed that APAC accounts for 39% of global luncheon meat sales, with China, South Korea and Japan among the top consumers. An astonishing 400 million cans of Spam are sold across the region every year. Hong Kong-based Green Monday’s food tech arm OmniFoods launched the world’s first vegan spam for precisely this reason. In fact, a survey by the company showed that 70% of Hong Kongers eat Spam at least once a week.

OmniPork is Asia-Pacific’s pork analogue leader; its points-of-sale are spread across 20 countries and are targeted to reach 40,000 before the end of the year, having entered the U.S. and Australian markets in April 2021, after launching in the U.K. and Japan in March 2021, and across China in 2020.

Chinese startup YouKuai Group International has developed a plant-based ground pork product called Zrou, which it claims is the leading plant-based meat brand in China. Currently, YouKuai has teamed up with more than 100 outlets across China, including hotels and over 25 international schools and corporate cafeterias, to serve Zrou. The firm raised US$7.3 million in May 2021 to fund its further expansion plans. Malaysian startup Phuture Foods has also developed a vegan pork mince product.

PLANT-BASED SEAFOOD

Asia is also a huge market for seafood, accounting for two thirds of global consumption, making it a potentially lucrative opportunity for companies manufacturing plant-based alternatives to fish and other marine protein. And seafood sustainability and availability are a complicated matter. China’s massive distant-water fishing operations are responsible for an estimated 15% of the world’s reported wild fish catch, but the country brought in new rules last year to govern its fleets. Plus, its government issued a 10-year fishing ban at the Yangtze River in 2020, further limiting seafood capacity.
Both in Asia-Pacific and globally, plant-based seafood is way behind plant-based meat in terms of innovation and commercial availability, but consumption is on the rise, with Singapore leading the charge according to data from plant-based social platform abillion.

The investment community is excited about the space, with money flooding in to support startups that have either developed and launched products, or which are working on R&D with a view to launching in the next 6-18 months. For example, Chinese startup New Singularity has developed seafood alternatives based on a fungus protein, and scored investment from Lever VC in September 2020. Singapore’s Growthwell Group’s origins are in meat substitutes, but the firm has diversified its business into seafood alternatives and its sales are now split half and half between the two categories. Shanghai-based startup Hero Protein is looking to add a plant-based seafood option to its already-successful line of chicken and beef alternatives.

Hong Kong’s Green Monday’s recent OmniSeafood launch marks the first time a leading food tech in Asia is tapping into the enormous opportunity to be made in the alternative seafood space. The new line includes six products in total: “Omni Classic Fillet”, “Omni Golden Fillet”, “Omni Ocean Burger”, ambient shelf-stable “OmniTuna” and “Omni Crab Cake”, and soon-to-be-launched “OmniSalmon”. They are primarily made from soy, pea and rice protein, bearing a similar ingredient list to Green Monday’s OmniPork range. The classic fillet is the world’s first non-breaded plant-based fish fillet.
Founded in 2012, Green Monday Group is a leader in the Asia-Pacific alternative protein space. Green Monday itself is an open-source movement, supported by the group’s foundation’s non-profit work to advocate for plant-based eating. The group also owns Green Common, a chain concept of cafés and grocery stores which supports its product distribution, alongside its innovation arm, OmniFoods, and Green Monday Ventures, which invests in sustainability and healthy living. Its unique multi-channel model is designed to drive change, through consumer education, plant-based food innovation, and venture capital support.

As founder and CEO David Yeung explains, Green Monday is more than just a single company, it’s an entire ecosystem: “On one hand, we have alternative protein innovation under OmniFoods, so OmniSeafood and OmniPork. But at the same time, we also have Green Monday, Green Common, and even Green Monday Ventures. Green Common is a one-stop showcase platform, so people can dine, people can shop, and they can experience what this whole future plant-based lifestyle is all about. Green Monday is the advocacy, and the movement to provide the framework to kick off the green sustainable lifestyle and diet. And then finally, Green Monday Ventures invests in companies that we feel share the same mission and are highly synergistic. Having such a comprehensive and holistic model is what makes Green Monday one of a kind; we are not just tackling this problem from one dimension, we’re tackling this from multiple dimensions.”

"Having such a comprehensive and holistic model is what makes Green Monday one of a kind."

David Yeung, Founder and CEO, Green Monday
Following its record-breaking US$70 million funding round in September 2020, Green Monday has been on a path to global domination. Three years after its food tech arm OmniFoods launched its flagship vegan pork mince OmniPork, and expanded with OmniPork Luncheon and OmniPork Strip in 2020, its point-of-sales are spread across 20 countries and are targeted to reach 40,000 before the end of the year, having entered the U.S. and Australian markets in April 2021, after launching in the U.K. and Japan in March 2021, and across China in 2020. OmniFoods also offers a line of OmniEat ready meals, which have been available in more than 700 7-Eleven stores in Hong Kong since February this year, following its headline-making city-wide partnership with fast food giant McDonald’s in October 2020. Green Monday Group also opened physical outlets of its grocery concept Green Common in both Shanghai and Singapore in December 2020 and January 2021 respectively.

**TAPPING INTO ALTERNATIVE SEAFOOD WITH OMNISEAFOOD**

OmniFoods’ latest debut is a new line-up of plant-based seafood alternatives, representing the first time the brand has launched a non-pork analogue. The new OmniSeafood range includes six products in total: “Omni Classic Fillet”, “Omni Golden Fillet”, “Omni Ocean Burger”, ambient shelf-stable “OmniTuna” and “Omni Crab Cake”, and soon-to-be-launched “OmniSalmon”. The classic fillet is the world’s first non-breaded plant-based fish fillet, and the launch marks the first time a leading Asian food tech has tapped into the enormous opportunity offered by the alternative seafood space.
According to Yeung, being headquartered in Asia is a key driving force behind Green Monday’s innovation decisions: “Naturally, we want to first look at the proteins that are most-consumed within Asia, but at the same time have global potential. And Asian seafood consumption accounts for a staggering 73% of the world, yet plant-based seafood accounts for less than 1% of the plant-based protein market. Plant-based seafood is a huge untapped white space, a major protein category that is without a leader in the market, which is why we chose to develop it. From an impact standpoint, promoting plant-based seafood can help save the ocean. Ocean pollution has a huge impact on the planet and our lives; we should do everything we can to prevent the situation from worsening. There are two key factors when considering R&D choices: flavour and texture. How to successfully replicate the umami of the fish, and the flaky texture of fish, these are both factors we considered when developing OmniSeafood, in order to bring the best alternative choice to consumers.”

“Plant-based seafood is a huge untapped white space, a major protein category that is without a leader in the market, which is why we chose to develop it.”

David Yeung, Founder and CEO, Green Monday
In celebration of its 9th anniversary on Earth Day in April 2021, Green Monday has launched an alliance dubbed the ‘Green Monday ESG Coalition’. The coalition is designed to unify businesses with plant-based solutions and actionable strategies in order to achieve net-zero targets and build a stronger and more resilient food ecosystem. Signatories that agree to join the coalition have to officially introduce and include plant-based foods through various setups in their organisations such as in staff cafeterias, pantries, company events, and community projects. Signatories are also expected to showcase climate leadership and sustainable practices to all stakeholders.

For Yeung, Environmental, Social and Governance issues are a vital part of business strategy in today’s world: “While governments and multinational corporations step up their Net-Zero pledges, the world eyes their policies and expects tangible results delivered by genuine actions. Food has been identified as a key contributor to GHG emissions by leading research institutions. Yet, it is the most commonly overlooked element in government and corporate policies. Green Monday has become their immediate solution provider to mitigate this ‘white space’.”

He believes there is a strong link between ESG and the diet-based social movement that is at the heart of Green Monday Group. “With our wide array of sustainable and wholesome food innovations, our Green Food measures are extremely easy for corporations to implement both internally within their offices and externally in their supply-chains. This allows them to achieve a low impact profile and a better ESG standard – a win-win situation, for the company, their employees and the planet. All companies should embrace this plant-based movement as having the right diet not only helps the planet but brings immediate benefits to their employees’ health.”

This will be particularly significant and even amplified in companies with a sizable team, resulting in lower sick leave rates and higher team morale. Sands Macao (HKEX ListCo 1928.HK) partnered with Green Monday in 2018 to offer plant-based meal options every Monday to their 26,000+ staff members and simultaneously launched vegetarian friendly menus in 14 restaurants across their properties in Macau.
These green measurements have become valuable disclosures for listed companies as CSR or ESG performances are being stressed by investors. Yeung adds: “With sustainability becoming a key investment theme accelerated by the pandemic and climate change, investors across the globe are motivated to have ESG front and center in their decision-making process. Companies that are reluctant to make changes will receive swift ‘feedback’ from stakeholders including investors and customers.”

“With sustainability becoming a key investment theme accelerated by the pandemic and climate change, investors across the globe are motivated to have ESG front and center in their decision-making process.”

David Yeung, founder and CEO, Green Monday

Green Monday’s holistic and actionable solutions range from educational talks to bespoke “Go Green” campaigns. It works with companies’ HR and training departments to offer “lunch and learns” run by Green Monday’s in-house registered nutritionists. Its team curates green menus for corporate cafeterias or enhances snack and coffee bars with plant-based and non-dairy options, and can set up a “green pantry” with ready-to-eat food options for their staff to make their life easier and healthier. On the food service front, Food & Beverage groups work with Green Monday’s team to co-create plant-based menu options, designed to satisfy an increasing amount of health-conscious diners and drive an increase in sales.

It’s a win-win for all parties: “The partnership with Green Monday transforms and reinforces businesses into ones with purpose. Covid-19 is a wake-up call that has made the world mindful and vigilant towards public health crises and worsening climate change. This has exponentially increased awareness of meat alternatives and our work. Staff and their families are reaping the benefits from receiving more food and nutrition information, enjoying a healthier diet and constructing a better future.”
PLANT-BASED DAIRY

Other than India, Asia has not historically been a huge consumer of dairy which is why it may be surprising to some that, today, the region is now the world’s largest consumer of milk and milk products, accounting for 39% of global consumption, largely due to China and India, the world’s two most populous countries, according to a 2014 report by Brighter Green. The same report finds that by 2025 countries in the global South, which includes the majority of Asia, are expected to consume nearly twice as many milk and dairy products as they did in 1997, rising to 375 million metric tons from 194 million metric tons a year, a potential market consisting of nearly three billion new dairy consumers. Globally, experts on a recent vegan trend insight panel said that vegan milk was the most popular plant-based grocery item now being ordered on food delivery platforms. But while milk remains the dominant alt-dairy category, other dairy alternative products are quickly becoming a hit too.

Asia-Pacific is home to many large-scale white-label production facilities that make plant-based dairy products for global brands, as well as well-known local brand Vitasoy.
In the 80 years since its inception, Vitasoy has been growing steadily in Asia. Its full year 2020/21 sales were HK$7,520 million (approximately US$968 million), up 4% year-on-year. Mainland China made up 66% of this revenue, with Hong Kong, Australia and Singapore at 25%, 7% and 2% respectively.

Initially established to address local malnutrition through high-protein soy milk, it has spent the past few years diversifying to be a major and relevant player in the plant-based movement. When Roberto Guidetti, Group CEO, joined Vitasoy in 2013, Chairman Winston Lo shared the story about his father, Dr K.S. Lo, attending a lecture in Shanghai in 1940 that changed his perspective about soy and nutrition. Due to differences in climate, land and the natural environment, the professor giving the lecture said that the Western nutritional model, one that relied on dairy, was not really feasible in an Asian context, especially in mainland China. Rather, soy which was cheap but highly nutritious was “the cow of China”.

“The trend of plant-based moving into the mainstream in recent years has further confirmed that consumers, society, retail, etc have started to understand the concept of plant-based. Riding on this development, our team has been placing a lot of focus on soy and tea, the two major plant-based categories in our portfolio.”

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<th>FY20/21 Revenue</th>
<th>As % of total revenue</th>
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<td>5,008,000</td>
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<td>Hong Kong</td>
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<td><strong>Total</strong></td>
<td><strong>7,519,817</strong></td>
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Vitasoy Revenues FY 20/21
Esg aligned soy supply chain

The majority of Vitasoy’s portfolio always has been, and remains, plant-based, but now the company is focusing on improving its products’ nutritional profile and ensuring its ingredients are responsibly-sourced. Simeon Cheng, Group Director - Sustainability & Corporate Communications at Vitasoy emphasises their commitment to a ESG-aligned supply chain: “We ensure that the soy we use in our products is not associated with the environmental or social issues that are commonly associated with soy.” For example, some consumers may have an issue with its association with deforestation. Vitasoy makes sure that its suppliers are properly accredited. Some consumers prefer to avoid genetically modified beans, so Vitasoy has an open policy to use non-GMO products. “We have rigorous processes in place, including an in-house test for every batch of our products that comes in,” says Cheng.

“"We have rigorous processes in place, including an in-house test for every batch of our products that comes in."

Simeon Cheng, Group Director - Sustainability & Corporate Communications, Vitasoy

Adapting to regional consumer preferences for plant-based dairy

Vitasoy has seen a general shift in its consumer base in recent years as demand for plant-based products grows, and its markets reflect different consumer preferences. Cheng says: “In China we’ve seen a demand increase in the more premium market. In Australia, consumers are very keen on coffee, so our barista products were developed to meet their needs and we’re now selling them elsewhere. In Hong Kong, we’ve always been most well-known for our very affordable soy milk beverages, and we’ve seen a shift in consumers picking it up for convenience.” Its presence in Australia is an important factor as Vitasoy develops propositions for the market there, which it sees as very advanced in terms of plant-based development. It then brings its portfolio back into Hong Kong and mainland China to engage with consumers, and adapts its messaging to appeal to a wider audience. Guidetti adds: “I think Hong Kong is ready for communication that is very similar to that in Australia as its awareness around veganism, vegetarianism and sustainability has greatly increased in recent years. In mainland China, the concept of vegetarianism and sustainability has been there for years. Our role is to make it more widespread. Like anything in China, things will develop very rapidly. We’re not repositioning, but more continuing to evolve our approach.”
Vitasoy is also careful to cater for local tastes, explains Cheng: “We are sensitive to market needs. If you taste a soy product that we sell to the Asian markets, alongside the soy product we sell to the Western markets, the Western range would be a bit creamier, so that people can put it on cereal, and the soy taste is less pronounced because we know that there are different flavour preferences across our different markets.”

Based on its data, the Classic Vitasoy Soybean Milk and Vitasoy Malted Soybean Milk are the most popular products across Hong Kong and mainland China, whereas in Australia, Café for Baristas is the best seller.

The company has seen an increased demand for its products with a healthier nutritional profile, particularly in the wake of COVID-19. Its products with lower sugar have attracted the biggest increase in sales. It is also currently working on diversifying into functionality, whether that be products which have an additional health benefit, such as plant milk with added dietary fibre to support digestive function or plant sterols which can help lower cholesterol, or those which focus on performance, for example, ensuring that its barista milks are creamy and froth in the same way as conventional dairy milk.

“The conversation about sustainability and plant-based is very Western-centric. But where solutions are going to be most needed is in Asia.”

Roberto Guidetti, CEO, Vitasoy
On engaging consumer demand, Guidetti says: “We are also very keen to make sure that Generation Z sees us as belonging to the plant-based space, as opposed to just talking about the fact that we were founded 80 years ago. Apart from this strong heritage connection with local communities, we also hope they start talking about the better future ahead of us. We’re quite keen to make sure that we keep pace with a new consumer base, with where the world is going to go, and make sure that we evolve to become part of the solution. The importance of being innovative, scientific, and purpose-driven, is a must for the new generation.”

KEY POSITIONING AS PIONEERING ASIAN GIANT

In terms of its future, Vitasoy’s position as an Asian giant will be important. “The conversation about sustainability and plant-based is still very much Western-centric. The media may be more developed, there has been more attention and more entrepreneurship in the Western world. But on a global level, the geographical area where solutions are going to be most needed is in Asia,” says Guidetti. “So we think that we can play a role over time by scaling up our company to provide a solution for food in Asia, where these solutions are going to be needed. We need to improve a number of things that we’re doing. We recognise and are ready to make the biggest improvement in not the content inside the product, but its packaging. We’re also doing work on energy reduction. It’s a journey and we keep improving. Eventually, we hope we could be a role model in the way we do things. And it would have been a decade in the making; not a transformation, but evolution to go from where we were to a very specific direction.”
APAC has very few startups focused on dairy alternatives. The most established is India’s GoodMylk, in operation since 2015, offering plant-based milks made from oats and cashews, plus dairy-free yoghurt and butter and egg-free mayonnaise. MilkinOats, the first homegrown oat milk brand in India, has also launched vegan milk chocolate bars made with their high-fibre dairy alternative. A third Indian startup, PlantMade, is known for its vegan beverage powders, largely made with coconut milk or soy, and GoodDot is planning to move into the dairy alternative space, starting with tea and coffee premixes. Indonesian startup FairFlavor Foods uses the Kenari nut, found in the Indonesian rainforest, to make plant-based dairy products. MAD Foods, reportedly Singapore’s first alt-dairy food tech startup, launched its debut line of 100% plant-based cold brew coffee products based on oat milk in July 2021.

Some companies are bringing in their dairy alternatives from abroad, however, such as California-based precision fermentation dairy startup Perfect Day, which is opening its Singapore-based R&D centre this year, in partnership with the government-run Agency for Science, Technology and Research (A*STAR). And major chains such as Starbucks have been introducing Swedish oat milk giant Oatly’s products to its outlets across Asia for the past year.

### 60%+

**Jackfruit grown in Asia that is currently wasted, according to KARANA estimates**

### Plant Whole Foods

Whole food protein alternatives, such as jackfruit and king oyster mushrooms, can realistically mimic the texture and culinary applications of certain meats and seafoods, as well as being clean labelled and requiring minimal processing.
Across South Asia, pale-fleshed young jackfruit, known locally as ka-thal, is a popular ingredient in vegetarian dishes. Across ASEAN countries, the ripe yellow fruit is consumed as a snack. The large spiky fruit that many mistake for a durian is currently an underutilized crop, despite its abundance across the region. Jackfruit grows quickly, bearing fruit just three years after planting. It is a highly efficient crop that requires little water to produce high yields and is naturally climate-resilient and pest-resistant, making it relatively simple for farmers to manage. Plus, unlike other popular alternative proteins, such as soy, which is monocropped, jackfruit is grown intercropped, which promotes flora and fauna biodiversity in surrounding areas. Given that it is estimated that over 60% of jackfruit is currently wasted, repurposing it into usable food products is a big environmental win. As Duncan Robertson, Head of Marketing at KARANA puts it: “We’re turning a food waste situation into a food source.”

“‘We’re turning a food waste situation into a food source.’
Duncan Robertson, Head of Marketing, KARANA

REGENERATIVE & ETHICAL SUPPLY CHAIN A MUST

KARANA has so far established a supply chain with small-holder farmers in Sri Lanka, and is looking at other markets. In fact co-founder Dan Riegler spent many of his early career years working in agricultural supply chains across Southeast Asia. Co-founder Blair Crichton says the company has worked with NGOs, aggregators and community organisations to build up its farming network.

Robertson adds: “We work with our farmers across the entire growing process, to understand the best time of year to harvest, and how to most cooperatively bring the fruit to a processing plant. We make sure that our farmers understand that this is an extra income stream for them and their families, that doesn’t require them to move their focus from their existing crops.”
A robust and ethical supply chain is key to KARANA’s mission. According to Robertson, “Some players, they’re buying commoditized crops from brokerages and exchanges, and some of them don’t even know where it might come from. Only the biggest players really invest in sustainable crops. We are trying to create an efficient, regenerative agricultural process that isn’t about monocrops, clearing of land or fertilising or changing ecosystems, it’s about plugging into something that isn’t fully utilised, and bringing it to market.”

**TECH-OPTIMIZED, MINIMALLY-PROCESSED MEAT ALTERNATIVE**

KARANA’s goal has been to develop a tech-optimised yet minimally-processed young jackfruit product that is home cooking-friendly and ready to use in kitchens. It uses young jackfruit because the starches in the fruit haven’t yet converted into sugar, making it neutral-tasting, and because the unripe flesh has a fibrous texture akin to ‘pulled pork’. Unlike most other plant-based brands, KARANA is taking a plant that is naturally meat-like and smartly processing it so that it is tasty and meaty, without lots of added ingredients and avoiding heavy processing.

Jackfruit is rich in vitamin C and is one of the rare fruits that is rich in B-complex group of vitamins and contains very good amounts of vitamin B6, niacin, riboflavin, and folic acid. It is naturally high in fibre, which is particularly relevant at a time when gut health is a key concern for many consumers.

KARANA launched its signature ready-to-cook pulled jackfruit in restaurants across Singapore in January 2021 and Hong Kong in May 2021, working with chefs to create a range of plant-based dishes from tacos to lotus cakes to pulled ‘pork’ burgers, and has plans to expand into other markets in Asia-Pacific within the next 12-18 months. The team says the company is focused on optimising and scaling up its production with that goal in mind. Robertson comments: “Launching with chefs first has been about providing that credibility, that buzz, starting to get people talking about our product, but it has also been about proving our supply chain and our ability to scale. With the amount of effort required to range with a retailer, we wanted to make sure we could safely scale up and ensure we didn’t have any hiccups on supply before diving in. As we move forward and launch into other markets, we want to make sure that things are robust and consistent all the way through, so the end product is consistently of good quality and we don’t have any out of stocks or anything that could hamper the uptake of our plant-based products.”
For its retail product launch, KARANA is focused on the lucrative ready-to-eat category, with a firmly Asian identity. “While our products are different from Western plant-based products, we’re actually playing in big, fast-moving categories here in Asia. Retailers are responding really well, especially when they taste the products, so we’re confident of a strong launch.” says Crichton.

The company intends to unveil its ready-to-cook dim sum products in Asia during the second half of 2021.

This differentiation factor is a key part of their strategy to stand out in the now-crowded plant-based meat alternative sector. Roberston adds: “I know there are a lot of products out there at the moment in the meal creation space, like minces, sausages, burger patties, but we are looking to provide plant-based product options that best cater to the formats and flavours that consumers in Asia know and love.”

“We’re playing in big, fast-moving categories here in Asia and retailers are responding really well.”

*Blair Crichton, Co-founder, KARANA*

**“WE ARE NOT A JACKFRUIT COMPANY”**

While jackfruit is at the heart of their offering today, the company is not ruling out other plants in the future. Crichton says that KARANA is currently working with other interesting ingredients from the region as part of its ongoing R&D, though he underlines that sustainable supply chains and undervalued crops remain integral to their mission. “We’re not a jackfruit company. We’re focused on giving our time to underappreciated and underutilised ingredients, that are naturally meat-like, and finding ways to enhance them and bring them to market in interesting formats that are scalable and sustainable. We’re starting with Asian formats, because we see the opportunity here in Asia for more localised products, but we definitely see the opportunity to expand beyond those formats in the future.”
According to U.S. market research firm EMR, the global plant-based egg sector is expected to grow nearly 6% until 2026 to reach around $1.48 billion in value. Egg consumption in Asia has outpaced the West. The Chinese, especially, already eat more eggs per capita than almost everyone else, approximately 280 a year or almost one billion a day total across the country. This demand puts immense pressure on production, as breeders focus on maximising efficiency and reducing costs.

There is an appetite for plant-based eggs in Asia, though. Chinese fast-food giant Dicos swapped its animal-based eggs for San Francisco food tech Eat Just’s plant-based version from January 2021.

1 BILLION
chicken eggs consumed by Chinese citizens every day
In our last report, the only plant-based startup wholly focused on eggs was India’s Evo Foods, which makes its liquid egg substitute from lentils. Now, there are a few more scrambling to commercialise or expanding their operations to include eggs, such as Japan’s Next Meats, which recently expanded its alternative protein range with a new egg substitute, Next Egg 1.0, or India’s PlantMade, which makes plant-based eggs from mung beans, the same ingredient used by Eat Just. Singapore’s Float Foods is working towards commercialisation of its plant-based whole egg alternative, OnlyEg, the city-state’s Osome Foods debuted what it claims is the world’s first plant-based boiled egg in May 2021, and Hoow Foods unveiled a new plant-based subsidiary called Hegg Foods and a new vegan egg product in August 2021.
Choosing the right oils and fats is pivotal in creating plant-based alternatives that provide a superior sensory experience. Fat is the component that makes some of our favourite animal foods taste delicious; consider marbled steak or streaky bacon. If companies are going to convince consumers to choose plant-based alternatives, they need to find substitutes and solutions that can perform just like animal fat, to help elevate the taste, texture and appearance of vegan meat and dairy alternatives, a factor that is critical to mass adoption. Fats and oils also play a role in the culinary aspect of food products, from the meltability and elasticity of a plant-based cheese to how a plant-based steak cooks in a pan, potentially reducing the need for other ingredients and allowing for a cleaner label.
There are a few startups around the world working on plant-based oils and fats, including Canberra-based Nourish Ingredients, which closed a US$11 million financing round co-led by Hong Kong billionaire Li Ka-shing’s Horizons Ventures and Main Sequence Ventures in March 2021. Using its proprietary fermentation technology, the Australian biotech “brews” alternative fats and oils that are sustainable and animal-free, which can also be customised to suit varied flavour profiles and applications in alternative protein products. Others, such as Barcelona’s Cubiq Foods, are focused on cultivating healthier “smart” omega-3-rich structured fats, oils and other fatty emulsions for use in alternative proteins, hoping to replace common saturated fats, such as coconut oil, that are currently used in both cultivated and plant-based analogues.

As the alternative protein category continues to accelerate, product differentiation will be key to gaining market share. Innovation in oils and fats will be a fundamental enabler of this, and industry players should focus on making new types of oils and fats more accessible, developing new formats to maximise sensory experience, or optimising the functionality of an application.
Established in 1871, Swedish-Danish specialty oils and fats giant AAK is bringing its 150 years of expertise to a new opportunity: alternative proteins. Over the past few years and as the plant-based meat and dairy space has reached a more sophisticated age, the lipids expert has seen a surge in requests for new fat solutions and applications from its customers.

AAK has been working with plant-based customers for many years, but during a strategic business review two years ago decided to invest in the space and a team to support the booming plant-based food industry, and so far it has reaped the gains. AAK has seen major growth in this area, and borne witness to existing majors rebranding and repositioning their product ranges alongside emerging startups changing the future of food.

Niall Sands, President Plant-Based Foods at AAK, calls the growth in the sector “phenomenal”, and “inspiring”. “From my perspective, having worked in the food industry for 20 years, there’s not been a category like it in terms of excitement, in terms of investment, in terms of interest, in terms of pace of change. We intend to be the leading plant-based oils and fats supplier in the space, and given our global reach and the ambitions of a lot of the new startups to globalise as well, we’re well positioned geographically to support them on their journey, and that’s what we’re actively doing today.”
AKOPLANET™: THE CRITICAL INGREDIENTS IN PLANT-BASED FOODS

AAK’s 3,900 employees support its customers across 25 regional sales offices, 15 dedicated Customer Innovation Centers, and more than 20 production facilities. AAK’s lifelong business has been oils and fats, which makes it uniquely placed to work alongside other industry players in order to help them accurately mimic the taste, texture and mouthfeel of conventional meats in plant-based analogues. More than that, the company is even innovating within other important key trends, such as clean labels, without compromising on nutritional value and while remaining price-sensitive.

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Niall Sands, President Plant-Based, AAK

Made with sustainably-sourced raw materials, AAK’s AkoPlanet™ ingredients are ideally suited for plant-based meat and dairy applications. The company uses raw materials such as rapeseed, soya bean oil, shea kernels, sunflower oil and palm oil, primarily sourced from Northern Europe, West Africa, Southeast Asia and Latin America. AAK crushes certain raw materials, such as seeds and kernels, and extracts the oils at its production plants, but purchases others as crude oils or semi-refined oils to then process and refine further.

Within plant-based burgers, for example, AAK’s ingredients can tackle lack of succulence, one of the top taste and enjoyment barriers, and one in which fat plays a critical role. AAK’s experts have found the balance between boosting succulence whilst enabling saturated fat reduction, for zero compromise. Lucas Hardy, Global Customer Innovation Director for Plant-Based Foods at AAK adds: "When a plant-based meat has the right fat solution, consumers get a juicy, succulent and meat-like bite, with the proper flavour release during product consumption. On top of those sensory attributes that are hugely important, fat also plays a key functional aspect related to the manufacturing feasibility of most plant-based applications, in terms of “machinability”: getting the right rheological and texture attributes such as adhesiveness and cohesiveness of raw products to properly apply the necessary processing steps.” As for plant-based ice cream, oils and fats contribute to creating a smooth, creamy texture, enhancing flavour and improving the melting profile.
In order to achieve its growth goals, AAK is focused on delivering best-in-class products, and believes that collaboration with peers who have a similar open approach in terms of a collaborative and transparent product development is a big part of the route to success. It has joined MISTA, the innovation platform in San Francisco, along with other leading food ingredients companies, all of whom are working collaboratively on specific projects and applications that are especially challenging, bringing the best of the industry together to deliver world-class solutions. It’s an experience that Sands describes as “hugely insightful”, especially because major players such as Danone, Mars and Conagra are partners in the platform, providing immediate and specific feedback to AAK’s R&D team, and helping the company calibrate its products to ensure optimal application performance.

In March 2021, AAK forged a strategic partnership with New York and Singapore-based venture capital firm Big Idea Ventures in order to speed up the development of alternative protein ingredient solutions. AAK provides capital and its expertise to support the game changing startups identified by Big Idea Ventures. Startups can also tap into AAK’s innovation infrastructure, which includes a newly constructed Plant-Based Foods Global Centre of Excellence in the Netherlands to open next year.

Sands is bullish about the added value that AAK’s experts can offer to startups. “We recognise that a steady cash flow is imperative to a lot of these startups to keep them going and make sure that the great ideas and their business plans come to fruition. And we can offer technical expertise to them as well, where there’s a need and a role for oils and fats, to make their products the best they can be.”

**ECOSYSTEM COLLABORATION TO MEET CONSUMER DEMAND**

![Graph](image)

Source: AAK

APAC ALTERNATIVE PROTEIN REPORT 2021

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**ECOSYSTEM COLLABORATION TO MEET CONSUMER DEMAND**

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THE ASIA-PACIFIC OPPORTUNITY

While AAK is actively producing and selling in every continent around the world, Asia-Pacific is an important market for the company. Jurgen Kennedy, Business Development Director - Asia, underlines the demographic pull that makes the region a large part of their current and future roadmap: “The food scene across Asia-Pacific is very dynamic. An increasing middle class is driving innovation and we are excited to work with both existing food companies and startups to make tastier and healthier plant-based foods.”

Singapore is AAK's Asia-Pacific hub, strategically located for its suppliers and customers. Kennedy adds: “When it comes to tropical oil, most of the biggest producers are from Malaysia, Indonesia and Philippines. And this is why we set up a tropical oil sourcing hub in Singapore, which has been quite successful in building strategic partnerships with our suppliers and getting closer to the plantations, overlooking sustainability and traceability.”

As part of its acceleration strategies to expand its footprint in Asia-Pacific, AAK has joined forces with leading food suppliers to collectively use their resources to scale up innovation and fulfill growing demand for plant-based meat alternatives. Kennedy explains what AAK brings to the collaboration: “APAC is a key market for AAK, and with these partnerships our innovative and customised “AkoPlanet by AAK” solutions for plant-based foods will be available to food manufacturers via their well-established technical facility, manufacturing and distribution network locally. They can depend on AAK for speed of service, quality prototypes, innovation and inspiration in order for them to achieve their aspirations in what is a very unique and fast-paced market.”

ALT SEAFOOD RISING

In particular, AAK sees plant-based seafood within the Asian markets as an area to double down on, particularly because of Asia’s massive QSR market, where major players are actively looking for plant-based versions of their standard menu items, alongside what Kennedy terms “more natural fish options”, such as salmon and tuna. He explains: “At both ends of the continuum, when we look at fish, whether it be processed for QSR, versus the more natural fish for other parts of the market, that’s where we need to have solutions that
bridge both.” The beauty of AAK’s B2B setup is that consumers may never know the colossal contribution it makes to the industry, but it can provide solutions at every part of the spectrum, from mass to premium, delivering the best quality oil and fat ingredients for plant-based foods.

"We have been involved in and are the backbone of many of the most disruptive product launches that have happened, both in plant-based dairy and plant-based meat over these past two years. And it's been hugely exciting to see how those businesses have evolved and come on. We're very proud of the role that we have played in supporting them and will continue to do so."

Niall Sands, President Plant-Based, AAK

AAK’s new path is an exciting one, a global sales opportunity that is delivering major results. The company has grown its customer penetration by more than 40% so far in 2021, and is constantly innovating to bet on the future, working with both startups and majors to add value to their product development, and provide education on the role of oils and fats in plant-based foods.

The road ahead is promising. As Sands says: “We have been involved in and are the backbone of many of the most disruptive product launches that have happened, both in plant-based dairy and plant-based meat over these past two years. And it’s been hugely exciting to see how those businesses have evolved and come on. We’re very proud of the role that we have played in supporting them and will continue to do so.”
Alternative protein innovation and production relies upon robust technology and infrastructure systems to support it. SGProtein, the Singapore-based contract manufacturing platform, announced in March 2021 that it plans to open a large-scale plant-based meat alternative production facility situated at Commonwealth Capital’s Food Hub, to help boost local sustainable food production in Singapore as well as Southeast Asia. The facility will have an initial production capacity of over 3,000 tons a year, helping plant-based brands to meet increasing demand. The facility will have the latest high-moisture extrusion technology that will facilitate the large-scale texturing of plant proteins into meat alternatives. SGProtein has chosen Swiss food processing giant Bühler to engineer and supply its production line for the facility.
Bühler is a 160-year old Swiss food processing solutions giant which has seized an opportunity to apply its expertise, particularly within extrusion technology, to plant-based foods. For the first time ever, Bühler, a grain and food processing technology specialist, is playing in the plant-based meat business, carving out a new sector for itself and tapping enormous revenue potential. To that end, the machinery leader has decided to target Asia, where there is diverse arable land, and a more vegetarian/vegan-friendly culture than in Europe.

**A WORLD CLASS PLANT-BASED INNOVATION CENTER**

Bühler, in partnership with Swiss flavour house Givaudan, has recently launched a world-class plant-based Innovation Center in Singapore where startups can innovate and experiment with scaling up their plant-based food products using Bühler’s equipment and technical expertise. The center has connections to several R&D innovation centers and main hubs in Switzerland, to facilitate plant-based product development on a global level. It combines Bühler’s dry extrusion and its new wet extrusion technology that lends a fibrous structure to plant-based products similar to the texture of muscle, and holds more protein when compared to dry extruded products. Along with this, Bühler’s processing equipment and Givaudan’s culinary capabilities allow the center to produce 40 kilograms of plant proteins per hour. In addition, the facility features a development kitchen, storage facilities, meeting utilities, and a viewing area for visitors, allowing them to tour the 400-square-meter operation and witness the live workings of the production process. Bühler and Givaudan have designed the centre to make plant-based foods more delicious, authentic, and accessible to business and consumers.

**40KG**

of plant protein per hour can be produced at Buhler's Singapore Innovation Center
Christian Carrillo, Regional Manager Process Technology, Bühler Southeast Asia & Oceania, says the benefits of the Innovation Center for startups are wide-ranging: “As a startup, perhaps they don’t have access to the capital investment that would allow them to access the equipment they need to test their product or to scale up production. So here, we provide that as part of the toolbox, then they also get access to employees at the Center that will allow them to speed up their product development process, if they want to use them. It’s a service that allows startups to accelerate their market entry and improve their chances of success. For startups, acceleration is a key factor, as first movers in any space can set the tone for that which follows. And when we started looking at this two years ago, we decided to do it in the spirit of collaboration and collaborative innovation, because we really believe that alternative proteins are going to be ecosystem-driven. The whole meat industry has been optimising for hundreds of years at least, to the point where it’s so efficient and the costs are so low that it’s going to be quite a challenge to beat it. So for plant-based foods we want to encourage firms to come together, go through a very fast learning curve and not just innovate behind closed doors but instead enable collaboration between the ingredient company, the flavour company, the tech company like Bühler and maybe customers as well.”
The centre is at pilot plant scale, so it works as a useful introduction to bigger equipment, allowing startups to iron out any kinks in recipe or production method early in the development process. Another big plus according to Bühler is that anything produced at the centre can be scaled with confidence onto larger equipment, particularly important when considering market demand, where price is a critical factor in gaining a consumer base. Cementing its partnership-first approach, Bühler has joined forces with alt protein accelerator Big Idea Ventures, supporting its startup cohort with any production technology they may need.

"Buhler's Innovation Centre allows startups to accelerate their market entry and improve their chances of success."

Christian Carrillo, Regional Manager Process Technology, Bühler Southeast Asia & Oceania
Asia-Pacific, in particular, is a market with enormous growth potential for Bühler, as Thailand and Malaysia have traditionally boasted strong logistics solutions in place and, along with China, provide exciting opportunities for growth in the plant-based meat production sector. Carrillo adds: “I’m very interested in specific applications in China. I believe there might be some special applications that emerge with niche products that will be very interesting, like Green Monday’s luncheon meat. But it’s clear that the consumption here is not going to be about the burger patty, it’s going to be about something else. And for that, there will perhaps be more emphasis on the texture. In Asian food, meat often is about providing texture and bite. Maybe it’s in a dumpling or it’s in a curry, maybe it doesn’t really need to look as fantastic as the red meat in your burger, but the texture and the taste are still very important. The nutritional profile is very important, obviously, because if you’re aiming to replace meat for populations that already probably consume less meat than in Europe you need a good nutritional profile of protein and other nutrients. Plus, if you take Southeast Asia, it’s very fragmented.
We have countries that are leaning more towards pork-like products like Vietnam, Philippines and China. We have Muslim countries like Indonesia and Malaysia which are leaning more towards chicken and beef. We have a melting pot like Singapore that may need a bit of everything, and possibly has higher expectations in terms of product quality. In all cases, it makes sense to grow businesses closer to population centres to decrease final costs, so we see potential for production growth in all areas of APAC.”

"Plant-based foods solve a lot of problems on the catering side, such as halaal, or allergens. The food safety side is much simpler."

Christian Carrillo, Regional Manager Process Technology, Bühler Southeast Asia & Oceania

PLANT-BASED FOODS SOLVE FOR FOOD SAFETY IN FOODSERVICE

Carrillo adds that further potential growth areas could include private label, and catering: “Plant-based foods solve a lot of problems on the catering side, such as halaal, or allergens. The food safety side is much simpler. You’re working with a plant-based meat, it’s made in factory conditions, the sourcing is a lot stricter. I know that before the pandemic, airlines were starting to look at plant-based options, and I think soon offices, canteens, hospitals and others will create volumes that are very important for a business to succeed, driving those economies of scale.”

In terms of proteins, many startups currently work with soy and pea, and Bühler can offer processes to neutralise the flavour that comes with pea flour or pea protein, eliminating aftertaste drawbacks. Carrillo is excited about the potential of pulses such as mung beans and lentils that are grown in Asia Pacific, especially in Myanmar and Australia. “Bringing more diverse product ingredients into the mix would make sense, it would also shorten the supply chains in Asia, instead of mainly sourcing protein from North America as happens currently.”
Some startups cite issues with supply chain as one of the biggest impediments to success. As a young, fledgling business, understanding how to build out a supply chain, from sourcing and production to delivery to end consumers, is complex, and the right (or wrong) decisions can and do have major impact.

Knowing how to launch a brand is not innate for most startups, and building relationships with key distributors is not an easy task. Partnerships with leaders in the space can help and, if you can make the right connections, such as with renowned international distributor Classic Fine Foods, the sky could be the limit.

Through the pandemic, as food supply chains broke down, it became increasingly clear just how fragile our food systems are. Establishing a robust and ethical, alternative protein supply chain will be instrumental in supporting food production and consumption in the future, especially as demand from an increasing population continues to grow.
Classic Fine Foods was established in 2000 with a very simple philosophy: to bring the very best food products from around the world to its customers. The multinational fine foods distributor began operations in Asia, supplying local chefs with high quality ingredients from Europe, and quickly expanded its distribution networks across the globe. In 2015, it was acquired by leading international wholesale specialist Metro AG. Classic Fine Foods now employs more than 1,000 people and serves its 650 brands to 12,000 clients in 18 cities across 10 countries throughout Asia, the Middle East and Europe. Karen Tay, General Manager, Classic Fine Foods Singapore; Group Lead for Alternative Proteins, says: “When you are in the city centre of Hong Kong, Dubai, London or Singapore, there is a high chance that you will see a Classic Fine Foods truck, on its way to deliver to a restaurant. Our core mission is to source and bring to customers the very best food products from around the world. Whether it’s the 4-5 star hotel you stayed in, the upscale restaurant you celebrated a special occasion in, or the hip, casual restaurant you met friends at, or the supermarket around the corner, they are most probably our customers.”

After its very first collaboration with Impossible Foods in 2018, when Classic Fine Foods became the first to distribute the plant-based burger brand outside of the U.S, the company has dived into the world of alternative proteins with gusto. Interestingly, it replicates the strategy that made it successful across its various geographies, concentrating on delivering best-in-class brands and engaging with top chefs to launch new products. Mickael Penvern, Group Category Manager - Alternative Proteins at Classic Fine Foods, says: “Michelin-starred restaurants and five star hotels are at the core of our identity, we also work very well with the mass premium segment, where innovative chefs create remarkable culinary experiences that are accessible to most. We love to work with the independent and creative gastronomy segment to launch innovative alternative protein brands. Chefs are the ideal partners to create positive culinary experiences and tell the brands’ stories in their own original way.”

"Our core mission is to source and bring to customers the very best food products from around the world."

Karen Tay, General Manager, Classic Fine Foods Singapore; Group Lead for Alternative Proteins
OPENING DOORS FOR BRANDS ACROSS ASIA

Working with Classic Fine Foods can open doors for a brand, especially in Asia. Its established distribution network, featuring the highest international standards of food safety, gives brand partners instant access to thousands of F&B establishments across a region’s most dynamic cities. For startup brands, speed-to-market is of the essence, particularly with investors behind them who want to ensure they hit key metrics, and Classic Fine Foods accelerates that access. Tay explains: “We provide a route to market, helping companies to scale quickly via our market coverage and customer network.” The company works with carefully selected, best-in-category partners to ensure focus, while building a wide-ranging portfolio for its customers. When accessing a Classic Fine Foods catalogue, chefs can be certain that all brands on the list have been tried-and-tested and are of exceptional quality, as Tay says: “We provide them with high quality and innovative food ingredients, responding to latest trends and market needs.”

THETASTELAB: A GASTRONOMIC R&D HUB

heTasteLab serves as Classic Fine Foods’ training and R&D hub. Here, start-ups can work with chef José Luis Del Amo to develop recipes, test products, their business and engage launch partners with recipe possibilities. For Del Amo, this is a very rewarding responsibility: “I love collaborating with food tech companies because the field is evolving at an extremely fast pace. The road of alternative protein hasn’t been paved yet and it comes with plenty of new challenges, from the selection of new ingredients to adapting my cooking techniques. I need to be creative and test many new approaches. Also, it’s really exciting to be at the forefront of the shift from animal-based to a plant-based food system.”
Among the highlights he has experienced was the development of a recipe for the world’s first-ever public tasting of cell-based lobster made by Singapore-based startup Shiok Meats: “It was especially interesting to understand the science behind how cultured seafood is made and to be one of the very first people in the world to be able to cook with such a product. It is an incredible breakthrough in the world of food and I feel extremely lucky to be a part of this milestone.”

The chef relationship is at the core of Classic Fine Foods’ business model. Penvern explains: “Innovation, creativity, passion and reputation are key when it comes to launching a new brand. We work with chefs that have a certain aura, who work in well-chosen venues and can translate the brand story through their creations. In Asia, people don’t eat burgers or nuggets every single day. So we look for products that can adapt to the great variety of cuisines in the region and work with chefs able to showcase the versatility of the products. For example, when we first started working with Impossible Foods, we partnered with chefs that are masters of satay, gyoza, and other local Asian cuisine. Working with chefs from different backgrounds allows us to showcase our products in many, many different ways, and bring a much more exciting consumer experience than a burger alone.”

“\[quote\]
It’s really exciting to be at the forefront of the shift from animal-based to a plant-based food system.\\[
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José Luis Del Amo, Chef, Classic Fine Foods
A COMMITMENT TO THE WORLD’S BEST FOODS, ALT PROTEIN INCLUDED

Alternative protein, while still a relatively small part of Classic Fine Foods’ portfolio, is a clear strategic focus for the group who aspires to grow it to 10% of sales by 2025. “We want to cover everything. Meat, seafood, eggs, dairy, especially cheese, we are looking for amazing cheese. The first step is plant-based, but we’re very excited about both fermentation and cell-based technology for their breakthrough potential. At the moment, we’re building knowledge and connections with producers from all around the world. Having our core team focusing on alternative protein in Singapore is a great opportunity for us, because we are ideally positioned to help the first cell-based companies to launch their brands in the city-state.” Christophe Barret, CEO at Classic Fine Foods, says: “We want to become the choice partner for the best alternative protein brands, and to be recognized as a trailblazer, introducing innovations to our customers. We can see that more and more customers, especially the younger generations, are asking for alternative proteins, and an increasing number of restaurateurs are also integrating sustainable products into their menus.” Classic Fine Foods currently distributes eight alternative protein brands, but this number will increase to ten by the end of 2021.

“We want to become the choice partner for the best alternative protein brands, and to be recognized as a trailblazer, introducing innovations to our customers.”

Christophe Barret, CEO, Classic Fine Foods

Classic Fine Foods plans strategically every time it launches a new brand, because all of its markets are different in terms of structure, consumer tastes and behaviours. “Generally speaking, Asia consumes a lot of seafood. In some regions like China and Vietnam, pork represents more than half of the protein intakes. In others, it is nearly nonexistent due to cultural reasons. We tackle these market differences with regular conversations with all our subsidiaries and prioritise our strategies for launch.”

For a startup, Classic Fine Foods’ link to German giant Metro AG is an advantage. It can facilitate links with the group’s internal investors or connect brands to an even wider distribution network across Europe. Classic Fine Foods views every brand relationship as a partnership. Its latest collaboration is with plant-based chicken sensation TiNDLE, by Next Gen Foods, which it has helped to launch in six key markets since its official brand launch in March 2021, and which is a concrete example of how to expand, fast. Through Classic Fine Foods’ established network, a fledgling brand can make a name for itself. Alongside TiNDLE, Classic Fine Foods recently partnered with KARANA, which makes whole-food plant-based pork from young jackfruit.
CORE TASK FORCE TEAM BASED IN THE WORLD’S FOOD TECH CAPITAL

Classic Fine Foods’ team of experienced and passionate staff, in tune with gastro and retail customer needs, is embracing alternative proteins, with a dedicated central resource to accelerate the sector. Tay explains: “We have a core task force team, which has its pulse on the latest developments in this sector, based in Singapore which is fast becoming a global hub for food tech. The city-state enjoys strong government support for this ecosystem, is central for growing corporate and institutional investments, has proliferation of both startups and large conventional companies getting into this space from up-stream to down-stream, and a small but progressive consumer market perfect as a springboard for the region. Classic Fine Foods is a key player in this ecosystem with involvement in mentorship programs, webinars, conferences and tasting sessions.”

Plus, for Penvern and his team, it’s not just about business: “It’s also the excitement we share in the team about these new technologies and their potential to solve the big issues our generations will inevitably face. We want to play a part in the birth of this ecosystem. We work with Big Idea Ventures, we are mentors for their cohorts. It’s a way for us to be more than just a distributor, but a partner, and a business that is really active in the ecosystem. It stems from our genuine excitement about this new industry, which is changing the way we produce, eat and enjoy food.” As Tay continues: “As launch partners of Impossible Foods in Singapore, the overwhelming initial success really opened up our eyes to the potential of this new category. Food is in the DNA of our company. We have been successful in the past 20 years by bringing the best from all over the world to our customers, and we believe that by now partaking in the biggest revolution in the food industry, we can continue to be relevant for the next 20.”

“We have been successful in the past 20 years by bringing the best from all over the world to our customers, and we believe that by now partaking in the biggest revolution to the food industry, we can continue to be relevant for the next 20.”

Karen Tay, General Manager, Classic Fine Foods Singapore; Group Lead for Alternative Proteins
FUNDING & INVESTMENT

*Chicken and Rice with Microgreens by Eat Just/GOODMeat at 1880
While the pandemic slowed down business across the world, many alt protein startups seized the opportunity to develop forward-looking novel technology and capitalise on the unprecedented shift in consumption trends. Globally, food tech firms managed to raise a record US$18.1 billion in 2020, according to statistics compiled by Morningstar subsidiary capital market firm PitchBook earlier this year. Key sectors that saw the most venture capital growth include online grocery shopping, e-commerce and other digital apps, as well as the soaring demand for alternative proteins from consumers who are increasingly concerned about food safety, supply chain resilience, health and sustainability.

According to data released by The Good Food Institute Asia Pacific in March 2021, 2020 saw US$3.1 billion in investments in companies creating sustainable alternatives to conventional animal-based foods, including plant-based meat, egg, and dairy companies, cultivated meat companies, and fermentation companies devoted to alternative proteins. This massive uptick in capital investment was three times more than the funding raised in 2019 and 4.5 times more than in 2018. Of the US$5.9 billion raised by alternative protein companies over the past decade, more than half was received in 2020 alone. In Asia-Pacific, the 2020 year-on-year growth is more than sixfold.
2020 saw many major funding deals, including the largest single raise in APAC alt protein, with Green Monday’s record-breaking US$70 million raise, and the largest Australia/New Zealand alt protein raise, with v2food’s US$55M Series B.

SUPPORTING STARTUPS

As compared to more mature geographies like Europe or the United States, there are fewer options for startups in Asia-Pacific in terms of investment and ecosystem support. That being said, the key players are all-in and provide an extremely attractive support stack, from funding to scaling assistance, and the support tends to outlast any one cohort program. Leading accelerators such as Hong Kong’s Brinc, Singapore-based Big Idea Ventures and GROW, Thailand’s SPACE-F and China’s Dao Foods and Lever have designed incubator and growth programs to empower startups to reach their full potential.
APAC's 5 Most Funded Startups

01 $135.8M (Series B) - v2food™
02 $70M (Series A) - Green Monday
03 $32.2M (Seed) - TiNDLE
04 $25M (Seed) - Starfield
05 $20.4M (Series A) - Shiok Meats

APAC's Most Active Alt Protein VCs

Brinc Ventures, Green Monday, Temasek, Dao Foods International, Sustainable Food Ventures, AgFunder, Better Bite Ventures, Lever VC, BitsxBites
Manav Gupta founded venture capital and accelerator company Brinc in 2014 based on a strong personal belief that one can drive change through business: “The world’s biggest problems have been created by those no smarter than any of us and will also have to, in the same manner, be solved by us. Every solution has a ripple effect of issues to other businesses, supply chains, people’s livelihoods, the planet, etc. In the past we never used to think about the ripple effects, but recently those have become very clear as there is more data, insights and knowledge sharing. It has become clear that if you are running a business or multiple businesses in a category, in order to drive change or impact in a sustainable way the key is to find that counter balance across the ripple effects. When I moved to Hong Kong I always believed I had two options - launch my own business or build a platform of many businesses to drive change. I chose the platform as it meant that I had an opportunity to constantly be learning, delivering value across many categories scalably while also working to see how common threads and value could be shared across the companies; all in all collectively working to solve a problem. Many heads are always better than one and you can drive a larger impact. As we got into food we realised quickly that a sustainable food system meant a sustainable planet and livelihoods for billions of people around the world. I could not think of more exciting space or important work to be involved in at Brinc.”

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*Manav Gupta, CEO, Brinc*

**ASIA’S FLAGSHIP FOOD TECH PROGRAM**

Brinc’s 65+ strong team debuted Asia’s first food tech program in 2018 and has since supported and invested in 155 startups to date, of which 40 were seed-stage food tech startups, including 29 alternative protein startups. These startups come from all over the world; in fact its food tech portfolio of 60+ founders hail from 17 different countries, and have gone on to collectively raise US$24 million post-program in just the last few years.
Brinc’s flagship food tech program is designed to accelerate early-stage businesses that are using technology to make our global food supply chains more efficient or sustainable, including solutions that remove animal-based or animal-derived products from our food systems. It has rigorous application requirements, and accepts fewer than 5% of applicants into each cohort, but successful startups are guaranteed expert mentorship, funding and support.

Of its 155 investments to date, in a portfolio valued at $615 million, 86% of startups are still in operation today and have raised an average of $1.8 million follow-on funding after taking part in Brinc’s accelerator program.

**BRINC’S THREE CORE ACCELERATOR PROGRAM PILLARS**

1. Technical: comprising anything to do with the actual product itself, and scaling up production. This covers support in obtaining regulatory approvals, refining product formulation and packaging, as well as conducting consumer testing, among many other things.

2. Commercialisation: forming a robust go-to-market and expansion strategy, including how to launch in a new market, how to capture consumer data, how to understand customer conversion rates and acquisition costs, how to structure commercial engagements, and how to plan for growth.

3. Fundraising: securing capital for growth, encompassing how to build a robust financial model, data room, investor materials and how best to communicate your business and unlock Brinc’s investor network.

On top of the above, Brinc offers an additional layer of curriculum which is relevant to all early-stage companies. Throughout the 10-week program, startups learn leadership skills, how to resolve co-founder conflict, how to incentivize advisors, how to attract talent, how to protect their intellectual property and how to engage big corporations.
Brinc tailors its program for every startup. Natalie Lung, Program Manager at Brinc, explains: “In our experience, no one size fits all. We have very technical founders who need support around refining their go-to-market strategy, fundraising and improving the way that they communicate their business. We also have founders who need help adapting their products to different markets or making their supply chain more robust. We help others with how to approach vendors and build partnerships for success. In all cases, we help startups identify their blind spots and figure out how to resolve them quickly, which is very valuable in terms of speed to market.”

“Every company moves at their own pace and has their own DNA. We like to design around this and ensure that together we can drive towards key development milestones. As companies grow during and post-program our focus also evolves with them. We are patient, mission-driven investors,” adds Gupta.

The program is run through a mixture of group webinars, small sessions and one-on-one catch ups and mentoring sessions. Typically, a program manager will check in once a week to ensure progress is being made to achieve each startup’s tailored program objectives and support its individual needs. But the support doesn’t end after the formal program is complete. As long-term, hands-on investors, Brinc has an entire portfolio team dedicated to supporting startups post-program.
“With the help of Brinc’s Food Tech program, we were able to identify competitors, strategic partners, and fully understand our own business as our product doesn’t exist in the market.” Eleana Casado, Co-Founder & CEO of Cerealthy

BACKING THE EMERGING MARKET WINNERS AND PIONEERS

Brinc has supported several pioneering alternative protein and food technology companies, including Hong Kong’s Avant Meats, which is cultivating marine protein for food, beauty and medical applications; Chinese startup Haofood, which uses peanut protein as a key ingredient in its plant-based raw chicken; Chinese biotech New Singularity, which is developing plant-based seafood through mycelium fermentation; Malaysia’s Phuture Foods, whose plant-based pork analogue has a complete amino acid profile; Indonesia’s FairFlavor Foods, which makes plant-based dairy products from the Kenari nut; Singapore’s Sophie BioNutrients, currently the only microbial fermentation startup using microalgae to produce food-grade protein; and Australian startup Has Algae, which is working on algae-based alternative protein.

Lung adds that mainland China, especially, is a big opportunity: “It’s one of the markets everybody has an eye on, it’s nascent and still growing. Brinc’s entire focus has always been around emerging markets. For these types of companies to succeed, you need to build an ecosystem around being able to hire talent, a consumer who actually understands what it is you’re selling and who is receptive to the product, plus investors who are willing to put capital in these types of businesses.”

“The Brinc team was really hands-on and supported us with marketing, ingredient sourcing, food formulation, co-packing, and distribution.” Renee Chan, Founder & CEO of True Nosh

“Brinc paired us with a diverse array of mentors with expertise ranging from fundraising, pitching, food safety, branding, design and F&B hospitality.” Tommy Leung, Founder & CEO of Hakko Bako

“We loved being in a comprehensive environment that challenged us to understand the limitations and opportunities in the food industry.” Riana Lynn, Co-Founder & CEO of Journey Foods

“Brinc gave us real exposure to the Asian market. We now have the knowledge & contacts that are required, should we look to bring a product to the Asian market.” Gabriel Bean, Founder of GROUNDED

“With the help of Brinc’s Food Tech program, we were able to identify competitors, strategic partners, and fully understand our own business as our product doesn’t exist in the market.” Eleana Casado, Co-Founder & CEO of Cerealthy
For Lung there are three big areas of opportunity: “We’re looking for the second generation of plant-based products that have a clean label and are actually good for you, and that will come with technological defensibility, including precision fermentation. Next, novel ingredients. So many of our plant-based products today are based on pea and soy. You have potentially so many other great ingredients, from algae to mycelium to a whole host of other unexplored inputs that we could consider. Last, exploration within cellular agriculture. Right now, you can’t really go B2B because the space is so small. But it’d be quite interesting, as the space continues to grow, to look at solutions which are more specialised in a certain part of the supply chain, particularly those focused on helping cell ag companies scale up and propel the entire ecosystem forward, rather than fully stacked solutions.”

Now, in partnership with leading global food tech venture funds, Brinc has launched a scale-up tech accelerator program, targeting growth-stage companies which need less foundational help, and a more targeted approach to help them achieve commercialisation at a faster pace. In addition, the program boasts a larger ticket size, and is specifically designed to help those companies enter markets throughout Southeast Asia and Greater China, with a focus on building relationships, supporting commercial distribution channels, and getting products on shelves and restaurant menus.

**THREE KEY OPPORTUNITIES FOR THE FUTURE OF FOOD**

For Lung there are three big areas of opportunity: “We’re looking for the second generation of plant-based products that have a clean label and are actually good for you, and that will come with technological defensibility, including precision fermentation. Next, novel ingredients. So many of our plant-based products today are based on pea and soy. You have potentially so many other great ingredients, from algae to mycelium to a whole host of other unexplored inputs that we could consider. Last, exploration within cellular agriculture. Right now, you can’t really go B2B because the space is so small. But it’d be quite interesting, as the space continues to grow, to look at solutions which are more specialised in a certain part of the supply chain, particularly those focused on helping cell ag companies scale up and propel the entire ecosystem forward, rather than fully stacked solutions.”
“Seeing more teams that are driving against these core metrics (taste, texture, health profile and price point) in a localized manner for their market will show us that the overall category is growing and entrepreneurs from all around the world are recognizing the opportunity and getting involved.”

Manav Gupta, CEO, Brinc

WHY STARTUPS MUST LOCALIZE PRODUCTS TO BOOST CONSUMER ADOPTION

Gupta would like to see more regional teams building localized products that are tailored to local palates, local market conditions, consumer pricing and cultural profiles. “We are technology agnostic and want to ensure at the end of the day that teams are driving high fidelity products in Alt Meat and Alt Dairy that deliver the taste, texture, health profiles and price point that locals all around the world demand.

Seeing more teams that are driving against these core metrics (taste, texture, health profile and price point) in a localized manner for their market will show us that the overall category is growing and entrepreneurs from all around the world are recognizing the opportunity and getting involved. This will push innovation across all players as the market continues to heat up. We believe this isn’t about competition by companies in plant-based or lab-based, it’s really all those companies going against the incumbent’s market share that haven’t made the shift yet.”

The alternative protein space is accelerating at an extremely fast rate, and Gupta thinks that regional government support, especially regarding regulation, will be instrumental in enabling emerging technology to be brought in at an affordable price point for consumers. He would also like to see better collaboration between countries and ecosystems to scale IP or commercialize existing technology from one market to another: “It would be great to see more companies attempt to access the China market for example, or use Hong Kong or Singapore as a base for Southeast Asia.”
When Big Idea Ventures initially raised capital for its $50-million New Protein fund in May 2021, the first investors were Temasek, Enterprise Singapore and Tyson Foods, demonstrating the bullish support of major players in the industry and ecosystem. At the time, Andrew D. Ive, Managing General Partner at Big Idea Ventures said: “this is just the beginning” for the future of alternative protein and the growth trajectory that the industry is likely to see globally, but especially in Asia. “Asia will be a driving force across the alternative protein categories as more and more Asian countries see how these technologies can deliver protein far more efficiently and sustainably than the traditional methods,” explained Ive. “If we work together we can build food innovation ecosystems which will improve food security across the whole region.”

Ryan Bethencourt, CEO of Wild Earth, thinks that Asia-Pacific needs more Future of Food entrepreneurs and more pre-Seed stage angels and venture capital funds: “Singapore is getting there. China, India and Australia are emerging but need further support as emerging ecosystems.” He sees a potential opportunity in Pan Asian Funds to support Asian companies from Seed to Series B onwards, and thinks Asia will be the most important region for alternative proteins over the next decade (the 2020s), but in the 2030s Africa will be the most important region for alternative proteins due to demographics and population growth.
What makes an alternative protein startup attractive to investors? Michal Klar, Founder and CEO at Future Food Now Ventures says it’s a combination of factors but market size is key: “A large addressable market = big impact (e.g. large domestic market like China or Indonesia; or export potential; or large category, e.g. pork).” Also important is the founding team: “a combination of technical/scientific talent and “hustling” to be able to attract investors, partners, and customers. Plus, it depends on a particular investor’s strategy, but for us it is investing early in “moonshots” that can become huge in a few years.”

For Bethencourt, it’s about “Missionaries over mercenaries. People who are mission-motivated will find a way to succeed while those who are just in for the money will eventually give up as things get too hard (or the money dries up).” Despite the seemingly unending publicity around alternative protein investment, and the energy that it gives to the sector, it remains to be seen who the winners might be, and when or from where they might emerge. In order to achieve mass market acceptance, companies need to have products that can replicate the tastes and textures of animal-based products, and be able to manufacture these sustainably, and cost-effectively, at scale. Companies and investors may also need to navigate potential regulatory hurdles and public attitudes around the safety and health credentials of their products, so the path to success is not straightforward, and not just about cash investment.
THE RISE OF CELLULAR AGRICULTURE

*Selection of Cell-Based Crab Meat Dishes by Shiok Meats
Since our last report, APAC’s cellular agriculture landscape has changed dramatically. Where previously there were barely a handful of startups, now there are many. When it comes to cellular agriculture, APAC is now THE region on the map, and Singapore in particular has marked itself as a cell-based hub, having been the first country to grant regulatory approval for cultivated meat in November 2020.
Eat Just, already famous for its award-winning mung bean-based plant-based egg, made history in December 2020 when its GOOD Meat cultured chicken became the world’s first cellular agriculture-produced meat to be sold commercially after the Singapore government’s Food Agency SFA gave the firm the go-ahead. The San-Francisco-based startup is the first commercial entity to get regulatory approval for cell-cultured protein and the first to commercialise cultivated meat, for sale first to select restaurants, and later to retail stores.

Pursuing regulatory approval for its cultivated chicken was a complicated, two-year long process. Andrew Noyes, Head of Global Communications at Eat Just, describes the Singapore Food Agency, the regulatory regime for food products in the country, as “the gold standard” of regulatory bodies. “We had to share details about the characterisation of our cultured chicken and the process we use to produce it; things like the purity and stability and identity of the chicken’s cells that we use. During the manufacturing process, we had to provide a very detailed description that demonstrated that the harvesting of our cultured chicken met rigorous quality controls, and there was a very solid food safety monitoring system in place. There was a distinguished outside panel of international scientific authorities both from Singapore and the US that studied every aspect of the product and process, all with backgrounds in medicine, toxicology, allergenicity, cell biology and food safety. It was a pretty extensive process but needed to be for the first [cultivated chicken] in the world.”

Eat Just grabbed global headlines again in April 2021 with its partnership with Asian food delivery player foodpanda, marking the first time cultivated meat was available for delivery anywhere in the world.
Building exclusivity and demand by hosting invite-only dining events with a selection of Singapore’s celebrities, influencers, government officials and students. Using a gastronomy-first approach: GOOD Meat debuted at members only club restaurant 1880 to start, with customers having to add their name to wait-lists, and subsequently offering a limited menu at JW Marriott Singapore South Beach’s Madame Fan, ensuring that the cultivated nuggets were in the hands of leading chefs who would ensure a top-notch culinary experience.

Creatively adapting to pandemic restrictions: the company collaborated with Asian food delivery leader foodpanda in April 2021 to offer the first cultured meat food delivery experience, yet again dominating world headlines.

Beyond the regulatory approval hurdle, consumer acceptance of a brand-new technology is always challenging. Said Noyes: “It was very important for us to not only take this from the realm of science fiction to reality very quickly, once we had regulatory approval, but the proof is in the tasting, and we can quickly begin to shape consumer perceptions of what cultivated meat is when people can actually try it for themselves.”

Eat Just worked on a multi-pronged marketing launch campaign that involved

1. Building exclusivity and demand by hosting invite-only dining events with a selection of Singapore’s celebrities, influencers, government officials and students.
2. Using a gastronomy-first approach: GOOD Meat debuted at members only club restaurant 1880 to start, with customers having to add their name to wait-lists, and subsequently offering a limited menu at JW Marriott Singapore South Beach’s Madame Fan, ensuring that the cultivated nuggets were in the hands of leading chefs who would ensure a top-notch culinary experience.
3. Creatively adapting to pandemic restrictions: the company collaborated with Asian food delivery leader foodpanda in April 2021 to offer the first cultured meat food delivery experience, yet again dominating world headlines.
Eat Just considers that consumer education is essential to the success of the cultured meat industry, and its launch strategy reflects a strong focus on creating a customer experience that is engaging, informative and transparent.

“One of the great things about our initial launch in 1880 was that it was a full immersive dining experience. So in addition to being able to try these delicious cultured meat dishes on the menu, diners walked into a 360-degree audio-visual experience where they learned about the production process. One of the things we wanted to do was figure out how to translate that educational experience to people’s homes when they’re ordering on foodpanda. Now, each order comes with a Google Cardboard headset, which allows you to have the same VR experience you would have in the restaurant. It tells the story of how GOOD Meat is interconnected to the red jungle fowl, which is the predecessor to the chickens that we eat today, and then helps educate people on the link between cultivated meat and building a better food system.”

The company’s efforts seem to be paying off. A recent survey conducted by Eat Just found that two-thirds of consumers are open to substituting conventional meat with cultured meat, while 75% of consumers are likely to substitute plant-based meat with cultured meat.

Recognising the investor appetite for ready-to-scale cellular agriculture, GOOD Meat, now its own division, brought in an initial US$170 million round in May 2021, including investment from local venture capital firm K3 Ventures, and has continued raising. The raise marked the largest single announced round for a cultivated meat company in the industry globally and, notably, separate from Eat Just’s US$200 million raise earlier in the year. The funds will go a long way towards ensuring that GOOD Meat can grow its team and technology, while laying the foundation for more pilots and commercialisation efforts.
It is not a coincidence that the company chose Singapore as its launchpad. In October 2020, Eat Just announced a partnership with a consortium led by global investment management firm Proterra Investment Partners Asia to build a JUST Egg production facility in Singapore, its first Asian facility and the largest of its kind in the country, in order to meet the rising demand for plant-based alternatives across the region. Co-founder and CEO Josh Tetrick has hinted that Singapore may play an even bigger role in the future: in January 2021, the company said that the Lion City will “at minimum” serve as its Asian headquarters.

While alternative proteins are still a tiny sector in the region, Asian markets are poised to see demand grow by 200% within the next 5 years and, as Eat Just’s CEO explains: “Asia will account for a large percentage of our future growth because consumer demand there is being driven by a desire for healthier, safer, and more sustainable food products — both for the individual and collective benefit.” Eat Just launched its folded egg in South Korea in August amidst chicken egg shortages and has already strategically ramped up its presence in China, the biggest market in the world. After debuting on e-commerce giants JD.com and Tmall, the firm rolled out its plant-based egg across Chinese QSR Dicos. The fast food chain, which sits on the same league as McDonald’s in China, was the first QSR to swap its chicken eggs for a plant-based version.

Since then, Eat Just has opened its pop-up Future Food Studio in Shanghai, the country’s first dedicated plant-based culinary studio, and has launched localised campaigns. Its most recent initiative involved partnering with street vendors across the city to offer 100% plant-based versions of jianbing, one of the most popular Chinese breakfast foods. The campaign was designed to educate locals on ways to incorporate Eat Just’s plant-based eggs into everyday life, and demonstrate its relevance to local cuisine, which will be fundamental to convincing mainstream consumers to make the switch to plant-based eating.

“Asia will account for a large percentage of our future growth because consumer demand there is being driven by a desire for healthier, safer, and more sustainable food products – both for the individual and collective benefit.”

Josh Tetrick, Co-Founder and CEO, Eat Just
The far reduced climate impact of cell-based meat was revealed in a first-of-its-kind life cycle assessment published by the alternative protein nonprofit Good Food Institute (GFI) in March 2021, showcasing that proteins cultivated directly from cells can save up to 92% of greenhouse gas emissions, in addition to other environmental savings.

Cell-based meat offers a unique opportunity to increase domestic meat production, so is exceptionally relevant in countries which rely on imports, those whose arable land has been compromised by building development or pollution, or which have seen a vastly increased meat consumption amongst its population. A few countries are making plans and legislating to follow in Singapore’s footsteps:

- In a plenary session between the Chinese People’s Political Consultative Conference and the National People’s Congress in June 2020, cell-based meat development was discussed as a major solution to make China’s food supply more sustainable and crisis-resilient.
- Japanese cultivated protein startup IntegriCulture launched its CulNet Consortium, an open innovation platform dedicated to cellular agriculture, in June 2021. With twelve companies on board, including some of the biggest industry names in Japan, the platform aims to accelerate and scale cell-based solutions across the meat, cosmetics, nutraceuticals and materials industries. The aim of the platform is to overcome the “numerous problems that need solutions such as cost, safety, and production scale,” through a collaborative approach. By having members from different sectors, IntegriCulture says the consortium will be able to “build a whole cellular agriculture supply chain.”
Plus, Singapore authorities are encouraging cultured meat makers to apply early for regulatory approval. With the priority on ensuring safety, the Singapore Food Agency (SFA) says that firms should start the regulatory process as early as possible, so as to allow for ample testing and control before being approved for sale, a clear indicator of the country’s bullish approach to cultivated proteins as a sustainable source of food.

BlueNalu teamed up with leading Asian seafood giants Thai Union and Mitsubishi Corporation in April 2021 to accelerate the launch of its cell-cultured seafood across Asia-Pacific.

Hong Kong-headquartered Avant Meats announced a strategic partnership with Guangdong-based biotech firm QuaCell in March 2021, enabling a more-than-90% production cost reduction of its cell-based seafood products. With more cost-efficient production, Avant said its scale-up plans will be pushed forward by “at least 12 months”. In January 2021, it also announced a strategic partnership with Vinh Hoan Corporation, the world’s largest pangasius fish producer, based in Vietnam, in order to leverage its global sales network and manufacturing capabilities.
- Israeli food tech Aleph Farms announced an agreement with Mitsubishi’s food industry arm in January 2021, in order to bring cultivated meat to Japan. Aleph Farms is providing its manufacturing platform to cultivate whole-muscle steaks while Mitsubishi brings its biotech, food production and local distribution expertise.

- TurtleTree Scientific, the venture dedicated to food-grade growth factors launched by Singapore cell-based milk startup TurtleTree Labs, announced in February 2021 a strategic partnership with biotech leader Dyadic International to develop a range of recombinant proteins growth factors that can be produced at high-yields and for a low-cost, hopefully expediting the path to market for cultivated food techs and significantly slashing prices to “make cellular agriculture a reality for all.”

- Vietnam seafood major Vinh Hoan Corporation and South Korean food giants Woowa Brothers and CJ Cheiljedang led Shiok Meats’ bridge funding round in July 2021, to fuel the startup’s ongoing R&D and construction of its new production facility.
For seafood, especially, demand in Asia has grown and now accounts for over two thirds of the world’s consumption, and experts are even predicting that China’s seafood demand could triple by 2030. In general, most scientific estimates say that marine populations are depleting so quickly we could be seeing most species consumed by humans going extinct by 2048, but recent figures have highlighted the urgent need for solutions to emerge due to a spike in demand from the consumer trend of choosing seafood as their choice of protein over red meats. Cell-cultured solutions could be the answer to satisfy growing consumer demand whilst limiting environmental impact.

In August 2021 Shiok Meats announced a 90 percent acquisition of Gaia Foods, Southeast Asia’s first cell-based red meat start-up. According to Shiok Meats, its acquisition of Gaia Foods will help expand both companies’ efforts in the cell-based meat arena, creating a “collaborative mindset” that helps to add value to the industry.
Singapore-based Shiok Meats is at the forefront of cellular agriculture technology in Southeast Asia. It is the region’s most valuable cell-based meat startup, having raised $30M in seed, bridge, and Series A funding up to now, and one of few companies globally with an all-female C-suite. The company continues to advance its R&D and commercialisation efforts through support from strategic investors and advisors, and is now firming up plans for a Series B round next year.
According to the startup, cell-based production of seafood could reduce the problematic aquaculture industry’s greenhouse gas emissions by 96%, energy consumption by 45% and water consumption by 96%. It is currently building its first commercial pilot facility, and is working towards launching its sustainable, traceable cultivated minced shrimp product in 2022, putting it on track to become the world’s first to launch a fully-functional commercial pilot plant dedicated to cell-based crustacean production.

Dr Sandhya Sriram, CEO & Co-Founder at Shiok Meats explains what motivated her and CTO and Co-Founder Dr. Ka Yi Ling to launch the venture: “Shiok Meats was conceived because we strongly believe that a sustainable solution was required to feed the ever-growing population without creating additional pressure on the otherwise declining ocean health. It is my third startup, and I believe in ventures that are rooted in purpose, impact, and innovation – and it’s that fulfilment that drives me to work every single day.”

Sriram describes the technology: “First, we extract and isolate the stem cells from a healthy animal then, through our R&D process, we are able to get good cell lines which allow us to multiply stem cells using nutrient rich broth, creating cultured meats. We are working on formulating plant-based media to grow the stem cells, to make sure that the final product is affordable.” Sriram adds: “What is interesting is that our patent-pending technology can make crustaceans six times faster than conventional production – this is because we do not need to grow the entire animal; we only grow the meat and parts of the animal that we actually consume.”
For its first commercial launch, Shiok Meats is looking to adopt a B2B2C approach, working with high-end restaurants to showcase its planned first product. Pei Wen Law, Sales & Marketing Manager at Shiok Meats explains: “The primary reason for this route to market is that we believe that for consumers to accept cell-based meats, they need to be exposed to them via a position of confidence. Consumers need to see that hotels or famous chefs who already believe in sustainability, or who are already advocates of cell-based and plant-based foods, are the ones launching it. When consumers see our meat as part of the most common dish they eat, they are more likely to accept it. So the idea is to first create acceptance and then go to B2C once we drive down costs and reach mass scale.”

Launching in this way should have the added bonus of diminishing the connotations of a science experiment that surround ‘lab-grown’ meat, which Shiok Meats is concerned could be off-putting for consumers. Law explains: “Another factor that we hear most frequently is that cell-based meat is something fake, it’s not authentic, it’s not real meat. This is the kind of perception that we need to work on; we need to keep talking and educating consumers. Conventional meat is simply a collection of cells, so to cultivate it through science we don’t really need a shell, or the limbs or anything else to be able to call it meat.”

After pioneering cell-based shrimp in 2018/2019 and cell-based lobster in 2020, Shiok Meats hosted the world’s first cell-based crab tasting in Singapore in August 2021, the same month the company announced the acquisition of Gaia Foods.
The boom in Asian pork production over the last four decades has been enormous, and has even had geopolitical implications, especially in the trade of Latin American soybeans to feed the Chinese pork sector. While African Swine Fever and Covid-19 pressures affected China’s production levels in 2020, meaning that its pork imports reached record levels, taking its share of global trade up to over 50%, its 2021 production is predicted to see strong growth again. Pork is a popular ingredient in many APAC countries, so the impact of cell-based alternatives will be extremely obvious.
South Korean cultivated meat startup Space F, along with researchers at Sejong University and Seoul National University, has developed the country’s first cultured pork prototype, directly from porcine stem cells. The project, which first began in 2018, is being supported by the South Korean Ministry of Trade, Industry and Energy as the country looks to bolster its local food production and resilience against supply chain shocks, and the team is working on commercialising its cell-based technology. The company’s research team consists of three specialists, Chang kyu Lee, CSO at Space F, in porcine stem cells, Cheorun Jo, CTO at Space F, in muscle food science and technology, and Sungkwon Park, CDO at Space F and professor at Sejong University, in alternative protein technology. The company completed its Series A funding round in August 2021, raising approximately $6M to fund further research.
EMBRYONIC CELLS FTW

The firm uses embryonic stem cells, and in fact Space F pioneered the world’s first pig embryonic stem cells capable of differentiation into various cells and tissues, including muscle. Ben Byoung-hoon Kim, CEO at Space F says that cells at an early development stage are vital to the scalability of their technology: “Unlike adult stem cells, embryonic stem cells can constantly provide muscle cells without animal sacrifice due to their infinite proliferation ability and differentiation potential into various cells, making them an optimal cell source for producing cultured meat. Currently, we are attempting to optimize myogenic differentiation protocol using embryonic stem cells for cell-cultured food materials. We have accumulated vast experience and experimental technologies for developing the culture medium of domestic animal stem cells along with stem cell derivation techniques. We believe that this technology would be a game-changer in cultured meat research.”

WHY FAT MATTERS

Space F is also working on the production of fat cells, because fat is an important contributor to the taste of meat and a key component of its texture and juiciness. According to Kim: “When higher amounts of fat are present, the contribution of volatiles (fatty acids) to the overall flavor increases. For this reason, we think that fat is inevitable in the later business of cultured meat, so we researched it at the same time as researching muscle. Plus, our team, especially CTO Dr. Jo, has studied meat processing and factors related to meat flavour for over twenty years. We think that cultured meat is first going to be applied as processed meat rather than as a whole cut, for reasons such as technical hurdles and consumer acceptance. Thus, we are investigating meat processing and additives for processing the various cultured meat products. In Korea, minced meats are widely consumed in various product types including mini sausage, toppings on bibimbaps, and meat dumplings. So, we used our prototype of cultured meat to cook these products.”

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<th>Prototype #1 (2019)</th>
<th>Prototype #2 (2020)</th>
<th>Prototype #2 (Grilled)</th>
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Space F Cell-Based Pork Prototypes
A MATTER OF NATIONAL SECURITY

Kim started working on this new food concept after becoming aware about the link between localised food production and food security: “My experience in the food industry gave me a new perspective about the concept of food, especially meat. Korea is not a country with an excellent food self-sufficiency rate due to its small territory relative to its population. So, it is reliant on importing most of its food products. Moreover, due to environmental issues such as animal epidemic diseases, such as Avian Influenza, ASFV etc, Korea’s domestic supply chain is not enough to afford a stable food safety.” Kim’s role in the project is to cover the business side of commercialisation, and he hopes that his experience as a semiconductor processing engineer will come in useful when setting up a pilot production system for Space F’s cell-based pork.

“My experience in the food industry gave me a new perspective about the concept of food, especially meat.”

Ben Kim, CEO, Space F
SOUTH KOREA REMAINS A CHALLENGING MARKET

Kim feels that developing cultivated meat in South Korea may be more difficult than some other APAC countries: “Korea is one of the most conservative countries, especially in terms of food. In spite of our actions to establish new regulations for cell-based foods, a project which we began with the KFDA (Korea Food and Drug Administration) in 2019, I think the government may not be able to decide as easily as Singapore’s did. However, the cultured meat industry in Korea is changing rapidly. Startups and investors expect that the market will open in a few years. There are several global companies that are close to releasing their products, and big markets such as the U.S. and EU are about to approve commercialisation. I think that Korea will not be the second country to commercialise cell-cultured meat, but equally won’t be far behind.”

But the market opportunity for cell-cultured meat could be large, as South Korean consumers love to eat meat, especially barbecue. Recent statistics show that the annual average consumption of meat per capita increased from 11.3 kilograms in 1980 to 53.9 kg in 2018. Pork is the most popular meat, with consumption rising by an average of 3.9 percent each year over the period.
CONSUMER ACCEPTANCE REMAINS A BARRIER

Kim says that consumer acceptance may be tricky: “As the concept of alternative protein is now widely known and understood, it will take a little longer for consumers to recognize cell-based meat as a viable source of food. However, if the market for cell-based meat is opened in APAC countries as well as worldwide, I think that time will come earlier.” He considers that there is work to be done in terms of consumer awareness and messaging to convince consumers to make the shift: “First, we’re talking about food safety, because we know this is a concern for consumers. We will try to inform consumers of the process and results related to food safety so that they can trust that it is safe. Plus, marketing is important. We’re going to make clear our mission, talk about climate change and ethical issues, and make it clear that this is a better way than killing cows and pigs. It’s still expensive, we’re working on our pricing strategy, so that will have a positive impact for consumers as well.”

“"We're going to make clear our mission, talk about climate change and ethical issues, and make it clear that this is a better way than killing cows and pigs.""

Ben Kim, CEO, Space F

LOOKING AHEAD: SETTING UP FOR SUCCESS

Space F’s goal is to be able to produce 100g of its cultivated pork with in-vitro produced fat for under $3 by 2023, and it is planning to export its products to Singapore and any other countries which may have approved the commercialisation of cell-based meats by then. Alongside this, the firm is pursuing a business platform for cellular agriculture using its technology and research know-how, in order to support the growth of other cellular agriculture fields in a collaborative way.
Several other startups have hit major cell-based milestones over the last 18 months:

- ClearMeat, India’s first cell-based protein startup, announced in January 2021 that it had filed to patent its proprietary technology used to develop its cultivated minced chicken.
- Mainland Chinese cultivated meat startup Joes Future Food raised 20 million RMB (US$3 million) in an angel investment round in January 2021, and is using the funding to ramp up R&D and overcome technical challenges in order to improve its cultivated minced pork.
- Perth-based startup Cass Materials developed a new edible scaffold last year, which can be used by cellular agriculture food techs to manufacture cultivated proteins. The company’s biodegradable scaffolding, which is derived from nata de coco, can provide the matrix for animal cells to grow around, making it a suitable replacement for gelatin-based fibres that many lab-grown meat developers still rely on.
- South Korean startup SeaWith has developed its own seaweed-based cell culturing medium and scaffolds, and is now in the process of scaling up production ahead of its plan to unveil its final cultivated meat products at a pilot restaurant by the end of next year.
- Another South Korean startup, DaNAgreen announced in January 2021 that it had adapted its initial biomedical scaffolding for cell-based meat production at a price “a thousand times cheaper than the original”, and it is now in the process of creating an entire platform for cellular agriculture protein production, from culture media to bioreactors.

Cellular Agriculture Beyond Food

Avant Meats unveiled its cultivated fish fillet in November 2020, having prior to that focused on developing cultivated fish maw, a prized culinary delicacy in traditional Chinese cuisine and a species that is now threatened with extinction due to rising demand. The company diversified its portfolio in February 2021 with the launch of its cell-based functional protein for cosmeceutical products, marking its first foray into the US$52.5 billion anti-aging products market and its first commercial product, Zellulin®, a collagen alternative.
Avant Meats is Hong Kong’s first cell-based seafood startup, tackling demand for prized local delicacies such as fish maw, alongside more mainstream products such as its cultivated fish fillets, the first in Asia, which debuted in November 2020. It has made great strides since its inception in 2018, all of which led to it being named one of the world’s 100 most promising Technology Pioneers for 2021. The list, selected by the World Economic Forum, identifies companies that are disrupting industries using new technologies that are set to have a positive impact on health, the environment and society.

Avant Meats is firmly focused on cultured fish delicacies that often feature in Chinese soups and stews and command high market value due to their unique texture and purported health benefits. Chinese demand for dried fish maw has a major environmental impact: the swim bladder trade, which is based in Hong Kong and mainland China, has driven some fish species to near extinction. According to the Environmental Investigation Agency, the two main species of fish most sought-out for their bladder, Bahaba and Totoba, risk being “pushed to oblivion.” An EIA report also revealed that the bladders can be sold for anywhere from US$2,300 to US$8,500. Using cellular agriculture to develop fish swim bladders under laboratory conditions can therefore alleviate some of the associated environmental problems.
Because fish maw is made up of a singular cell type, cultivating it in a lab is easier than the process for other cell-based meats, meaning that the startup is able to “scale up” a fish cell into a fish maw product within six weeks. The company’s end-to-end technology platform also enables local production of fish proteins, enabling a further reduction in greenhouse gas emissions from transportation and reducing countries’ reliance on food imports. For cities like Hong Kong and Singapore, it presents an additional food resilience solution to defend against supply chain shocks.

Carrie Chan, co-founder and CEO at Avant Meats, elaborates on why the company chose fish maw as its first prototype: “We want to bring cultivated technology to Asian consumers in a way that they emotionally connect with. So people are very familiar with this ingredient, people actually get very excited about fish maw in this part of the world. This is the effect we want to get from the consumer, an emotional connection. And you know, the expectation versus if we make a burger, although it’s something very common on menus, especially Western menus, but in this part of the world we want something that echoes and resonates more with the local preferences and culinary cultures, with our initial few products to take to market.”

“For us, when we’re thinking about the consumer, we want to bring cultivated technology to Asian consumers in a way that they emotionally connect with.”

Carrie Chan, co-founder & CEO, Avant Meats

Chan is confident that local consumers are open to cultivated seafood, having received requests from a Hong Kong-based restaurant for samples and pricing of Avant Meats’ cell-based fish maw, which it says could provide many benefits for the food service industry, including waste reduction and operational benefits. Chan explains: “To get the dehydrated fish maw form to the actual form that it is served on the plate, it takes almost a day to prepare. They need to be soaked in water for 12 hours, they need to be stored and also cooked for a longer time to soften it. It is a very lengthy process. But the product we could supply to them is ready to be incorporated into the dish, saving them a lot of processing time and costs. Plus, we can also help to standardise portion size. Naturally-caught fish maw comes in different sizes, and it can be very difficult to manage the portion from one to the other. But our product can come in a standard size, reducing waste, so the restaurant and customers are happy.”
The company announced in April 2021 that it will be establishing its R&D and pilot manufacturing plant in Singapore, supported by the Singapore Economic Development Board, and enabling Avant Meats to scale up and speed up the route to market, given the regulatory framework already in place in the city-state. “Avant has grown its presence in strategic locations in Asia to optimise its market access, technology ecosystem, and funding opportunities. Singapore provides Avant with regulatory clarity, international talents, and sufficient space for the next step of scaling up,” says Chan.

Avant Meats diversified its portfolio in February 2021 with the launch of its cell-based functional protein for cosmeceutical products, marking its first foray into the US$52.5 billion anti-aging products market and its first commercial product. Produced in a traceable and controlled environment using the startup’s cell culture biotechnology, its product, Zellulin®, is described as the first of its kind and a sustainable and ethical alternative to traditional non-cruelty-free animal-based skincare ingredients such as collagen. Chan says that, as a vegan, it is difficult to buy skincare products due to the frequent presence of animal-sourced ingredients, which is why she is determined to use the company’s technology to address market demand for sustainable personal care.
THE FUTURE OF CELL-BASED PROTEIN

A recent report by analysts at McKinsey & Co estimates that cultivated meat could balloon to a US$25 billion global industry by the end of the decade, as long as companies can overcome key hurdles such as pricing, regulatory approvals and ensure consumer acceptance. The latter may not be impossible, as research published in the peer-reviewed journal Foods in May found that the average consumer imagined that cultivated protein will make up at least 40% of their future meat consumption, while conventional meat will constitute the other 60%. In terms of pricing, GFI also projects that cultivated meats could rival the price of its conventional counterparts as soon as 2030, a crucial turning point for mass adoption.

Mirte Gosker, Managing Director at GFI APAC, believes the future of cell-based foods in Asia-Pacific depends on funding: “While the limited cultivated meat dishes that are currently available to consumers are cost-prohibitive for the vast majority of people in Asia, early adopters—including those who do not normally consume alternative proteins—have been blown away. That experience will become increasingly available to broader segments of the population in coming years, but the rate of acceleration depends in large part on how much funding for R&D and commercialisation the industry receives.”

Source: new harvest
THE THIRD PILLAR: FERMENTATION

*Fermented Microalgae Meat Patties by Sophie’s Bionutrients
There are three main approaches to fermentation in alternative proteins:

1) **Traditional Fermentation**, which uses live microorganisms to process plant-based ingredients, to modify the texture, taste and nutritional profile, as with tempeh;

2) **Biomass Fermentation**, which takes the high-protein and fast-growing content of microorganisms as an ingredient to produce large amounts of protein, that can be used to create an alternative meat product, as with Quorn;

3) **Precision Fermentation**, which leverages microbial hosts as “factories” where cells can produce specific ingredients to enable the improvement of plant-based or cell-based products, from sensory characteristics to functional qualities. Impossible Foods’ heme protein, the ingredient which gives its plant-based burgers its famous iron-rich mouthfeel, is created using this technology.

The Good Food Institute held its first-ever Symposium on Fermentation in November 2020, where global alternative protein experts and food industry players spotlighted fermentation as “critical” to accelerating alternative protein solutions amid climate change, rising food insecurity, supply chain disruptions and health crises. Support for the sector is growing, though it is still very much in its infancy in terms of product development.
Precision fermentation may sound like a new technology, but in reality it’s been around for some time. Previously, rennet from a calf’s stomach was vital to curdle milk for dairy cheese production through separating the whey from casein, until in the 1990s there was pressure from animal rights activists to stop animal cruelty at the same time as animal rennet became more expensive. Scientists then leveraged precision fermentation technology to synthesise rennet in microorganisms and developed non-animal rennet. Or, in terms of pharmaceuticals, insulin for diabetes used to be taken from pigs’ stomachs, but through precision fermentation it could be safely synthesised without animal cruelty.

Precision fermentation technology has been adopted by European and North American companies looking to pioneer animal-free dairy. In Australia, where dairy is an important part of the diet, there are a handful of companies doing the same. But to date, there is still no precision fermentation company in the ex-Pacific Asian region, and one explanation for this is that many Asian countries do not have long traditions of consuming dairy products, particularly cheese, which is why founders do not focus on creating alternatives to the same extent that they do elsewhere. We believe this will change, particularly in India, where milk and curd are key parts of the daily diet.
CASE STUDY: CHANGE FOODS

PIONEERING ANIMAL-FREE DAIRY USING PRECISION FERMENTATION

Change Foods, founded in Australia in 2019 by David Bucca and Junior Te‘o, is the only startup in the Asia-Pacific region creating animal-free cheese through precision fermentation. The young company is currently working on creating a bio-identical product that cooks, looks and tastes just like the real thing, having raised US$3.1M investment to date to scale-up its precision fermentation technology, expand its core team, and develop initial cheese prototypes. Longer-term, it also aims to target other dairy products in order to accelerate disruption of the massive US$442 billion global dairy industry. Change Foods plans on raising its next round of funding by the end of the year.

David Bucca, co-founder and CEO at Change Foods, explains his reasons for founding the company and exploring precision fermentation: “Change Foods was born when I connected the dots between the impacts of industrialised animal agriculture on our planet, our health and the animals. Looking at the continually rising demand for animal products globally, I realized we were on a collision course with nature. I have two kids and care deeply about their future, the future of our planet, and the way we treat and respect all life on Earth. I could not sit still and watch us continue down the same destructive path. This is when I discovered the amazing potential that precision fermentation has in solving the challenge of feeding the growing population in a truly sustainable, efficient, safe and kind way. We had to start with cheese, because it is, unquestionably, the most desired consumer product with the largest performance gap to current alternatives. If we can create a perfect stretchy, melty animal-free cheese, we can convert the flexitarians and mass-market consumers to the new world of animal-free dairy. This is where true change of our food system will occur!”
Unlike many non-dairy alternatives made from plants, Change Foods is developing bio-identical dairy proteins to create our favourite dairy foods that are indistinguishable from the real deal, using the magic of microbes instead of animals. It may seem a complex process, but Irina Gerry, CMO at Change Foods, explains just how simple the concept is: “It’s a combination of two things: new bio-technology and age-old fermentation. First, we create our unique dairy-producing microbes. To do that, we select microbes, such as yeast or fungi, and encode them with dairy protein DNA sequences. These DNA sequences are taken from a digital database, so no animals are involved in the process. Our special microbes are then placed in a fermentation tank, similar to those used to brew beer, where they eat simple plant-based nutrients and sugars to grow. During the fermentation process, these select microbes produce proteins, identical on molecule-by-molecule basis to those found in dairy milk. At the end of the process, we filter out our chosen proteins and create a pure milk protein isolate, which we combine with fats and other plant-based ingredients to create our favorite dairy foods. You get to enjoy animal-free dairy foods that taste and function just like their animal-based counterparts. People have used fermentation for years to make kimchi, tempeh, etc. The essence of fermentation is taking an original food, for example cabbage, and combining it with microorganisms, water, salt and sugar, and then letting the microbes do their magic and transform the food. What we’re doing is infusing a new element upfront and controlling the microbe selection, fermentation and purification process precisely to get exactly the kind of transformation we want to occur. We’ve changed the process, but we didn’t change the end result.”

“When you're bringing new-to-the-world technology, you cannot just drop it on the shelf and expect it to work.”

Irina Gerry, CMO, Change Foods
CLEANER, SAFER, PLANET-FRIENDLY ANIMAL-FREE DAIRY

Change Foods says precision fermentation dairy is a lot more efficient when it comes to water, land and energy required compared to traditionally farmed dairy. It is also able to dramatically slash production time from the 2-3 years required to raise and milk cattle down to a matter of days. Plus, cleaner precision fermentation technology should translate to a far more efficient and less vulnerable dairy supply chain, because it doesn’t require cold-chain logistics, the products are expected to have a longer shelf life, and there is greater stability in pricing and supply.

A B2C APPROACH IS KEY FOR SUCCESS

The firm is in R&D stage, and is targeting a B2C approach to be able to tell consumers its story and drive consumer acceptance. “When you’re bringing new-to-the-world technology, you cannot just drop it on the shelf and expect it to work” says Gerry. There’s a lot of work we need to do in terms of telling our stories, explaining what this technology is and the benefits it provides, in order to get consumers to bring these products into their lives and kitchens. We want to help them understand why we are doing what we are doing and what problems we are solving. We also need to explain what we are doing in clear and simple terms. While the backbone of this technology is quite revolutionary, the products themselves are incredibly familiar. It’s just cheese after all. And, most importantly, precision fermentation technology has been used in 90% of all cheese made globally for the past 30 years. This is how we make non-animal rennet today. We are just taking it one step further and replacing the rest of the animal ingredients in cheese, which is both an evolution and a revolution. We can now take farmed animals out of the equation entirely and we can give you the products you know and love with the same taste, so eating sustainably doesn’t feel like sacrifice.”
The important message for global consumers is that fermentation has been used in food preservation and preparation for millennia. In fact, Asia is an important market for Change Foods, because there is generally a greater understanding and cultural acceptance of fermentation within food, when considering typical Asian products such as tempeh or kimchi. Gerry explains: “There’s also a greater degree of acceptance and consumption of non-animal products in Asia. In Europe and in the US, there’s so much legacy drive for consumption of animal products, so there’s a much greater cultural shift that needs to happen for plant-based foods to become mainstream. Plus, there’s a more favorable regulatory environment in Asia. If you look at a country like Singapore, that has made it a national priority to get closer to food independence, and put policy in place to support alternative proteins at the highest levels of government, you could see how it creates a market pull for new technology. It makes a massive difference in time-to-market through expedited approvals, ability to market the product, ability to put it on shelves, ability to operate and talk about your technology. We see Asia as an absolutely critical market to drive success globally.”

“We see Asia as an absolutely critical market to drive success globally.”

Irina Gerry, CMO, Change Foods

Change Foods animal-free dairy emissions profile vs. animal dairy
In terms of homegrown startups, Hong Kong-based microalgae biotech Geb Impact Technology received a grant from the Hong Kong government in June 2021 for its new project to scale its microalgae cultivation for plant-based meat applications. The startup is working on cultivating Euglena microalgae, via biomass fermentation, due to its unique protein, beta-glucan, EPA, and DHA content. Previously, Geb Impact Technology has developed microalgae such as Chlorella vulgaris and Haematococcus Pluvialis for applications in the plant-based skincare and cosmetics sectors.

Singapore-based Sophie’s Bionutrients grows its proprietary strain of microalgae, which it uses to make a protein-rich flour, in bioreactors via fermentation technology.

With a similar approach to success in Asia, California-based alternative dairy startup Perfect Day opened its Singapore-based R&D centre earlier this year, in partnership with the government-run Agency for Science, Technology and Research (A*STAR). Called the A*Star-Perfect Day Joint Lab, the facility is focused on further developing Perfect Day’s precision fermentation technology.

Plus, Hong Kong’s Igloo Dessert Bar partnered with Perfect Day to launch Ice Age!, Asia’s first animal-free ice cream made with real dairy proteins in January 2021. Forged alongside Li Ka-shing’s tech venture capital firm Horizon Ventures, who invested early in the American precision fermentation leader, the collaboration brand offers customers a line-up of eight lactose-free, hormone-free and vegan-friendly ice creams powered by Perfect Day’s tech stack, a hybrid development model that could inspire others with flavours designed to reflect Chinese consumer preferences such as Red Bean and Ginger Milk Pudding.
Singapore-based biotech Sophie’s Bionutrients has the distinction of being the only company in Asia-Pacific working with microalgae to develop plant-based proteins, and the only one in the world to be using industrial feed. The startup grows its proprietary strain of microalgae in bioreactors via fermentation technology, which allows precise control over protein production. Its bioreactors require minimal water and use local food waste as its feedstock, such as by-products from tofu production and molasses from sugar refineries. Sophie’s Bionutrients’ end product is a high-protein flour, which has an exceptionally clean label due to the manufacturing process itself as Eugene Wang, co-founder and CEO, explains: “Unlike the conventional nutraceutical way of growing microalgae, we don’t use sunshine. We use a fermentation tank, which is very efficient because you can grow tonnes and tonnes of protein flour in that very compact space, whereas when using conventional animal farming or aquaculture, you need a lot of space. And because the whole process takes place in a tank, you don’t need fertiliser, herbicides, antibiotics, or growth hormones. When you talk about microalgae protein flour, on Google or Amazon, it’s always dark green, even black. That’s always the case because they use sunshine to grow the microalgae. In our tank, there’s no photosynthesis process because it’s dark, so the microalgae produce minimal chlorophyll, and the colour becomes so light that you can easily remove it using the protein isolation process. Plus, the flour’s flavour is also very pleasant. In an open pond, you have a lot of bacteria coexisting with the microalgae, and that’s what gives the microalgae that fishy smell. In the tank, there are no other bacteria, so there’s no heavy smell. And because we use tank production, our efficiency is 10 times, sometimes even 100 times more than sunshine production, and our cost will be driven down quite a bit going forward when we use bigger tanks.”

Sophie’s high protein flour looks to be very attractive to food manufacturers, thanks to its neutral colour and flavour and, crucially, its lack of allergens.

“And so that's when I realised we stumbled on a wonderful and major opportunity to introduce a really super-sustainable and super-nutritious protein to the world.”

Eugene Wang, co-founder & CEO, Sophie’s Bionutrients
THE INHERENT VERSATILITY OF MICROALGAE

The company unveiled its first 100% plant-based burger patty created from single-cell microalgae in April 2021, and debuted what it claims to be the world’s first plant-based milk alternative made from microalgae in May 2021, both formulated with its microalgae protein flour. So far, the company is averaging one production batch of its burgers a week, which is around 20 to 100 patties, but has plans to scale up soon. In terms of its milk alternative, Sophie’s Bionutrients says that its formula can be tailored by tweaking the ratio of its water-soluble microalgae flour that is homogenised with water, to elevate the protein content of the dairy alternative by up to 50%, and improving the textural and sensory qualities of the product, such as its creaminess.

Wang realised the versatility of microalgae through the R&D process: “Initially, my whole focus was to see if I could make plant-based seafood, but later on I realised you don’t have to limit it, and wanted to see if we could use it to make milk, or even a burger or chicken nuggets. All you need to do is give it a different flavour profile, or texture, and anything is possible. And so that’s when I realised we stumbled on a wonderful and major opportunity to introduce a really super-sustainable and super-nutritious protein to the world. We want to show the world how you can grow it sustainably, efficiently, and how you can eat it in the multiple ways that you used to eat your favourite foods but without any sacrifice.”

“"We're the only team among the 40ish microbial fermentation-focused teams in the world that is using industrial food waste to feed our microalgae, and why?"”
Eugene Wang, co-founder & CEO, Sophie’s Bionutrients

MICROALGAE’S ASIAN HERITAGE & LOCALISED SOLUTION

In 2019, Sophie’s Bionutrients received a S$1 million grant via Temasek Foundation’s ‘The Liveability Challenge’, and is working on setting up an urban protein production facility in the city-state to meet local needs. According to Wang, microalgae have been studied in China and Japan for centuries, so he considers that there is an
Wang is laser-focused on sustainability, and believes that microalgae’s biodiversity is what makes it so perfect as a protein source, especially compared to other, popular plant crops, with the potential to sustain humanity even beyond the realms of our planet: “There are about one million different species of microalgae on this planet. How many different strains of soy are we cropping? Probably no more than five. Even in ancient times, it was probably no more than thirty. And we all know that where there is water, there could be microalgae. We also know that there is water on Mars. So there could be microalgae, even on the outer planets. If we develop this technology, it could even enable human beings to detach from the soil, as you no longer have to rely on the soil to grow your food, so you no longer have to stay put on this planet to have enough food to eat, because you know that you can leverage microalgae to make foods or nutrients that you need to sustain your life. And that’s why and how important I see our technology.”
Fermentation as a method of alternative protein production is not yet widespread in Asia-Pacific, and Mirte Gosker, Managing Director at GFI APAC, explains why: “More than 80 percent of companies devoted to fermentation-enabled alternative protein applications have formed in just the past five years. Impossible Foods’ precision-fermentation derived heme is the breakout example of this technology’s potential impact, but the first precision fermentation-enabled animal-free dairy products from Perfect Day only debuted in 2020, so the industry is still quite nascent, particularly in Asia-Pacific. Despite this, local startups are making significant strides. Some precision fermentation-derived products are already gaining regulatory approvals in the region—and precision fermentation-derived rennet for dairy cheese production has set a long-standing precedent here. Impossible Foods secured approval to enter the Australian and New Zealand markets at the end of 2020 and can be bought in Singapore and Hong Kong already. However, some markets will present regulatory challenges that must be navigated due to the fact that the precision fermentation process can involve gene editing or gene modification. The premier example in this category is mainland China, where any food that includes these steps in its production has a very challenging regulatory pathway to approval.”

Precision fermentation, in particular, is not without its challenges. Despite not being a brand new technology, it is still new within alternative protein production and specific application for dairy proteins, so Change Foods’ Gerry foresees issues for some firms in scaling up, even after overcoming the scientific hurdles of developing a product. “When you’re making a pharmaceutical product such as insulin, which is used in small amounts and priced at a premium as a drug, the economics work very differently compared to a mass-produced food product like dairy. You have to meet a certain cost threshold in order to reach market scale. The first technological challenge is to increase yields, so that when we go to large-scale fermenters, we get enough protein to make products profitably. Further, given nuances in the fermentation process, we need customized equipment. Typically, it would be too expensive for any one company to try to build their own custom facilities for each stage, from pilot to scale-up and beyond. You need an ecosystem of contract manufacturers in order to move through development stages and scale technology cost-efficiently. Right now, there is limited availability of such facilities, however, there are a number of companies working on creating capacity as we speak, so we believe the bottleneck is temporary.”
“You need an ecosystem of contract manufacturers in order to move through development stages and scale technology cost efficiently. Right now, there is a limited availability of such facilities, however, there are a number of companies working on creating capacity as we speak, so we believe the bottleneck is temporary.”

Irina Gerry, CMO, Change Foods

THE FUTURE OF FERMENTATION

The opportunities to leverage fermentation are huge, with many more possible applications ahead thanks to its versatile technology that means it can produce everything from ingredients and enablers to flavourings and whole protein products. In the realm of meat substitutes, the Good Food Institute identified fermentation as key to “greatly enhance the functionality and sensory experience,” which will make it possible to create novel product formats that have yet to be achieved. Other applications of fermentation could also help to close the food loss gap, with the waste or byproducts from the process having underutilised value in products such as feed additives, biofuels and fertiliser.
7 APAC ACCELERATION FACTOR

presented by TiNDLE in partnership with brinc

*Cultivated Fish Fillet Burger by Avant Meats
ASIA-PACIFIC
ACCELERATION FACTOR

Asia-Pacific presents an exceptional growth opportunity for the sustainable food sector, especially within alternative proteins, and in fact many countries within the region are leading the charge to accelerate Asia-Pacific to market dominance within the sector.

Asia has a long history and culture associated with plant-based protein, with tofu, tempeh, and soy already forming a large part of many countries’ traditional diets. In fact, if we go back 1,000 years, vegetarians in China were consuming mock meats - that is, high protein meal centres - made of vegetables, nuts, beans, mushrooms and gluten. Now, with the advent of alternative proteins, often the underlying raw plant material used to create plant-based products is already a familiar staple food in Asia.

Alternative protein brands going after Asia-specific foods will likely perform better in the region, as Aun Koh, Director of Content & Communications at plant-based social platform abillion, explains: “Nuggets or burgers are versatile to an extent. But you need to think about what people are eating on a regular basis. And if the Asian parent doesn’t want to feed their kids burgers all the time, but are able to create several different recipes with mince, then products like OmniMeat are much more useful for Asian cooking. It’s much easier for someone to say okay, I have in my arsenal a dozen recipes that I do for my family anyway with mince. It’s more versatile.”

Plus, dairy intolerance is rife in Asia-Pacific: an estimated 90-100% of adults in East Asia and 80% in Central Asia have an impaired ability to digest lactose, which is a significant driver behind consumption habits. In fact, Asia-Pacific already accounts for around 60% of global dairy-free beverage sales, which is why plant-based brands, both homegrown and foreign, can do well in the region.
Asia-Pacific’s millennial and Gen Z populations will be pivotal in accelerating the consumption of alternative proteins. By 2025, the group will make up a quarter of the Asia-Pacific region’s population, the same as millennials. Globally, these population subsections are generally better educated, more health and environmentally conscious, and more curious than the older generations, alongside being digital natives, quick to catch on to global consumption trends.

Brand-conscious followers and premium shopaholics are the largest segments within Generation Z.

According to a recent survey conducted by American financial firm Piper Sandler, Generation Z, the group of teenagers and young adults born between 1997 to 2012, are spending more on food than any other product category and prefer value-led brands that care about social and environmental issues.

The poll, which involved more than 7,000 Gen Z consumers across the U.S., found that food spending contributed nearly a quarter (23%) of the total self-reported spending, up from 21% recorded in the previous survey conducted in late 2020, and
nearly half (49%) said they either already consume or are willing to try sustainable plant-based meats, with Impossible Foods being their top brand of choice, closely trailed by Beyond Meat. The report also claims that Gen Zs in the U.S. alone contribute around US$830 billion to retail sales annually, and highlighted an all-time high in online shopping and digital consumption among Gen Zs, especially amid the pandemic, which has led to the significant growth in influence of “influencers” on social media platforms like TikTok, YouTube, Snapchat and Instagram. According to the survey, a whopping 86% of female Gen Z shoppers use online influencers as their source of discovery for new brands and trends. Digital shopping continued to rise as a whole, with 96% and 92% of females and males saying they shop online, up from last year’s 88% and 91% respectively.

No surprise, then, that research conducted by U.S. market research firm Packaged Facts in October 2020 shows that the main market for alternative meat products are younger consumers, and they are citing health, animal welfare and sustainability as the key reasons why they’re turning their backs on conventional meat. Millennials are more likely to partake in choosing plant-based alternatives and currently make up the largest portion of plant-based meat eaters due to their market share, but statistics show that as Gen Zs take over the economy, they are likely to bring in more sweeping shifts away from conventional meat. The report also claims that the outlook for cell-based meat products is positive, citing the same health, sustainability and animal welfare concerns that younger consumers have about conventionally-farmed meat products. Analysts at the Bank of America published their findings from a poll of over 14,000 Gen Z participants in November 2020, and found that the majority of the group already practise meat restrictions of some kind, varying from vegans to flexitarians.
In terms of cellular agriculture, an Australian study conducted by the University of Sydney and Curtin University, and published in the peer-reviewed journal Frontiers in Nutrition in September 2020, found that Gen Z are not ready to accept cultivated meat, but nearly half of the cohort surveyed recognised its potential as an alternative protein source that could help the world transition into a more sustainable food system. Over a third of those who said that they would reject cultivated meat are instead open and willing to adopt plant-based meat alternatives, which they believe are “normal” and “sounded more natural”.

Mirte Gosker, Managing Director at GFI APAC says that Asia, as a large and heterogeneous region, is uniquely primed to capitalise on the shift towards alternative protein. “Between East and Southeast Asia’s rich agricultural landscapes, expansive infrastructure and manufacturing power, world-renowned innovation hubs, and unparalleled market size, local producers now have the ability to source a nearly unlimited range of ingredients. However, to process them in new and innovative ways, and manufacture the next generation of plant-based meat, the region is in need of large capital injections to ramp up infrastructure and production capacity. There will be other regional challenges along the way, such as a lack of reliable cold supply chains in many developing and middle-income countries. We are confident about a continued rise in consumer demand and adoption, but innovative solutions will be necessary to deliver more alternative protein products that final mile to consumers. A recent study by DuPont Nutrition & Biosciences projected a 200 percent increase in demand for plant-based meat in China and Thailand over the next five years, so we are optimistic that even countries that have been slow to appreciate the economic benefits of centering their agricultural sectors around alternative proteins will get on board quickly when they see their neighbors cashing in on it.”
For many alternative protein companies, Singapore is the place to be. The city-state has a leading reputation as a food tech innovation hub with a supportive government keen to push forward sustainable food solutions. Its government has a unique approach to its future food security, having established the Green Plan 2030 to map Singapore’s green targets for the next 10 years. It showcases a range of sustainability goals such as planting one million trees across the city, a 30% reduction in per capita landfill waste, and the creation of a ‘carbon services’ sector, plus its aim to domestically produce 30% of its population’s annual food requirement by 2030. To that end, the government announced in February 2021 that it is dedicating S$60 million (US$45.2 million) to a new Agri-Food Cluster Transformation Fund focused on supporting local farmers to boost domestic food production.

Three Singapore agencies, Nanyang Technological University (NTU), Singapore Food Agency (SFA) and the Agency for Science, Technology and Research (A*STAR), set up a new Singapore body in April 2021. The Future Ready Food Safety Hub (FRESH) is designed to accelerate food safety research, support food science capabilities and enable regulatory responsiveness to speed up the commercialisation of novel foods in the Asia region.
Plus, Singapore’s very infrastructure plays an important role. Physical infrastructure projects such as the AgriFood Innovation Park by the Ministry of Trade and Industry (MTI), and Singapore Institute of Technology’s Food Plant allow for innovation and the advancement of food and agriculture technology.

**SHAPING ITS ALTERNATIVE PROTEIN FUTURE**

The city-state is also shaping its future alternative protein talent, through Asia’s first-ever alternative protein university course, starting in August 2021 at Nanyang Technological University. Developed in partnership with the Good Food Institute (GFI), the elective course gives students an overview of the three main pillars in the alternative protein industry: plant-based, cultivated and fermentation technologies.
Commenting on the introduction of the course to NTU, Professor William Chen, who directs the university's Food Science and Technology Programme, said that the university has previously “developed a number of groundbreaking innovations for alternative protein production and is therefore well-positioned to host and contribute to this historic university course on Future Foods. Alternative protein production has emerged as a powerful economic engine in Asia, potentially creating lucrative job opportunities for skilled young people from across the novel food industry landscape.”

Abigail Lai, Agri-Food Manager at the Singapore Economic Development Board, considers that the two areas to focus on are infrastructure and talent: “In terms of pilot scale facilities, for startups, this is very complex. It’s so taxing; if every startup sets up their own pilot to scale up towards commercialisation, when instead they could maybe work in a shared facility, use it to scale, learn the tech, get some tech transfer, some expertise, maybe even from a corporate here, and then get themselves to the commercial scale. So I think infrastructure-wise, filling in the gap...
between the lab offerings, and the commercial; putting things in place in between. And for talent as well. The space is new, globally. The good thing for us is that the biomed/bio-pharmaceutical sector in Singapore is quite mature. And because of that there’s a lot of peripheral knowledge about biology and Life Sciences. And so it’s about how we can tap into these people with existing knowledge, and adapt that to food tech.”

Eddy Ho, Director, Enterprise Development Group, and Jia Xin Seah, Senior Associate, both at Temasek, consider that Singapore is well-placed to nurture alternative protein development, and provide opportunities for growth: “In addition to advanced biotech capabilities and a growing AgriFood ecosystem, Singapore is a global tech and financial hub, with near access to the large market in Asia.” The Temasek Trust, Temasek’s endowment trustee through its Foundations, supports innovative technical capabilities and industry knowledge advancement, such as the Temasek Life Sciences Laboratory, established in 2002. The laboratory has developed a way to identify and select fish with desirable traits, successfully breeding freshwater tilapia in seawater without genetic modification. It has created climate-proof vegetables that require less light, and yet have enhanced nutritional value. Plus, it has developed and commercialised the Temasek Rice, a climate-resistant rice variety that can grow through floods, droughts, fungal and bacterial attacks.

Singapore’s population is pro-alt protein, too. Burger King Singapore launched a plant-based Whopper in June, after the chain received “many requests from local fans” to introduce the plant-based Whopper to Singapore. Plus, more than three-quarters of consumers in Singapore are open to trying cultured seafood, according to a recent survey conducted by cell-based food tech Shiok Meats. Consumers’ primary motivations are sustainability, with 45% saying that the appeal comes from the lower environmental footprint compared to its traditional counterparts, curiosity in the novel protein, and health and food safety concerns.
SINGAPORE’S SUPPORTIVE ECOSYSTEM

It’s no surprise, then, that companies from all over the world are flocking to Singapore to take advantage of its supportive ecosystem. Andrew Noyes, Head of Communications at Eat Just, explains: “Singapore was the ideal place for us to pursue regulatory approval for GOOD Meat. Given the unique circumstances that the country has, both from a food supply standpoint because the vast majority of food that’s consumed in Singapore is imported, and the fact that they don’t have a lot of land to graze animals. The government of Singapore, and the Economic Development Board and others, have been very focused on self-preservation as it pertains to its food system. And so that means investing in technologies that can allow Singapore to feed itself well into the future, in ways that don’t necessarily require acres of land for grazing animals or growing crops. And the lessons that we’re learning in Singapore, as we’ve rolled this out, are going to be invaluable to our rollouts in other markets.”

As Dr Ralph Graichen, Senior Director, Food & Consumer at Biomedical Research Council (BMRC), A*STAR explains: "We have an interlocking food ecosystem locally that is unique in its form. Packaged food & beverages companies, ingredient companies, flavour & fragrance houses, contract research organizations, and VC firms are located within close proximity to one another, making it easy for open innovation to flourish. Our public research performers, including A*STAR, the universities and polytechnics, are also keen on collaborations with the industry. In addressing the safety of alternative proteins, our national regulatory body, the Singapore Food Agency, initiated the novel food regulatory framework to keep abreast of the latest novel food developments by working closely with the industry in assessing relevant food safety issues. This cohesive partnership allowed Singapore to have first-in-the-world regulatory approval of cultured chicken from Eat Just to be sold commercially."
Alongside Eat Just, several major global players are establishing their operations in Singapore:

- Swedish oat milk maker Oatly announced in March 2021 that it is partnering with Singapore-headquartered Asian heritage beverage giant Yeo Hiap Seng to jointly invest US$30 million to begin producing the brand’s oat milk for the first time outside of the U.S. and Europe.
- California-based precision fermentation dairy startup Perfect Day is opening its Singapore-based R&D center this year, in partnership with the government-run Agency for Science, Technology and Research (A*STAR), and Temasek.
- Hong Kong-based cellular agriculture startup Avant Meats announced in April 2021 that it will be establishing its R&D and pilot manufacturing plant in Singapore, to scale up and speed up its route to market.
- ChickP, the company behind the world’s first 90% chickpea protein isolate, is applying for a patent in Singapore, where its investor Growthwell Group is based, and is gearing up for its commercial scale-up in the city-state.
Retailers, too, are adapting their product ranges to capitalise on Singapore’s population’s growing demand for alternative proteins:

- Impossible Foods launched its ready-to-eat plant-based burger across 300 locations of 7-Eleven stores in Singapore in May 2021, marking its first launch into an Asia-based convenience store. Through summer 2020 the brand also rolled out its famous “bleeding” plant-based meat across several key outlets, including Starbucks, MOS Burger and BreadTalk.
- KFC Singapore announced its first-ever meat-free alternative product called Zero Chicken Burger in January 2021, showcasing a mycoprotein meat-free patty made with Colonel Sanders’ original recipe of 11 herbs and spices.
- Singapore’s first vegan online shop, Everyday Vegan, opened its first-ever retail storefront in November 2020.

Some local big players are pivoting their operations to keep up with the fast-growing meat-free market. Agricultural commodities company Agrocorp International announced the launch of its new plant-based brand, HerbYvore, in April 2021, and frozen foods giant Tee Yih Jia Food Manufacturing (TYJ) launched its own plant-based brand, ALTN, in December 2020.

**BORN IN SINGAPORE & CHANGING THE WORLD**

Singapore’s very size is what makes it so mighty, as it drives innovation and resourcefulness. As Graichen says: "As a land-scarce nation, we have to look beyond the traditional primary production to feed the nation. We also must look at generating high value jobs in this space for the country to contribute to economic growth. We target to tackle these challenges with the Singapore Food Story R&D programme, launched in 2019, amongst other initiatives."

Homegrown startups are making a difference, fostering many and varied innovations to drive forward alternative protein development:

- Next Gen Foods, the firm behind cult plant-based chicken sensation TiNDLE, has raised a total of US$32 million to date and is valued at US$180 million, having launched in six cities since March 2021.
- In April 2021, Sophie’s Bionutrients, which is changing the alternative protein landscape with microalgae, unveiled its first 100% plant-based burger patty created from single-cell microalgae, which claims to have more protein than beef or most fish that is commercially sold.
Shiok Meats raised an additional US$10 million in July 2021, making it the most well-funded cellular agriculture company in Asia-Pacific. The new round was led by Vietnam seafood major Vinh Hoan and South Korean food giants Woowa Brothers and CJ CheilJedang, and the capital will fuel Shiok Meats’ ongoing R&D and construction of its new production facility.

OsomeFood debuted what it claims to be the world’s first nutrition-focused and plant-based hard-boiled egg, made from mycoprotein, in May 2021.

Shandi Global debuted its plant-based chicken drumstick in January 2021. Made with non-GMO plant ingredients such as pea protein, chickpeas, quinoa, flaxseeds, brown rice and coconut oil, the product is described as a clean labelled alternative with “no compromise on taste and nutrition”, and is sold at a “similar price” to conventional chicken. Shandi closed a second seed round of funding, totaling US$700,000, in August 2021. Investors include Singapore-headquartered Tolaram, one of Africa’s largest packaged food companies, marking its first foray into the vegan and plant-based protein category.

WhatIF Foods launched BamNut Milk this year, a new vegan dairy alternative made from Bambara groundnut, a climate-resilient crop that can grow in harsh environments while also regenerating the soil in which it is planted.
Whole foods plant-based meat brand, KARANA, announced that it had closed US$1.7 million in a seed funding round in July 2020. Using regionally abundant organic young jackfruit, the startup creates minimally-processed vegan meat alternatives.

Kind Kones, a Singapore-based vegan ice cream startup, secured S$1 million (US$753,900) in its first external capital raise in January 2021.

TurtleTree announced in June 2021 that it will be launching human lactoferrin as its first cell-based commercial product. Until now, lactoferrin has been derived from cow’s milk and is used in infant milk formulas for its immunity-boosting properties, as well as in performance nutrition and medical applications. Interestingly, TurtleTree chose UC Davis, California to set up its R&D lab.

MAD Foods, reportedly Singapore’s first alt-dairy food tech startup and founded by regional media and radio personality Angelique Teo, launched its debut line of 100% plant-based cold brew coffee products based on oat milk in July 2021.

Hoow Foods unveiled a new plant-based subsidiary called Hegg Foods and a new vegan egg product in August 2021. The startup uses its proprietary Food & Ingredient Artificial Intelligence platform called RE-GENESYS, which uses ingredient informatics that includes information about food ingredients and their physicochemical properties. Using this database, the startup understands how to optimise foods using novel food ingredients as healthier replacements, claiming to achieve this at record-breaking speeds.

Growthwell Foods has forged a new partnership with premium foods supplier Indoguna to bring its vegan seafood to new markets across Southeast Asia and the Middle East.
For Eugene Wang, co-founder and CEO at Sophie’s Bionutrients, there are several advantages to being located in the city-state: “Politically, Singapore has always been very stable. It is such a hub for all kinds of cultures, for people coming in from different countries to work. It provides a wonderful environment to test out theories. The government is very efficient and really visionary. Last but not least, is that people from everywhere in the world, especially investors and entrepreneurs like myself, are willing to relocate and come here to Singapore to make things happen. And so now, it is officially becoming the food hub, or Silicon Valley of food in Asia, so to speak.”

The opportunities for startups to innovate and expand are plentiful, thanks to Singapore’s growing infrastructure, which includes Bühler’s new plant-based Innovation Center. Plus, Singapore’s first contract manufacturing facility dedicated to plant-based foods, SGProtein, has announced an agreement with Bühler Group to build its new production line in the city-state. Slated to operate by Q4 this year, the facility will boast an initial capacity of 3,000 tons of plant-based meat annually and is expected to help the city-state become a major alternative protein exporter in the coming years.

Local funding and investment also play an important role in accelerating Singapore’s reputation as an alternative protein hub. Southeast Asian agri-food tech accelerator GROW launched a program focused on boosting Singapore’s food security in May 2020, and startups across Asia working on climate-resilient, decentralised and sustainable food solutions have taken part in its Singapore Food Bowl program. Enterprise Singapore is a statutory board under the Ministry of Trade and Industry, that works with companies to build capabilities, innovate and internationalise, and supports Singapore’s food security strategy by encouraging global investment in the country’s food sector. Plus, Singapore-based venture capital firm Good Startup raised US$25 million in the first close of its Good Protein Fund I in June. It manages a cross-border venture capital fund that focuses on investing in alternative protein startups, with a focus on Southeast Asia. Graichen says: “[We are] happy to see local start-ups taking an active role in the space of alternative proteins, in producing the next novel food product. They are also well supported by local and international institutions and companies such as Temasek Foundation, Big Idea Ventures and VisVires New Protein.”
The level of meat consumption in Thailand, estimated at about 30 kg per capita, is still significantly below those of most other countries in Asia-Pacific, and the rest of the world. Its population is already vegan-friendly, and plant-based demand in the country is growing at 25% year-on-year. Like many other Southeast Asian countries, Thailand is facing acute challenges as climate change intensifies and is already witnessing higher temperatures, sea-level rise, and floods and droughts happening on a more frequent basis. The country’s capital Bangkok is set to become one of the worst-hit destinations, with nearly 40% of its area expected to experience severe flooding annually by 2030, according to the World Bank. Sustainable protein production could help to counteract some of these issues.

As outlined in The Good Food Institute APAC’s report, ‘Asian Cropportunities’, producers of certain raw materials stand to benefit from the societal shift away from animal meat. One such raw material that has huge growth potential in Thailand is the world’s largest fruit, otherwise known as the jackfruit. A very versatile ingredient, its unripe flesh is an excellent mimic of fibrous meat dishes such as pulled pork.
Some of Thailand’s biggest producers are adapting their existing business practices to meet changing consumer demands. The world’s seafood leader, Thai Union, launched plant-based brand OMG Meat in March 2021, having previously introduced plant-based products into the market in late 2020, mainly through foodservice channels. Its range includes plant-based crab cakes and dim sum, and it plans to launch plant-based shrimp this year.

**MAJOR BUSINESSES ARE PIVOTING**

Alongside jackfruit, konjac, which grows widely in Thailand, has emerged as a useful ingredient for mimicking certain textures in plant-based seafood. It is well-suited for expanded cultivation, given that it can be successfully planted alongside rubber, which is already big business locally.
Thai Union is the world’s largest canned-tuna processor and a leading global supplier of seafood products to the U.S. and Europe, so this pivot in operations signals that mass demand for plant-based foods cannot be ignored. Its latest move has been to partner with Californian cultivated seafood startup BlueNalu and Mitsubishi Corporation, in April, to help to accelerate the launch of cell-cultured seafood across Asia-Pacific.

Thailand’s largest agribusiness company Charoen Pokphand Foods Pcl launched a new plant-based meat brand dubbed “MEAT ZERO” in May. The firm claims that its products feel, taste and look like traditional meat thanks to the help of its “Plant-tec” innovation, and plans on becoming the leading alternative meat brand in Asia by 2022 and being among the world’s leading three alternative meat brands over the next 3-5 years. Its products are priced close to traditional meat equivalents, and are ready-to-eat so easily incorporated into meals from every global cuisine.

In food service, Zen Corporation, the conglomerate behind the country’s famous street food brand Khiang, began introducing a plant-based version of pad kaprao at all of the chain’s locations nationwide and for online delivery in September 2020, following Mudman Plc, the operator of Charna restaurants and Au Bon Pain cafés, which began serving plant-based meals a few months prior.
NR Instant Produce Pcl, a large food manufacturing company which also produces jackfruit-based pork alternatives and vegan snacks, went public on the Stock Exchange of Thailand in October 2020 and saw its stock doubling on the day of its debut. Since 2016, the company has become a major manufacturer and distributor of plant-based condiments, food ingredients and protein powders, as well as a private label pork alternative made from jackfruit. The company also produces animal-based foods such as beef and seafood condiments, seasonings and ready meals.

While plant-based meat is a more sustainable option, many imported alternative protein brands remain far too expensive for the average Thai consumer, making low-carbon food options inaccessible to the domestic mass market. This is why there are several homegrown startups doing their best to bring alternative protein options to the Thai population.

In June 2020 Chiang-Mai-based startup Let’s Plant Meat launched its first plant-based burger product across major supermarket chains in Thailand, including Gourmet Market, Rim Ping and Tesco Lotus. The homegrown startup says that its products – which retail for half the price of plant-based meat alternatives imported from the U.S. – help make sustainable protein choices more accessible to Thai consumers, who are among the world’s most vulnerable populations to the impacts of climate change.
Meat Avatar has developed a range of plant-based alternatives, including crispy pork, mince and a fried egg, made from a base of legumes. Currently, the brand is available across major retailers like Tesco Lotus, Villa Market and Home Fresh Mart.

More Meat is a health-focused brand of frozen plant-based meat mince, suitable for replacing meat in a number of dishes. It is available across around 200 mainstream supermarkets and independent grocery stores in the country.

Developed by frozen foods manufacturer SeaTech Intertrade, Krop is a brand of ready-made frozen plant-based dim sums.

MJ Plant-Based’s flagship product is a vegan-friendly burger patty, made from mushrooms sourced from local farmers in Thailand, and is available in independent stores in Bangkok and Songkhla, as well as direct-to-consumers via its website.
Mantra specialises in seafood alternatives that are tailored to Thai cuisine, including shrimp cakes, minced shrimp and shrimp balls.

Sesamilk is a brand of 100% pure sesame milk made using premium-grade locally grown Thai sesame seeds, which are drought-resistant, making them a solution for Thai farmers transition into a sustainable business. Sesamilk is part of Tangyingwattana Co., an established family business in the sesame hulling industry in Thailand.

Swees is a line of plant-based dairy-free cheeses, handcrafted in Chiang Mai using locally produced organic soybeans.

Hong Kong’s Green Monday has been championing sustainable lifestyle choices in Thailand since 2019, supported by influential local celebrities, including television personality Vuthithorn “Woody” Milintachinda and renowned actress Ramita Mahpreukpong, better known as “Gypso”. Green Monday also debuted its OmniPork meat alternatives through high profile gastronomic collaborations with chefs at Bangkok’s Grand Hyatt and the Peninsula.

Thai plant-based marketing and events organiser Root The Future is also working hard to promote the alternative protein industry in Thailand, with news, menu ideas and more.

**NEXT STEPS FOR THAI MARKET**

Thailand’s government is keen to pursue sustainable and environmentally friendly foodtech, as it strives to become a more digitally and technologically advanced nation through its Thailand 4.0 strategy. Thailand is swiftly developing a robust startup ecosystem, helped in no small part by SPACE-F, the first-ever food tech innovation program in Thailand. Founded in 2019, it was established through a partnership between Thai Union, National Innovation Agency of Thailand and Mahidol University. It aims to help entrepreneurs scale-up their products and connect them to potential investors with an overarching goal of bolstering the region’s food security. The country has strong ambitions for the food exports sector and, with commitment from both government and private sectors, and increased funding for startups from local and international sources, the country’s food producers should be able to successfully grow their business within Thailand, APAC and beyond.
THE FUTURE IN CHINA

China is the most populous country in the world. Its population consumes 28% of the world’s meat, including half of all pork. Even worse, a poll conducted by Meat & Livestock Australia showed that a third of Chinese people are eating more beef since 2020, mostly imported from Brazil. 2018 and 2019 saw more than half of China’s 440 million pigs killed from African swine fever or culled to slow the spread of the livestock-affecting disease, allowing beef to overtake in terms of demand.

China’s demand for protein gives it enormous alternative protein market potential. Concerns over food security are a big driver, with farmers reporting outbreaks of Decapod iridescent virus 1, a virus that affects shrimp populations, in April 2020, plus a new strain of swine flu called G4, with the potential to trigger a pandemic, discovered by scientists in China in June 2020. The news of both of these concerns came amid heightened attention on the vulnerabilities and dangers of the current broken food system due to the coronavirus pandemic, and exacerbated a shift in consumer behaviour.

“2020 was undoubtedly an important turning point for the rapid development of alternative protein.”

Doris Lee, General Manager, GFI Consultancy

Doris Lee, General Manager at GFI Consultancy says that the Chinese alternative protein space has seen explosive growth in the last 18 months: “2020 was undoubtedly an important turning point for the rapid development of alternative protein. High-profile startups have emerged one after another, and traditional food giants have also actively entered the game.” The latter, especially, are tapping into a huge business opportunity, a move that should make the burgeoning market increasingly competitive. Dennis Foo, MD at Pu Xin ASPIRA Advisory Greater China, considers China to be “a very competitive and challenging landscape. Anything that is good, profitable, and has strong interest would create a chain reaction that can create huge market competition.”
Winnie Leung, VP at Chinese food tech venture capital Bits x Bites, considers that Beyond Meat’s successful IPO in 2019 triggered China’s alternative protein market surge. Startups have since been flooding the market, and through 2020 both deal number and size increased dramatically.

Beyond Meat first entered mainland China by joining forces with Starbucks in the country, followed swiftly by other foodservice and retail brands such as KFC, Pizza Hut, Jindingxuan, GangLi Beijing, Slow Boat Brewery, Hema and METRO China, maximising its appeal and availability to mass market consumers. In April 2021, it opened a production facility in China, its first end-to-end manufacturing facility outside the US. Located in the Jiaxing Economic & Technological Development Zone near Shanghai, the new plant is designed to increase production of the brand’s plant-based meat products, especially Beyond Pork, which has been developed exclusively for mainland Chinese consumers.

But it’s not only major plant-based players that are making their mark in China. Some of the biggest food firms in the world are pivoting their business and creating China-specific product ranges. For example, Cargill debuted its own consumer-facing plant-based meat brand, PlantEver, in July 2020, following its partnership with fast food giant KFC to launch chicken-free plant-based nuggets in China earlier in 2020. In December 2020, Nestlé officially launched Harvest Gourmet, its plant-based food brand for the Chinese market, whilst also opening the doors to its Tianjin-based production site. Plus, Unilever-owned The Vegetarian Butcher rolled out six new plant-based meat alternative products for foodservice businesses in China in April 2021, after the brand landed in the country for the first time in December 2020.
And not just food firms, but major QSR players in China are introducing alternative protein, too. Having first launched its OmniPork luncheon meat in McDonald’s Hong Kong in October 2020, Green Monday debuted its plant-based Spam equivalent in Shanghai, Guangzhou and Shenzhen in March 2021, marking the first time McDonald’s has partnered with an alternative protein company in mainland China. The company also opened its first mainland China Green Monday store in Shanghai, its tenth in Asia, in December 2020. Plus, Chinese fast food giant Dicos, famous for its fried chicken, added San Francisco food tech Eat Just’s plant-based JUST Egg to its menu in January 2021. The folded pre-baked JUST Egg now replaces the chain’s conventional animal-based egg patty at more than 500 locations across China, marking the first time a QSR chain has displaced an animal-based product for a plant-based one across multiple menu offerings. While Eat Just may be the first foreign plant-based brand to land on Dicos’ menu, the fast food giant has also been serving a plant-based chicken burger made with Chinese firm Starfield’s seaweed protein-based alternative across all its stores nationwide since November 2020.

As China is such a big market, it seems only natural that homegrown and international players would develop products and dishes exclusively for Chinese tastes. Where Western brands and cuisines may have provided initial inspiration and a route to technology development, there is a significant increase in diversity within product ranges to cover mainstream consumer favourites. Eat Just’s plant-based egg Jianbing, rolled out across street vendors in Shanghai, is a good example of generating consumer interest through a plant-based version of a menu staple.
Money has been flooding into China’s alternative protein ecosystem. Startups have been pulling in bigger and bolder funding rounds, and VCs and accelerators are bullishly supporting development:

- Dao Foods, a cross-border impact investment venture helping bring sustainable protein to China, partnered with early stage venture capital fund New Crop Capital in 2020 to launch a new accelerator dubbed the Dao Foods Incubator initiative dedicated to Chinese plant-based startups. They announced their second cohort in August 2021.
- Hong Kong and New York-based alternative protein venture capital fund Lever VC and Asia venture accelerator firm Brinc announced a new joint investment fund and accelerator in June 2020 to support plant-based and cultivated meat and dairy food techs across China.
- Chinese food tech venture capital Bits x Bites, the only one of its kind dedicated to sustainable agri-food tech in mainland China, announced in November 2020 that it had raised US$30 million in the first close of its US$70 million fund investing in technologies to help transform China’s agri-food supply chain.
Where previously the majority of China’s homegrown plant-based companies may not have been utilising high-tech methods of production, now several have mastered high-moisture extrusion processing, which lends a much improved taste and texture to plant-based alternatives. In any case, GFI Consultancy’s Lee thinks that the perception of Chinese brands’ capabilities is a misconception: “China is the world’s largest and most sought-after market. For the following reasons, it takes a longer time and much more effort for a plant-based meat company to succeed here:

1) Unlike how Impossible Foods was able to win over consumers with “bleeding” plant-based burgers in the US, it is much more difficult to pick a single well-established food item or meal context in China that plant-based meat products could fit into, due to the country’s sophisticated and fragmented culinary landscape;

2) Chinese people have highly-developed expectations when it comes to the nuances of food;

3) Consumers are broadly familiar with meat substitutes, but often associate them with Buddhism and strict vegetarianism, so modern plant-based meat, which is designed to convincingly replicate animal meat, should be differentiated from mock meat;

4) Chinese consumers actively try to avoid heavily processed food with a long ingredient list, particularly of food additives, and prefer a more “natural” and animal-free ingredient list.”
Hey Maet claims its team is the first inventor and practitioner of plant protein high-moisture extrusion technology in China. It announced a multi-million US dollar pre-Series A in January 2021 that has enabled it to ramp up its technological R&D, channel exploration, and brand promotion. Four months prior, it raised a seed round of RMB 10 million (US$ 1.54 million) from a group of investors including Shuangta Food, a pea protein firm that supplies Beyond Meat.

YouKuai Group International, the Chinese plant-based company behind the pork analogue Zrou, closed a US$7.3 million Series A funding round led by Singaporean investment firm TRIREC in May 2021. The firm’s vegan alternative, which is manufactured in the country using non-GMO soybeans sourced from Northeast China, is available in around 100 foodservice outlets, including in Michelin-starred restaurants, premium resorts, private schools and corporate cafeterias.


Cell-based meat startup Joes Future Food raised 20 million RMB (US$3 million) in an angel investment round in January 2021 to ramp up R&D and overcome technical challenges in order to improve its cultivated minced pork.

Shanghai-based Hero Protein first landed on the market in January this year and raised US$850,000 in a pre-seed round in February 2021. It launched its range of plant-based chicken, beef and fish products via food service at a number of restaurants, corporate and school catering establishments across Shanghai.

Female-led HaoFood is among the world’s first brands to develop meat alternatives using peanuts, unlike other companies that either use soy, wheat or pea, and partnered with five restaurants in Shanghai in April 2021 to offer Chinese consumers a new plant-based experience featuring authentic dishes from cultures around the world.

New Singularity has developed seafood alternatives based on a fungus protein and scored investment from Lever VC in September 2020.

Chinese cultivated meat startup CellX raised a US$4.3 million seed round in early 2021.
As with every market, China faces its own unique challenges for the uptake and development of alternative protein. Where food safety may be a huge driver, because health and wellbeing are concerns for Chinese consumers, sustainability isn’t a selling point in the same way as it is in the West, because it doesn’t relate to consumers’ personal needs. At the moment, cost can also be a limiting factor. Bits x Bites’ Leung explains: “Plant-based products are often more expensive than meat, and that’s counterintuitive to Chinese consumers who expect the complete opposite. It wasn’t that long ago that meat was only affordable to the rich and for special occasions.” Plus, consumer retention is a major sticking point, as taste and quality are key drivers to shifting consumer purchasing power away from meat and towards alternative proteins. Leung continues: “The challenge for startup companies is whether they can unlock repeat purchases, effect lasting change in consumer behaviors, and create sustained growth for their business.”

Also, as GFI Consultancy’s Lee points out, there are issues with the talent pipeline: “There is low awareness of alternative protein among scientific
communities in adjacent fields, particularly within the biotechnology space. Qualified scientific talents are not aware of the opportunities available in the alternative protein space, and they find it risky to switch careers into a less proven industry that may offer lower salaries than, say, the biopharmaceutical industry. Therefore, GFIC is launching a talent acquisition campaign aimed at raising awareness of alternative protein and attracting qualified talents from adjacent fields.” Plus, she considers that there are hurdles within tech transfer, research and funding: “The major challenge that researchers are facing is the lack of understanding of the industry. Most academic researchers are focused on upstream research, such as crop breeding and ingredients properties, and are unaware of technical problems faced during product development and manufacturing. As such, they have found it difficult to identify their research focuses when first tapping into the field. Secondly, for research focused on cell-based meat analogues, the regulations and restrictions landscape is unclear, making it tough for the researchers to decide which technical approach they should pursue. Which is why building a bridge between academia, industry, and policymakers to fill in the knowledge gap should be the priority in promoting alternative proteins in China.”

“Building a bridge between academia, industry, and policymakers to fill in the knowledge gap should be the priority in promoting alternative proteins in China.”

Doris Lee, General Manager, GFI Consultancy

Adjusting to China’s market dynamics can be tricky, too. Foo explains: “Each of the key cities have a large wholesale market and they are the supply connector or the ecosystem for all of the supply chain, from producers to middle intermediaries to buyers, retailers, or operators. These generally account for 50-60% of the entire Chinese distribution market volume and business, depending on the product category or group. For the food market alone, there are more than 200 wholesale market centers across China and they each have between 200 and 1,000 agents or business operators buying, distributing, stocking and selling. They are helping to distribute products across China to more than 10,000 cities, towns and villages daily. While we see big brands thriving in the large cities, they probably only account for 10-40% of the entire China market volume, and there is still a big chunk that products or brands are unable to reach. China’s economic development between the key cities and across China are completely different as well. Just
targeting the top 50 cities in China is challenging, and China has more than 2,000 cities and districts. Having a blanket approach can be costly, challenging and competitive. Regional differences in terms of taste, economic well being, purchasing power, consumption habits etc can pose lots of questions on what and how to do.”

REGULATORY WINS

In the last year, there has been a shift in regulatory awareness from scientific groups to a national level. The Chinese Institute of Food Science and Technology established a voluntary standard for plant-based meat products, which came into effect in June of this year, marking a first for the country. It contains definitions, technical specifications and guidelines to govern the labelling, packaging, transportation and storage of plant-based meat alternative products in China. These products should not contain any animal-derived ingredients, including dairy and eggs, and are “encouraged” to have a high-protein, low-fat and low-sodium content. While food additives can be used by plant-based meat producers, the guidelines say that non-plant ingredients should not make up more than 10% of the total mass of the item. Regarding labelling, the standard dictates that the product’s plant-based attributes should be “clearly reflected” using either descriptive words or indications that the product is meant to simulate its animal-based counterpart. The new voluntary standard marks a significant step forward in the mainstreaming and growth of the plant-based industry in China, and signals the government’s increasing attention to alternative sources of protein to bolster its food resilience and security in the wake of the pandemic.

“Each of the regional culinary and cuisine differences are opportunities in themselves and brands need to know that to be successful and viable.”

Dennis Foo, MD at Pu Xin ASPIRA Advisory Greater China
Alongside China’s alternative protein market prospects, it is a manufacturing and ingredient hub, with massive potential to reduce global production costs, locally. GFI Consultancy’s Lee explains: “The Good Food Institute APAC mentioned in the report ‘Asian Cropportunities’ that the demand for pea protein has soared in recent years, partly because different meat customers and other powerful companies use pea protein as the main raw material for their products. There are many more high-protein ingredients that can be explored too, such as lentils, chickpeas, mung beans, hemp, oats, seaweed, and even duckweed. China is also a big producer of microalgae, so there is a need to study how to apply it to alternative protein.” Shirley Lu, Managing Director at ProVeg Asia, confirms that “China is also the world’s largest pea protein processing market (about 60%). Their supplies or movement downstream can influence pricing in the segment.” Lu believes that oat milk and its application is an upcoming trend in China, because “consumers are widely bought into the health benefits of oats.”

Foo adds that local cuisine is a massive opportunity: “Chinese dishes or food make up 95% of the China food and beverage market. It’s a huge market and growing at 10% or more per year. The China hotpots market, BBQ, the HK Café concept, Milk Tea or the Meal Sets segments are all worth over $10 billion dollars each. There are more than 20 types of cuisine in China, from Shanghainese to Cantonese to Hunanese, and there are major differences within all of them. The cooking processes and the dishes have variations as well. Each of the regional culinary and cuisine differences are opportunities in themselves and brands need to know that to be successful and viable.”
China’s national dietary advisory body recently advised that consumers need to eat more seafood to improve health, so alternative seafood development will be key in order to limit the impact on the environment of such advice. Lee noted: “Investors and non-profit organisations that focus on sustainable development are gradually moving away from making simple improvements to conventional aquaculture, and are instead keen to develop alternative seafood as a solution to many of the world’s most pressing environmental problems. This support is expected to translate into more capital investment for research and development, thereby expanding the research and development space to another level.”

Cell-cultured meat and fermentation-derived proteins could also play an important role in the future of China’s alternative protein sector. As well-known companies such as Avant Meats, Eat Just, Perfect Day and Joes Future Food make progress in the field, this will hopefully attract more research and funding into the space. In September 2020 the GFI Consultancy held a seminar session on fermentation and cultivated meat, the first event of its kind to take place in mainland China. It saw over 80 scientists, investors, food companies and policymakers come together to discuss the fermentation sector, which is fast establishing itself as a solid pillar alongside the fields of plant-based and cell-based in the wider alternative protein industry.

Food safety concerns and nutrition will be the key drivers for Chinese consumers to adopt cell-based products, according to a consumer attitudes survey published in the peer-reviewed food science journal Foods in March. However, while half of the population would be willing to try cultured meats, only a fraction would agree to eat it on a regular basis, suggesting key barriers to mass adoption. Among some of the key challenges identified in the paper include the perceived “absurdity” or “unnaturalness” of the novel food, which is underpinned by consumers’ fears about food safety. There’s one caveat, however, with price being a key factor that could convince the masses to adopt cultured proteins – but it must go further than parity. According to the research, nearly 90% of the respondents said they would be willing to try cultivated meat if it cost less than its conventional counterparts.

The alternative protein market in China is well positioned to continue its rapid growth in the coming years. As Ken Zheng, General Manager of VeggieWorld, a Shanghai-based platform for plant-based & sustainable business and vertical farming, explains: “If alt proteins can beat animal-based proteins in terms of health, taste, and price, and fit better into Chinese food culture, more consumers will be convinced to try them.”
THE FUTURE IN INDIA

China and India are the two most populous countries in the world, with China home to approximately 1.44 billion people and India to 1.38 billion. China and India together account for around 36% of the total world population and 67% of the total Asia population.

As of 2020, there are 59 million more people in China than in India. Due to the higher population growth rate in India, the margin between these two countries is reducing quickly. By 2027, it is predicted that India will have more people than China, with a population of approximately 1.47 billion. Currently, China’s population growth rate is only 0.39%, while India’s population is growing at 0.99%, and it is predicted that the populations of China and India will peak in 2031 and 2059 respectively.

India’s alternative protein industry is in a unique position. Its growing population, of which an estimated 70-80% are protein-deficient and cannot afford high quality protein on a daily basis, requires sustainable, affordable and nutritious options. The country has many hardy and bio-diverse indigenous crops, such as pulses and millets, and is already one of the largest producers of many key agro-commodities in the world and the leader in dairy production. Shardul Dabir, Innovation Specialist at The Good Food Institute India, a nonprofit organisation supporting India’s burgeoning alternative protein ecosystem, explains that “the low cost of labour and manufacturing could help India become the manufacturing hub for protein concentrates, isolates and end products in Alternative Proteins. It is worth noting that 60-70% of India’s population still directly or indirectly depends on agriculture and thus the possibilities of value-addition of income for farmers currently engaged in monocropping or who just rely on dairy is also quite exciting.”
There have been a lot of changes in the sector in India through the past 18 months and, while it may still be a pre-competitive market, startups and big players alike have been making waves.

“It is worth noting that 60-70% of India’s population still directly or indirectly depends on Agriculture and thus the possibilities of value-addition of income for farmers currently engaged in monocropping or who just rely on dairy is also quite exciting.

Shardul Dabir, Innovation Specialist, The Good Food Institute India

PLANT-BASED BIG FOOD

Plant-based big food is a signal of the unstoppable growth in demand for healthier, safer and more sustainable protein options from mass consumers:

- Domino’s Pizza, operated by foodservice giant Jubilant FoodWorks in India, launched a pizza with plant-based meat toppings in January. Available at all Domino’s locations across three major cities, the move marked the first time that a QSR chain in the country embraced plant-based meat.
- California-based food tech giant and plant-based pioneer Beyond Meat became available to customers in India from April 2021 via select retailers, thanks to agro-food producer and meat distributor IFFCO Group, marking the first debut of a major U.S. plant-based meat maker into India.
- Hershey India, a subsidiary of leading global chocolate giant the Hershey Company, announced in May 2021 that it had developed Sofit Plus, a plant protein drink made from soy created to meet the nutritional requirements of underprivileged children as part of its ‘Nourishing Minds’ social initiative.
While the arrival of big names from abroad may inspire consumers, MD of GFI India Varun Deshpande says that the plant-based market in India is slowly gaining momentum but needs backing from experts in the industry across the value chain. In May 2021, AAK, India’s leading manufacturer of specialty oils and fats, announced it had joined forces with food suppliers Vista Processed Foods to scale up innovation and manufacturing in the country’s alternative protein sector. At the time, Deshpande explained: “This will help fulfill India’s goals of a more secure, sustainable, and just food system. AAK’s partnership with Vista is the kind of pivotal development which will bring trusted innovation and scale-up capabilities to a nascent industry, enabling it to fulfill skyrocketing local and international demand for delicious, nutritious plant-based meats which are better for human and planetary health.”

Plus, in July 2020, Archer Daniels Midland Company partnered with Imagine Meats, a venture backed by Bollywood celebrity couple Riteish and Genelia Deshmukh which promises to boost plant-based innovation in India. Through the collaboration, Imagine Meats is leveraging ADM’s portfolio of protein ingredients and applications labs to create traditional Indian dishes and other popular products like kebabs, biryanis and curries, and the involvement of key influencers should help to grow consumer awareness of the benefits of plant-based proteins. Similarly, in February 2021, Salman Khan, the famous Indian film actor, producer and television personality, encouraged people to switch to plant-based meat alternatives, telling the estimated 15 million viewers tuned in to the finale of popular Indian reality television series Bigg Boss that ethical and sustainable “plant-based meat is the best form of protein” and that it doesn’t mean any compromise on taste or experience.
While India’s startup scene may be smaller than in some other APAC countries, there are a few companies and researchers making the most of the country’s resources to cater for local tastes and fulfil consumer demand. First movers such as GoodDot Foods and GoodMylk may have an advantage, but others are breaking through, and GFI India unveiled the first India Good Food Startup Manual in March 2021, in an effort to scale the country’s innovation ecosystem for the alternative protein sector.

- PlantMade launched what it claims are India’s first vegan lamb seekh kebabs in July 2021. Known for its plant-based egg and dairy substitutes, this marked the food tech’s first entry into the vegan meat sector.
- MilkinOats, the first homegrown oat milk brand in India, launched vegan milk chocolate bars made with their high-fibre dairy alternative in March 2021. The 100% plant-based, cruelty-free bars are crafted in small batches, replicating the creamy taste that consumers love about traditional milk chocolate using the brand’s oat milk base squeezed out of locally-grown oats.
- Upestablish Food Technologies launched the country’s first line of “hyper-realistic” plant-based meats, high protein kebabs, under its brand Greenest in November 2020, and is now strengthening its presence across the country with new product launches and retail expansion plans in the pipeline for 2021. In the long run, the brand wants to become the “largest and most comprehensive portfolio of plant-based meats in India”, expanding its offerings to include more products tailored to get “smart protein on India’s plates”.

HOMEGROWN STARTUPS - FOR INDIA, BY INDIA
Indian Institute of Technology, Delhi Professor Kavya Dashora of Centre for Rural Development and Technology won first prize at UNDP Accelerator Lab India for developing a plant-based egg alternative made from lentils that has the same cooking process as real eggs. In an interview with NDTV, Professor Dashora discussed her reasons behind developing the plant-based mock egg: “These products have been developed with an aim to address the longstanding battle for malnutrition and clean protein food for people. The mock egg has been developed from very simple farm-based crop proteins, which not only looks and tastes like egg but is also very close in nutritional profile to a poultry egg.”

BVeg Foods is aiming to become a trusted and high quality co-manufacturer and distributor for plant-based meats both locally and globally as they build ecosystem fundamentals in India by addressing white space opportunities.

39 startups currently working in India's alt protein industry
Founded five years ago in Rajasthan, Udaipur by a friends and family quartet, GoodDot has managed to become the leading plant-based meat company in its home market, known for its range of plant-based packaged foods, including mutton-like “bytz”, chicken-free “proteiz” chunks and meatless ready-meals. The company has managed to accelerate so quickly because of its focus on price accessibility and building for scale. Co-founder and CEO Abhishek Sinha explains: “We always wanted to go for volumes. Right from the very beginning, we wanted to disrupt meat as a product and as a commodity. For that, price sensitivity was one of the benchmarks apart from, of course, the driving forces of taste and texture.” India, like many developing countries, does not have a very strong cold chain logistics and support system, so GoodDot had to develop a solution which was shelf-stable at ambient temperature, with a very long shelf life. “We knew that was a technical challenge, when we set out to develop the product, but based upon these strong pillars of taste, price and shelf stability at room temperature, we started building the product.”

While GoodDot was able to take on R&D and manufacturing, when it came to distribution, it chose to go the partnership route and the company it works with only operates with larger volumes. Its partner, RCM, takes care of not just the metros, but also the smaller towns and villages of India with 7,500 stores across the country. GoodDot’s challenge was that it could not do a soft launch, starting with a few stores, and then going on to build a national footprint. RCM is a direct selling network, so its consumers all want whatever is being introduced, simultaneously. Because of the nature of GoodDot’s distribution agreement and its distribution partner, it started out on the medium scale from the get-go.
“We made mistakes, we learned some harsh lessons in production because our entire team was new. We were working with a very novel product and techniques, so we learned our lessons along the way. But what really helped us was we were at scale from day zero. So that really helped us to understand scale, and, being a startup, it was quite a steep learning curve for all of us.”

Since its inception in 2016, GoodDot has seen almost 100% year-on-year growth each year. The company broke even in 2018 and today is cash positive. This contrasts with many of the biggest players in the plant-based sector globally, who famously eschew profitability for aggressive market share pursuit.

There are four core pillars with which the startup maintains affordability, a key part of their go-to-market product strategy.

1. First is its production technology, its equipment and processes, which it tries to keep as low as possible so as not to load capital expenditure onto its products.
2. Second is GoodDot’s formulations. The startup sources ingredients locally to keep costs low.
3. Third is the shelf stability of its products, which facilitate simpler and less expensive product distribution, storage and extend their lives, reducing expense from waste.
4. Last, GoodDot has kept its organisation lean, resisting branding and marketing spend, which would eventually need to be loaded onto its products.

5 YEARS, 8 COUNTRIES, 14 SKUS

Since 2016, GoodDot has seen almost 100% YoY growth each year

GOODDO: INDIA’S FAST CASUAL VEGAN RETAIL LEADER

GoodDot’s sister venture GoodDo, named after a rescued goat which is now the company mascot, is India’s first vegan fast food restaurant chain, offering Indians veganised versions of traditional favourites in Indian cuisine and international fast food fare. Sinha adds: “Our focus is coming up with our street level solutions, affordable solutions and formats for the GoodDo food carts and street level kiosks so that we can reach consumers, be visible to them and give them tasty and affordable 100% vegan food.”

GoodDo has 12 outlets across the cities of Mumbai, New Delhi, Udaipur and Kathmandu. It offers a broad range of dishes, from Western style “Vegicken” Nuggets and the very popular GoodDo Fried Crispies to Indian mince-meat sliders named Keema-Pav, the international favourite spiced rice dish, Biryani, and several other crowd favourites. In fact, GoodDo also serves plant-based UnMylk shakes and ice-creams, which have their own fan following. GoodDo’s first outlet, a food truck in Udaipur, was rated as World’s Second Best Vegan Food Truck by Lonely Planet, pointing to the high quality of food and experience on offer.
GOODDOT’S FORAY INTO PLANT-BASED DAIRY

GoodDot’s latest development is a plant-based dairy alternatives company, yet to be officially named, because GoodDot believes this vertical to be a significant opportunity, though not without headwinds requiring a different approach. India has the largest percentage and absolute number of vegetarians in the world. This offers a tailwind for plant-based meat, but many Indians still consume dairy, as Sinha explains: “the consumption of dairy is culturally ingrained in the psyche and dietary habits of Indians.” GoodDot considers it important to target health, lactose intolerance and environment sustainability with local consumers, over the cruelty aspect. In India, tea and coffee consumption is often the main touchpoint for a dairy consumer, so GoodDot’s first products will be a vegan tea premix and a vegan coffee premix, as it finds that there are no good alternative products available in the market. Going ahead, the company intends to further develop vegan cheeses, including mozzarella and feta then ice creams and flavoured milk products. Sinha adds: “Many of those products have been developed, they have been put in our food outlets, and they have been appreciated by consumers. But we are focused on one step at a time.”

GOODDOT SPICES

In addition to its plant-based meat range and its plant-based ready meals, GoodDot has its own spices company, GoodDot Spices, which allows the company to easily modify its other products for different markets and rein in costs. This deep expertise in spices marries perfectly with the rest of the plant-based meat portfolio and helps the company churn out wildly popular Indian and international dishes in conventional formats for both B2B and B2C segments.
The company's rapid expansion across India is notable, given that the country's typically vegetarian population has dipped since industrialisation, particularly in urban cities. But as more consumers are realising the health, environmental and ethical impact of meat consumption, omnivore diners are more open to embracing the plant-based trend.

The startup recently secured pre-Series A investment from Sixth Sense Ventures and has significant plans for international expansion. While the exact amount is undisclosed, it marks the first venture capital investment into India's plant-based meat space. Already present in several global markets, including Canada, Dubai, Singapore and South Africa, GoodDot has its eyes on the U.K., the U.S. and Brazil next. One of GoodDot’s key USPs is that its products are shelf-stable. Sinha says: “We are very differentiated from the global players who have gone into frozen or refrigerated products and mostly in the format of nuggets, burgers, sausages, whereas we have gone for more customised solutions: chunks of meat, kebabs, biryanis. Now we are on the cusp of closing a funding round to aggressively brand and market our products within India and also outside.”

From a product-market fit point of view, the brand holds its own against plant-based industry benchmarks Beyond Meat and Impossible Foods, as Sinha explains: “There was an event in Singapore organised by Temasek, and we performed well. So that was a great validation. Same goes for the Alternative Protein Summit in Amsterdam. Our products were used in vegan sushi, which was loved by a lot of people commercially.

Infinite Foods, which is a distributor for Beyond Meat, they have also onboarded us, and we are doing well. So for a company which has been bootstrapped from India, with limited resources, holding our own with global players out there, it really gives us a lot of confidence about the future.”

GoodDot plans to launch a plant-based keema meat curry, and believes this SKU may be their best offering yet, with early taste tests suggesting that meat-eaters prefer it over the ‘real’ deal.
And now, GoodDot is taking its line of animal-free alternative meat products and vegan meals global, forging distribution partnerships across the Middle East, North America, Asia and Africa. International growth will set the tone to hopefully inspire future startups to get involved in the space. In fact, GFI India foresees the launch of hundreds of new startups in the next 5-10 years. Dabir explains: “Within plant proteins, GFI India has been building the Alternative Protein ecosystem since 2018, and we have seen a much-needed shift amongst key entrepreneurs, investors and other stakeholders in the value chain towards creating generation 2.0 products. These are superior bio-mimics of meat, eggs and dairy rather than many other plant proteins like soya-chaaps/chunks/kebabs along with tofu etc. which are generation 1.0 products that pre-existed in India for decades.” For example, Blue Tribe Foods, founded by veteran entrepreneur Sandeep Singh, MD of Alkem Labs, one of the largest pharma players in India, is creating exciting products like plant-based chicken-keema, catering to local tastes. Dhruvi Narsaria, Corporate Engagement Specialist at The Good Food Institute India, considers that brands which meet demand for local flavours and eating occasions will see success: “We see alternative meat-based options like pakoras, lollipops and nuggets as low-hanging fruit, as consumers have outlined the evening or party snack time as a high-need occasion where innovation in current meat offerings is required.”

There is only one cell-cultured meat startup in India, ClearMeat, and it announced in January 2021 that it had filed to patent its proprietary technology used to develop its cultivated minced chicken. The news came shortly after the company completed a pilot trial of its products at the end of 2020, achieving price parity with conventional chicken mince, and it has its sights set on scaling up ahead of a “lab-to-industry transition”. The startup has targeted cell-based chicken mince first because it stands as one of the most highly-consumed protein sources in India, with projected demand growth set to play a large role in fuelling the country’s rising food challenges. Experts have already warned that such a rise will translate to a drastic increase in greenhouse gas emissions, land use, and worsen water stress, a phenomenon to which India is already exceptionally vulnerable in recent years due to climate change. In terms of consumer acceptance of cell-based foods, Narsaria is confident: “Consumer research tells us that 48% of the early adopters in India would be willing to pay more for cultivated meat/clean meat (as the survey terminology suggests) than conventional meat and 56% of the sample is likely to purchase it regularly.”
Investors are starting to see potential in India’s alternative protein sector. In October 2020, New York and Singapore-based venture capital firm Big Idea Ventures partnered with Ashika Group, one of India’s leading retail financial services companies, to launch a new investment fund and accelerator focused on supporting India’s alternative protein ecosystem.

India’s pioneer plant-based egg company Evo Foods closed its pre-seed round in April 2021 and secured INR₹6.2 crores (approximately US$845,000) to help it gear up for its launch in the Indian market as well as scale its R&D and marketing team to prepare for an international launch in 2022. According to research, the global egg market is worth US$200 billion, with 100 billion eggs produced in 2019 in India alone. Plus, through Jubilant Ingrevia, a global integrated life science products and solutions provider, the Jubilant Bhartia Group group invested INR₹4.25 crores (approximately US$570,000) into plant-based meat company Mister Veg in April 2021.

Proeon, a startup focused on plant-based protein ingredients, was selected to join Scrum Ventures’ sustainable food global accelerator program in February 2021, to connect with food industry leaders in the U.S. and Japan, including big players like Nissin, Nichirei and Ito En. The Pune-based food tech offers a range of protein ingredients made from crops like amaranth, hemp seed, mung bean, fava bean and chickpeas, which undergo gentle extraction and processing as well as protein conditioning to enhance crops’ natural nutritional value, sensory and functional properties.
CHALLENGES

India’s diversity, while an incredible opportunity for alternative protein, also generates a level of complexity for brands and their marketing strategies. Narsaria explains: “Brands are often catering to a complex unit of an evolving Indian household as opposed to individual needs. Per a study conducted by GFI India and IPSOS, we discovered that 83% of users consume plant-based milk as a family as opposed to just the individual. From a production perspective we need a lot more capital for the expansion of supply chains. Infrastructure for making state-of-the-art alternative protein goods is coming up but added capacity is needed for the category to really scale, along with a steady stream of sci-tech talent to work in the field. This also ties in to the question of economies of scale and how higher volumes will bring product prices down and solve the price hurdle currently seen in the category. From a regulatory perspective, dedicated guidelines and knowledge bases for the category in India will help alleviate some of the concerns around the import and export of certain ingredients and end-products,” all of which will hopefully ensure greater consumer acceptance and uptake of alternative protein products.

GDP per capita in India still lags behind other countries such as China, meaning that Indian middle-class consumers cannot afford to spend as much on food. This likely means that India will export more plant-based ingredients than it will import, and local brands will need to win with affordability, as per GoodDot’s strategy to appeal to mainstream consumers.
THE FUTURE IS NOW

Alternative proteins have a huge potential in India for a healthier, more sustainable and crisis-resilient food supply. Alongside its otherwise incredibly diverse agricultural ecosystem, according to a report released by GFI India, the country has a unique opportunity to become a major foundation for the global algal protein industry, tapping into its cohort of homegrown microalgae producers and optimal coastline environment to serve the rising demand for climate-resilient food solutions. Everything we’ve seen has been progressing an industry that is set to be worth over US$1 billion within the decade.
Australia is a uniquely-positioned market, and its alternative protein ecosystem is no exception. A 2020 State of the Industry report by Australia and New Zealand’s independent think tank Food Frontier, featuring Deloitte Access Economics modeling, valued the industry in Australia at AU$185 million in 2020 (approx. US$142 million) and suggested that the sector could be worth AU$3 billion by 2030 (approx. US$2.3 billion).

46%

growth of Australian alternative protein grocery sales in 2020

BECOMING AN INTERNATIONAL LEADER IN NEW PROTEIN INDUSTRIES

Food Frontier’s report highlighted that grocery sales in the domestic industry grew by 46% in FY20, despite the economic downturn amid the pandemic. From surging retail sales to impressive three-digit growth rates observed in manufacturing revenues and job numbers, the report detailed the “exponential” rise of the sector and the potential for Australia to become a major global exporter of alternative protein products. “With the right political will, Australia can build a multi-billion-dollar plant-based meat industry, enabling our food businesses and farmers to capitalise on fast-growing global demand for alternative proteins,” said Thomas King, CEO at Food Frontier. “Australia has the agricultural capacity, commercial appetite and research know-how to become an international leader in new protein industries including plant-based meat.”
v2food announced a AU$77 million (US$55 million) Series B round in October 2020, breaking records as the largest funding round in the category within the country. The financing was led by major institutional investors, including Li Ka-shing’s Horizons Ventures, Singapore-based Temasek and Sequoia Capital China. Its Series B Plus round, in July 2021, attracted more Asian investors and brought in an additional US$52 million, elevating v2food’s valuation to over AU$500 million, a jump from the AU$2 million figure from two and a half years ago.

Fable Food Co secured AU$6.5 million (US$4.8 million) seed funding in August 2021 to globally expand production of its mushroom-based meat alternatives.

Fenn Foods launched its first carbon-neutral beef alternative, “veef”, in 2020, with the aim of being the most delicious and sustainable plant-based meat product on the market.

Deliciou raised seed funding from U.S. alternative protein venture capital Stray Dog Capital in April 2021 to continue expanding global distribution of its line of shelf-stable plant-based meat alternatives to Europe, the U.S. and Asia.

Hello Friend Foods, the first food tech in Australia to offer vegan halloumi cheese, launched a crowdfunding campaign in September 2020, and is scaling up its distribution and growing its new direct-to-consumer online store.

Provectus Algae secured US$3.25 million in a seed funding round in October 2020. It uses artificial intelligence to optimise algae growth and uses synthetic biology to create a platform of algae ingredients suitable for use in a range of industries, from sustainable proteins to bioplastics.

Plant-based protein startup Harvest B raised $3.5M seed funding in a round led by Aura Ventures and Woolworths’ venture capital arm W23 in July 2021, and is one of the first six Australian companies to be awarded a US$1 million grant from the Australian government, marking its support for the alternative protein industry. Harvest B’s business model aims to help Australian farmers sell their crops for the plant protein supply chain, which is crucial in the alternative protein industry.

Eden Brew raised $4M in July 2021 from the CSIRO’s venture capital arm, Main Sequence, and northern NSW dairy cooperative Norco, to make dairy products via fermentation.
Canberra-based Nourish Ingredients closed a US$11 million financing round co-led by Hong Kong billionaire Li Ka-shing’s Horizons Ventures and Main Sequence Ventures in March 2021 for its range of sustainable animal-free fats and oils.

In May 2021, Queensland-based company Sprout Organic launched a line of baby formula made from certified organic plant-based ingredients including rice starch.

Made With Plants launched an improved product line in May 2020, and at that time accounted for 20% of Woolworths’ alternative protein product range, having first been introduced to stores in September 2019, sharing shelf space with Woolworths’ own plant-based brand The Vegan Factor, chef-crafted Wildly Good, and Heston Blumenthal-backed Fable Food Co.

MEET was founded in 2008 and is led by a father-son team who have launched a range of plant-based meat alternatives that are proudly made in Australia.

Eighth Day Foods has developed Lupreme™, an incredibly versatile and nutritious plant protein made from sweet lupins via fermentation.

Has Algae is Australia’s leading food-grade microalgae producer, sustainably growing its protein-rich, vegan-friendly ingredient in Queensland.

Plus, ProForm Foods, an Australian plant-based protein supplier, opened its AU$11 million (US$8.1 million) manufacturing facility on the outskirts of Sydney in November 2020. It has the capacity to produce 5,000 tonnes of plant-based meat annually.
Karen Job, Head of Industry Engagement at Food Frontier, says that plant-based protein ingredient production could be a major opportunity for Australia’s alternative protein industry: “With the advantage of Australia’s vast geography, and with all sorts of different climates here, you can grow all kinds of plant proteins from soy and pea to lupins and chickpeas. But at the moment, we haven’t got the infrastructure for production. An ongoing trend in Australia is our consumers’ passion for locally-grown, locally-produced products; all our food products have a label on pack to show what percentage of their ingredients are Australian-grown. And so of course, because pretty much all of our plant protein ingredients are imported, it’s very hard to get over 70%. We see a massive opportunity in creating local infrastructure for protein ingredient production, plus R&D in the different types of ingredients Australia can be known for, rather than relying on soy.”

“We see a massive opportunity in creating local infrastructure for protein ingredient production, plus R&D in the different types of ingredients Australia can be known for, rather than relying on soy.”

Karen Job, Head of Industry Engagement, Food Frontier

AUSTRALIA’S CELL-CULTURED ACCELERATION

Australia’s cell-based industry is still in its nascent stages, but is growing quickly. Vow Foods is leading the charge, cultivating exoting animal meats such as kangaroo and alpaca. Having closed an oversubscribed US$6 million seed round in January 2021, the startup is now positioning itself as a sector leader in developing sustainable proteins that “outperform conventional meat” in terms of taste and experience.

Melbourne-based Magic Valley is the first Australian food tech cultivating lamb meat, looking to disrupt the US$96.5 billion global market for sheep and lamb meat. Focusing on lamb is distinctly Australian, with the country being the world’s largest sheep exporter; it ships 56% of its lamb and 95% of its mutton to overseas markets.

Perth-based Cass Materials is focused on cellular agriculture ‘ingredients’, and has developed a new biodegradable scaffolding, derived from nata de coco. It can provide the matrix for animal cells to grow around, making it a suitable replacement for gelatin-based fibres that many cultivated meat developers still rely on.
ME&MA is working on cell-based breastmilk, providing human milk-based products to the many children who currently consume cow-based formula. Its products are tailored to suit each stage of a baby’s development, boosting immunity, reducing exposure to allergy triggers, and assisting gut development.

Heuros specialises in quality, GM-free media and bioreactors for the cellular agriculture industry, to promote a more holistic approach to making cultivated meat.

Bianca Lê, PhD, Director of Cellular Agriculture Australia, which is a nonprofit organisation dedicated to promoting and accelerating Australia’s cellular agriculture research sector, as well as private industry, says that Australia is really well-placed to become a world leader in cellular agriculture. Two of its key priorities are developing a talent pipeline into the sector, and developing a connected and collaborative community in order to encourage healthy competition in the space. “We already have world-class expertise and facilities in the Regenerative Medicine Research sector here. A lot of those skills can be transferred into the cellular agriculture and food science space. We’re also nicely positioned and have a huge export market, particularly with APAC. We have this great reputation of producing clean, safe foods for the APAC region, so we can definitely leverage that reputation for the cellular agriculture and cultivated meat industry.”

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_Bianca Lê, PhD, Director, Cellular Agriculture Australia_
Cellular Agriculture Australia recently launched an interactive tool to help students and those looking to switch careers to “break into” the field of cellular agriculture. Designed to drive talent into the emerging industry, the Pathways tool outlines the areas where innovation and research is needed, and matches these to related tertiary qualifications in Australia.

The industry is not without its challenges. Lê explains that government support and an increase in funding would be key to progressing research and development: “We’re working on applying for different government grants to showcase to investors how this is a huge business opportunity and there is a lot of economic potential within this industry.”

Cellular Agriculture’s other concern is using effective science communication, to promote a positive public awareness of the field: “We’re educating consumers on what the meat that we currently eat actually is biochemically, how it’s produced, and showcasing that it is muscle tissue. And it’s just that those cells are going through a very well-established biological process that’s been studied for a very long time, and we are essentially just utilising that natural biological process and recreating it through a more sustainable method.”

**PRECISION FERMENTATION**

While Australia’s precision fermentation sector may be small so far, the country is home to Change Foods, founded in 2019, which is the only startup in the Asia-Pacific region creating dairy through precision fermentation.

Established in 2017, The Veggletto Company’s egg replacement technology tastes and cooks like eggs, and is tasty, nutritious and affordable. Its Veggletto® products are prepared from natural, readily available vegetarian raw materials and contain no artificial preservatives or colours, and are available in both shelf-stable powders and chilled preparations.
CHALLENGES IN THE ECOSYSTEM

Job explains that the size of the country, and the population spread across it, can be a challenge in terms of growing a new industry: “Many of the domestic players in the market are small, so some of them are piggybacked on to either the existing industry or are set up as adjacent to the industry without that access to distribution. Actual distribution is a really expensive part of the process. Plus, consumer perception can be an issue, which speaks to the maturity of the market. There are a lot of consumer perception challenges around what these products contain, which is something we’re trying to change.”

Consumer perception is especially important in light of a recent inquiry launched by a Queensland senator to prohibit the use of “meaty” terms such as “vegan bacon” or “meatless sausages” on alternative protein products, claiming that such products are “highly processed, unnatural”. Startups and advocacy groups say that voluntary guidelines are already being drawn up by industry stakeholders, and warn that Australia could miss out on huge business opportunities amid surging plant-based demand. A new representative group for Australia’s alternative protein sector, the Alternative Proteins Council, launched in March 2021. It has been formed in an effort to prioritize the sector in national policy discussions as well as act as a unified voice working on major issues surrounding this market, and will be key to the industry’s growth.

Food Frontier’s 2020 report also underlined that government support will still be key for R&D investment and building out the industry’s infrastructure, despite the exponential rise in 2020. Government should also “ensure a level playing field”, especially for new players in the market.
While some startups have raised serious cash, others are struggling to attract attention. Food Frontier is working hard to raise the profile of the industry and thinks that getting investors excited is a collective responsibility, as Job explains: “I think the big retailers have a big role to play here. Major retailers over here, such as Coles and Woolworths, dominate the market, and therefore their plant-based strategies are key to driving growth. I think investors need to see some of that scale, and be reassured that there is that potential that we talk about on a daily basis. The industry demonstrates that growth, but it’s currently from a low base, so we need to keep showing that growth. I think it’s confidence. Companies need to make great products and make sure the products sell, that their quality earns their place on shelf, and that’ll help the investors see that growth in numbers.”

In November 2020, Australia signed up to the Regional Comprehensive Economic Partnership, the world’s largest free trade agreement, following eight years of negotiation. The deal builds on Australia’s existing FTAs in APAC, improving export access and supply chain opportunities for Australian businesses in 14 Indo-Pacific countries. Australia has played a major role in satisfying APAC’s import demands for many years, as Asian consumers appreciate what Job terms “brand Australia” - a premium quality that they know and trust. While some Australian alternative protein companies - notably v2food, Fable and Fenn Foods - are already exporting and leveraging that reputation, there is definitely an opportunity for more.

Food Frontier’s AltProteins 2021 Conference in October 2021 will unite the agri-food industry leaders, retailers, innovators, investors and policymakers shaping Australia and New Zealand’s emerging proteins sector to realise the industry’s potential.
THE REST OF THE REGION

HONG KONG

Hong Kong may be small, but it is mighty, not least because of venture capital and accelerator firm Brinc’s sustainability investment goals, and Green Monday’s alternative protein movement. Avant Meats is the city’s first cell-based seafood startup, tackling demand for local delicacies such as fish maw alongside more mainstream products such as fish fillets. Hong Kong is also home to alt protein venture capital fund Lever VC, which has been a core player supporting the ecosystem. Managing partner Nick Cooney and partner Lawrence Chu have both been early investors in some of the biggest alternative protein food techs today, including Beyond Meat, Impossible Foods, Memphis Meats, JUST and Aleph Farms.

Hong Kong still holds the crown for being the first city in the world outside the United States where, in collaboration with Green Monday, Beyond Meat launched its famous burger back in 2017. A year later, Impossible Foods followed suit in Asia’s World City. And, as of June this year, Next Gen’s vegan chicken analogue, TiNDLE, has also launched in Hong Kong as part of its international expansion.
JAPAN

Plant-based protein is a growing trend in Japan, but marketing related to environmental benefits, sustainability or animal welfare is not part of the message. Japan is primarily a soy-based alternative protein market, relying on consumers’ strong, positive relationship with soy alongside the price competitiveness of soy protein compared to animal-based protein. The number of strict vegans or vegetarians is very limited in Japan, per a consumer survey conducted by consulting firm Frembassy in Dec 2019, which reported that 5.7% of Japanese consumers say they follow a vegan or vegetarian diet. There is also hardly any mention of any environmental benefit of soy-based meat in product marketing messages, perhaps because consumer concern about any negative environmental impact from the livestock industry is low in Japan; 85.8% of consumers surveyed by the Animal Rights Center in March 2020 responded that they had never heard about animal welfare. Japan has a long history of eating local soy-based products, like tofu and natto (fermented soybeans), and many Japanese consumers believe that Japanese traditional cuisine is ‘healthy’, with 63% of consumers surveyed by My Voice Com in Dec 2019 confirming they make a conscious effort to include soy foods in their regular diet.
In Japan, the alternative protein boom in the past 18 months has been largely driven by domestic companies. Nearly all major meat processors have released a plant-based meat alternative in the past year alongside products from major plant oil and soy-based processors, dairy processors, frozen food manufacturers, health food & drink manufacturers, and many major retail chains and major café and hamburger chains.

Fujioil, Japan’s largest soybean cooking oil processor, with a 50% share of the soy-based meat market, recently launched a fermented soy-based cheese, mainly for food service players and food processors. Marukome, Japan’s largest miso manufacturer, was also one of the early players in the alternative meat market, with its plant-based ground meat. Leading meat company Starzen collaborated with health food and drink manufacturer Otsuka to develop plant-based sausages, meatballs and burger patties under the brand ‘ZEROMEAT’. Koikeya, the second largest player in Japan’s savory snack market, launched its soy-based protein snack ‘Guiltless Fried Chicken’ in June 2020. Yonekyu, a leading meat and frozen food manufacturer, developed ‘AIR MEAT’, a frozen ready-to-eat food brand.
Through 2020, most convenience store chains, including Lawson, 7-Eleven and Family Mart, launched alternative protein products within their stores. Plus, food service outlets such as ramen chain Ippudo, Muji and Mos Burger all introduced plant-based menu items.

In terms of startups, Next Meats recently expanded its alternative protein range with a new egg substitute, Next Egg 1.0, released the country’s first-ever line of vegan yakiniku, and collaborated with home furnishing giant IKEA Japan earlier this year to debut a brand new plant-based dish in its restaurants. The company is now building a new solar-powered factory and R&D hub dedicated to alt protein production. Daiz, which raised US$6 million in its Series A round in June 2020 and won an award at the Future Food Asia 2020 event, is planning to open one of the biggest vegan factories in Japan that could produce 3,300 tonnes of soy-based meat products, from a “mince” suitable for dumpling fillings to a “beef” steak served with sweet curry. Open Meals is developing technology for 3D-printed food made from sustainable ingredients that can be transported all over the world. Researchers from the University of Tokyo announced in March 2021 that they have come up with a novel way to cultivate “millimetre-sized chunks of meat” by stacking and fusing together cultured beef cells.
South Korea’s alternative protein space is growing. Pulmuone, a South Korean food corporation best known for soybean products, announced the launch of a new plant-based meat line in April 2021, marking its first entry into the category. It plans to release more than twenty products over the next few years. Burger King South Korea introduced two plant-based versions of its Whopper to its menu in February 2021, partnering with Australian food tech v2food to respond to increasing demand for vegan food options.

According to recent statistics collected during the pandemic, the number of vegans in South Korea has tripled to half a million in a decade, while flexitarianism has ballooned to an estimated 10 million – representing nearly 20% of the country’s total population. Jimmy Sohn, CEO at TechnoPlus, an advisory service to the alternative protein industry in South Korea whose clients include cultivated meat startup Space F, offers his opinion on consumer attitudes in the country: “I don’t think a lot of Korean customers care about environmental issues, climate change etc. So, [they care about] taste first, price second, and then third maybe climate change and veganism. It’s a small country, and for alternative protein startups to scale up in the global market, they need to prove themselves in Korea first. Especially in a market like Korea, where plant-based foods are typically considered to be tofu, and other plant-based ingredients, like plant-based meats, are shocking and new to many consumers. So plant-based protein startups need to focus on how to get mainstream consumers to try their products for the first time. And since this consumption doesn’t come naturally to these consumers. The question remains as to whether fake meat is really healthier than real meat, especially with their ‘ultra-processed’ label. Still, the meat alternative market is a global trend, and the Korean market is likely to follow suit, but regarding the taste and texture of homegrown products, there’s still work to do in development in terms of their organoleptic inequality, flavour and texture.”
There are several homegrown startups working in different areas of alternative protein: Nakashima makes plant-based jerky, which is now available in 1,000 convenience stores across South Korea. The PlantEat makes a wide variety of ambient plant-based food products, and was just named a semifinalist in XPRIZE’s US$15 million Feed the Next Billion competition. Plus, Seoul-based Viomix Tech closed Series A investment in March 2021 to fund its global expansion and double down in its domestic market, where its plant-based meat range features across major supermarket chains and e-commerce platforms.

In terms of cell-cultured solutions, there are many. South Korean cultivated meat startup Space F, along with researchers at Sejong University and Seoul National University, has developed the country’s first cultured pork prototype. CellMEAT closed a ₩5 billion (US$4.5 million) pre-Series A funding round in February 2021 to further R&D of its cell-based meat technology to scale up and cut costs, with the view to “make cultured meat a reality in South Korea”. So far, the company has already developed its proprietary animal-free cell-culture and cell-culture medium technology, which does not rely on fetal bovine serum. Plus, SeaWith has developed its own seaweed-based cell culturing medium and scaffolds, and is targeting cultured steak at $3/kg by 2030.
TAIWAN

Taiwan has historically been an important manufacturer and exporter of first generation mock meats, widely used in Buddhist restaurants across Asia. Taiwan is a strong market for foreign plant-based campaigns, especially since Beyond Meat launched its burger at TGI Fridays in the country in 2018. Green Monday partnered with Taiwan’s major chain of convenience stores, FamilyMart, to launch a line of Omnipork instant meals across 3,600 locations in the country in March 2020, and the brand’s partnership with Taiwan’s biggest QSR chain, Bafang Yunji, attracts one million OmniPork dumpling sales each week.

Currently, we are aware of two Taiwanese alternative protein companies: MISEKI’s VVeat plant-based burgers are cruelty-free, trans fat-free and cholesterol-free, and RicoRico is a clean label plant-based meal delivery service.

MACAU

As with Taiwan, Macau is often favoured by many companies seeking to expand their global footprint. From Beyond Meat and Impossible Foods to Green Monday’s OmniPork and Next Gen’s TiNDLE; Macau’s alternative protein market should soon begin to mature as consumers get a taste for vegan analogues.
Indonesia is struggling with climate-related issues. From severe fires, to palm oil-related deforestation and its melting glaciers, it needs to act fast, and alternative proteins could hold the answer. Indonesian consumer interest in plant-based proteins and willingness to switch to plant-based diets has reached an all time high with a 2018 poll indicating almost a quarter of shoppers plan to follow a vegetarian diet going forward.

The country is rich with plant-based tradition and potential crops to turn into alternative proteins. For example, Italian scientists at FairFlavor Foods use the Kenari nut, a nutrient powerhouse found in the Indonesian rainforest, to make plant-based dairy products. These nuts are grown on Canarium indicum trees in the Eastern Indonesian region, which provide communities with shelter against typhoons and natural disasters while absorbing carbon from the atmosphere. British startup Better Nature works with tempeh, the high-protein traditional Indonesian fermented soybean product which is a staple of the country’s daily diet.

The alternative protein market in Indonesia is not as mature as other markets in Asia-Pacific. Helga Angelina Tjahjadi, co-founder at Indonesia’s first plant-based startup Green Rebel Foods, confirms that Indonesia is a big market in terms of the total population, and its market readiness is still quite low though promising thanks to its rising middle class, urbanisation, and young population who are becoming more aware of the health and environmental benefits of plant-based protein. “I would say in the next few years, all the players who are in this market need to invest in market education for the industry to actually pick up as a whole, as we have seen in Western countries.”

Singapore-based plant-based food startup Float Foods partnered with food incubator Ultra Indonesia to launch the NEW FOOD Startup 2020 program last year, specifically to target plant-based food innovators and entrepreneurs in Indonesia, so we should hopefully see significant changes fast as more investors are attracted to the unique opportunities Indonesia can offer.
Green Rebel Foods is Indonesia’s first plant-based meat alternative brand and is among the growing cohort of Asian food techs that are developing vegan analogues that cater to local tastes and cuisines. Founded by the creators of Burgreens, the country’s largest plant-based fast-casual chain, the startup is committed to championing homegrown ingredients and local sourcing. Green Rebel’s products are made with a number of domestic ingredients such as mushrooms sourced from the feet of volcanic mountains in Java, Balinese sea salt, coconut oil from Riau and Javanese turmeric, galangal and lemongrass, all of which reduce transport emissions while supporting small businesses and communities locally. Green Rebel’s signature products include its bestseller Beefless Steaks and Chick’n Steaks, alongside flavoured products such as Beefless Rendang, Chick’n Karaage, and Satay.

FROM RESTAURANT OPERATORS TO FOOD TECH FOUNDERS

Green Rebel’s co-founders, Indonesians Helga Angelina Tjahjadi and Max Mandias, first founded Burgreens, a fast casual plant-based dining concept in 2013. They wanted to introduce plant-based eating to mainstream consumers in a way which would be perceived as “modern”. After six years growing the company, and establishing ten outlets, it was time for the next step.
Explains Tjahjadi: “We wanted to accelerate healthy and sustainable eating adoption and to change the way people eat at a mass scale. Indonesia is such a large country, and within the first six years of Burgreens we were only able to capture the market in Jakarta and Bandung, because there was a lot of market education needed in the country. And we thought, you know, maybe the restaurant model isn’t really the most efficient way to promote this movement. And actually, to scale up the business, it’s very resource intensive. Every time you open a restaurant, it’s like opening a new business unit, you just start from zero again. And so that’s when we were brainstorming, hey, how can we make this more affordable? How can we make this a more scalable model? And how can we actually empower other restaurants who have a lot more outlets than us? You know, like QSRs such as Starbucks, McDonald’s, where they have more than 400 outlets across Indonesia. And also, we feel like as a vegan restaurant, if we say plant-based food is good for you, and good for the environment, a lot of people will be more defensive, but then if the restaurants we’re selling to say that it’s good for you, and it’s good for the environment, people will be more open to the idea of trying it. And if they like it, they would be more likely to actually integrate that as part of their lifestyle.

LEADING FOODSERVICE PARTNERSHIPS TO ESTABLISH SCALE

Since its initial launch, the company has developed successful business partnerships with many iconic brands across Indonesia, including Domino’s, IKEA and Starbucks, and its products are now available in over 650 food service outlets and 50 retail locations across the country. Green Rebel debuted two new products in June 2021, a Beefless Steak and a Chick’n Steak, which it called the “first plant-based whole cut steak in Asia”. The steaks landed at two of the leading steakhouse dining chains in the country in June 2021: ABUBA Steak, which has 29 outlets across the country, and Pepperlunch with 50+ outlets. In both chains, Green Rebel’s steaks were priced at the same rate or even lower than their animal-based counterparts. Both outlets saw an increase in sales after introducing these vegan options. ABUBA Steak, especially, experienced a significant sales growth in the two weeks following the launch, having tapped into a new market segment. Green Rebel has plans to launch with further steakhouses very soon.

“We wanted to accelerate healthy and sustainable eating adoption and to change the way people eat at a mass scale.”

Helga Angelina Tjahjadi, Co-Founder and CEO, Green Rebel Foods

ASIA’S FIRST PLANT-BASED WHOLE CUT STEAK

While poultry dominates Indonesian meat consumption and Green Rebel has a wide variety of chicken alternatives, the start-up decided to launch Steak during the World Environment
Month: “Just looking at how beef impacts the environment, it’s one of the most natural resource-intensive products, and has the most negative impact on the environment. And when we were speaking to food service partners, we wanted to launch in restaurants that are actually famous for meat, to make the statement that even meat sellers are going plant-based. We were pleasantly surprised to learn that the steakhouses are really interested in working with us. And we’re really happy to see that the sales and market reception have been very good.” Green Rebel also launched its Beefless Steak retail pack in June 2021, and it immediately became its top-selling item, responsible for 20% of the brand’s total sales so far in 2021.

Compared to animal-based beef and chicken steak, Green Rebel’s versions are cholesterol-free, have fewer saturated fat levels and have much higher fibre content, while still offering a similar taste and texture to their counterparts. According to the company, the production of these vegan meats has 15x lower negative impact on the environment than beef steak’s production process and, if consumers opt for a box of Green Rebel’s meat, they would be saving three days’ worth of drinking water and 5.5 kilometres driving equivalent of carbon emissions. This is key in Asia, where rising incomes and economic mobility means demand for animal protein is growing fast.

**INDONESIA: MARKET READINESS FOR ALTERNATIVE PROTEINS IS LOW BUT VERY PROMISING**

The alternative protein market in Indonesia is not as mature as other markets in Asia-Pacific, as Tjahjadi says: “Indonesia is a big market when you look at the total population, but the market readiness is still quite low. The market is promising, it’s got a huge rising middle class, urbanisation, and young population who are becoming more aware of the health and environmental benefits of plant-based protein. I think the reason why Green Rebel picked up very quickly is because we have been in the market for eight years and built this loyal health-conscious and eco-conscious customer base. Our homework is to educate the more mainstream audience on why they need to make the protein shift. So I would say in the next few years, all the players who are in this market need to invest in market education for the industry to actually pick up as a whole, as we have seen in Western countries.”
While on-the-ground investment has thus far proved difficult, Green Rebel closed its seed funding round, led by global venture capital firms Unovis Asset Management and Teja Ventures, in February 2021: “We’re happy that we’re supported by value-aligned investors who are leading the alternative protein industry and empowering a new way of eating. It’s integral to have strong initial partnerships with the same level of passion and mission to launch our brand globally.”

As Asia’s demand for plant-based proteins continues to grow, local startups will have an edge in catering to the specific preferences of Asian consumers, and this is certainly true for Green Rebel. The company’s next project is a yakiniku slice, popular in many countries and cuisines across Asia Pacific. It also intends to expand its operations in the region, targeting Singapore and Philippines first by the end of 2021, and more countries in 2022, forging a path for other Indonesian startups to follow.

““In the next few years, all the players that are in this market need to spend on market education for the industry to actually pick up as a whole, as we have seen in Western countries.”
Helga Angelina Tjahjadi, Co-Founder and CEO, Green Rebel Foods

GLOBAL ACCESS TO VENTURE FUNDING IS OVERFLOWING

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“For every box of Green Rebel vs animal protein, you will save lots of natural resources

- 9,000 liters of water
- 33.6 kg of CO₂
- 182.4 sqm of land
- 13.2 kg of grains

6 liters of water
= 3 days of drinking water/person
1.4 kg of CO₂
= 5.5 km driving emission
3.2 sqm of land
0.84 kg of grains
Nestlé Malaysia opened its first plant-based production facility in April 2021; the first in the Association of Southeast Asian Nations and one of only two in the whole of Asia. The new 6,000 sq.m. facility is situated inside Nestlé’s existing Shah Alam Industrial Complex in Selangor and is equipped with an annual production capacity of 8,000 tonnes, designed to supply local shops and meet export demands for its plant-based brand Harvest Gourmet.

"Malaysia has the right infrastructure, trade links and access to talent and capabilities."

Chris Johnson, Executive VP and CEO, Zone Asia, Oceania and sub-Saharan Africa, Nestlé S.A.

Executive vice president and CEO, Zone Asia, Oceania and sub-Saharan Africa, Nestlé S.A., Chris Johnson, said: “We have chosen Malaysia, and Selangor, as the location of this new manufacturing hub, as we find here the right infrastructure, trade links and access to talent and capabilities. We also build on Nestlé’s 108 years of successful presence in Malaysia. We are confident that with this new facility we will be able to capture the exciting growth opportunity for plant-based products in this region, which is a very important growth priority for the Nestlé Group worldwide.”

Alongside this, Tyson Foods Inc launched a new line of plant-based products in selected retail markets and e-commerce platforms in Malaysia under the brand First Pride in June 2021, its first Asian market for the brand, because the meat substitute category in the country is growing at 5.3% year-on-year.
Malaysia is home to plant-based startup Phuture Foods, which launched its new vegan pork mince product, Phuture Mince, in June 2020 and is expanding its sales footprint across Asia. IRA NOAH, based in Selangor, uses jackfruit for its plant-based burger patties, and is now working on nuggets, vegeballs, hotdogs and mince.

In terms of food service, Green Monday’s OmniPork (known as OmniMeat in the majority-Muslim country) is an established player, Next Gen’s TiNDLE launched in restaurants across Kuala Lumpur in June 2021, and Malaysian delivery app Zesty Clickz exclusively promotes accessible and tasty vegan options in the country. As of July 2021, the platform has 65 food providers ranging from vegan and vegetarian restaurants, cafes, stalls, to home-based businesses, servicing over 2,000 app users.

PHILIPPINES

According to Stephen Michael Co, co-founder and CEO of WTH Foods, “Filipinos are very culturally close to the U.S. in terms of following trends, and although not as much as Hong Kong or Singapore, OmniPork and Beyond Meat have made their presence felt here in the Philippines. Even San Miguel has released a meatless product – though it contains egg, it is vegetarian – so people are seeing plant-based choices in their groceries. The entry of super big companies like these means that there is growth.” Worth The Health is the first homegrown plant-based meat startup in the Philippines, developing plant-based sustainable meat alternatives that target the taste buds of Filipinos and the wider Asian market, including mung bean-based ground meat, jackfruit-based pulled meat, and plant-based corned beef.

Alongside WTH Foods, ready-made plant-based meal brand The Good Choices, which recently launched plant-based bacon and sliced ham, vegan beef alternative The Real Happy Cow, plant-based snack makers Vegetari Healthy Bites and speciality store Jack’s Produce, which offers jackfruit-based vegan sardines, are all leading the homegrown alternative proteins charge.
The plant-based industry may be smaller in the Philippines, but it is still home to food conglomerate Monde Nissin Corporation, which acquired British legacy vegan and vegetarian brand Quorn in 2015, and filed for an initial public offering (IPO) in March 2021, aiming to raise ₱63 billion (approx. US$1.3 billion), the country’s largest-ever first-time share sale. The firm said the fundraising will fuel its international expansion as it pivots towards the fast-growing alternative protein category amid record plant-based sales. Filipino giant Century Pacific Foods, best known for its tuna, created its own meatless brand, unMeat, in November 2020. Shakey’s Pizza Asia Ventures, the major pizza chain owned by Century Pacific, also added plant-based burgers to its menus in every outlet in the country. Plus, Burger King partnered with Australian food tech v2food to add the plant-based Rebel Whopper to its menu in the Philippines in November 2020, Beyond Meat first made it to the Philippines in 2019, and OmniPork Luncheon is now widely available across the country.
VIETNAM

Vietnam’s alternative protein market is predicted to reach 500 million USD by 2025, with a CAGR of 11.85% between 2021 and 2025. The market has become attractive for both foreign and domestic entrepreneurs, reflected by the rising foreign direct investment as well as the dynamic participation of local players such as startup Kashew Cheese, which makes plant-based artisan cheeses from local ingredients, especially cashews, which are fresh and locally-abundant.

Vinh Hoan Corporation, based in Vietnam, is the world’s largest pangasius fish producer. In January, it announced a strategic partnership with Hong Kong-based cell-cultured seafood startup Avant Meats, and has also recently invested in Singapore-based cultivated seafood startup Shiok Meats.
NEW ZEALAND

New Zealand has around 3.6 million beef cattle and 27.4 million sheep. Around 9.7 million hectares of the 26.8 million hectares of land in the country are used for pastoral agriculture, with meat being the main agricultural product by volume, most of which is exported. New Zealand has more than 10 times the land area currently used for horticulture that is suitable for growing plant protein crops. Its alternative proteins sector has huge potential, but is fragmented and lacks clear leadership, according to a report by FoodHQ.

There are a few firms working on alternative proteins, including plant-based chicken and bacon startup Sunfed Foods. Founded in 2015 and female-led, Sunfed Foods is one of the first ever alternative meat companies in the world and, according to Karen Job, Head of Industry Engagement at Food Frontier, it has “great nutritional credentials”. Berkano Foods is focused on plant-based beef, lamb and pork, hemp-based meat brand The Craft Meat Co, is owned by Sustainable Foods, Tahi Spirulina is working with microalgae and Vince is developing dehydrated plant-based mince. Food Frontier’s AltProteins 2021 Conference in October 2021 will unite the agri-food industry leaders, retailers, innovators, investors and policymakers shaping Australia and New Zealand’s emerging proteins sector to realise the industry’s potential.

Air New Zealand was the first airline to feature Impossible Foods in 2018, and the plant-based giant may well be gearing up to enter the Australia and New Zealand markets, having posted an advertisement for a regional role earlier this year.
APAC’S SUPPORTIVE ALT PROTEIN ECOSYSTEM

There are many organisations driving change in APAC’s alternative protein industry that are a crucial part of the ecosystem, advancing the movement by connecting key players, offering important insights and analysis, supporting regulatory change, research and development, plus hosting events, matching funders to companies and much more.

GFI: EMPOWERING THE INDUSTRY REGIONALLY FROM THE GROUND UP

The Good Food Institute is a nonprofit at the heart of alternative protein development, helping to establish change throughout the world via its commitment to supporting research, its work with entrepreneurs, and its advocacy for policy change to drive sustainability. Across its many teams, mission-driven colleagues are helping to build alternative protein infrastructure.
GFI APAC has identified two main organisational priorities for the foreseeable future: 1) help solve the lack of infrastructure and production capacity of alternative proteins across the region and 2) ensure regulatory approval for novel food ingredients in Asia-Pacific.

Mirte Gosker, Managing Director at GFI APAC, explains: “Both topics are extremely important for the alternative protein industry to grow, and we are uniquely well-positioned to help solve these challenges, since we are already connected to all of the critical stakeholders from both the public and private sectors. Private companies will do their best to solve their own challenges, whether by outsourcing part of their value chain to Europe, importing machinery into Asia, or working relentlessly to get approval to sell their product in a new market. We can help tackle some of these issues by taking a higher-level, cross-market approach.”

“We are uniquely well-positioned to help solve these challenges, since we are already connected to all of the critical stakeholders from both the public and private sectors.”

Mirte Gosker, Managing Director, GFI APAC

As a recent example, GFI’s global network collaborated with the World Health Organization in May 2021 to organize a two-day workshop on the regulatory future of novel food ingredients and technologies, which was attended by representatives from a dozen countries across the Western Pacific region. Gosker adds: “Alternative proteins are now prominently on their radar, with the strong support of the WHO leadership, which is an incredibly important first step. Another example of where we continue to add a lot of value is our research into the alternative proteins industry ecosystem. We are currently mapping the availability of pilot facilities, co-manufacturers, contract R&D facilities, and consultants for startups and SMEs in Singapore and beyond. Once finished, we will be able to compare this study to similar studies conducted in the US and Europe and look at those robust ecosystems to learn and apply best practices and lessons to Singapore. This is a crucial first step towards analyzing the full Asia-Pacific region, which will allow us to spotlight the largest industry gaps and ensure that other parties, including governments and private entities, start investing in those parts of the value chain.”
The team at GFI India is uniquely positioned to harness India’s manufacturing potential, through working with existing major companies and startups to meet the demand for plant-based foods. In March 2021 it unveiled the first India Good Food Startup Manual to provide an in-depth guide to help smart alternative protein entrepreneurs set up their companies. Innovation Specialist at GFI India, Nicole Rocque, said: “We’ve accounted for India’s unique business and scientific environment, and jam-packed the India Good Food Startup Manual with nuggets of knowledge that will supercharge entrepreneurs on their startup journey. We’re here to provide mentorship, resources, community, access to our network, and more, and we’re delighted that the manual is of value to innovators.”

70%
China's share of the APAC plant-based meat market

The Good Food Institute’s China-based strategic partner GFI Consultancy provides unrivalled insights into the biggest market opportunity in the world, not least because the country accounts for more than 70% of the current US$163 million Asia-Pacific plant-based meat market. In its most recent report, published in May 2021, GFIC highlights several food categories that plant-based meat makers could provide substantial disruption to within Chinese cuisine, among them meat alternatives for hot pot, Chinese-style barbecue skewered meats, vegan analogues for meat-based snacks and ready-to-cook meals. Given that consumers in China prioritise health and sensory qualities of plant-based products the most, GFIC experts say that plant-based brands should factor in ingredient sources, protein content and nutritional
value in their product formulations and marketing to differentiate themselves with traditional mock meats. Furthermore, GFIC believes that B2B collaborative partnerships are “critical for successful market entry and expansion”, particularly for international players.

**SOCIAL MOVEMENTS & NGOs: UNITED TO DRIVE CHANGE**

Green Monday is an open source movement backed by a nonprofit foundation, leading advocacy and providing a framework for behavioural change through consumer education, plant-based food innovation, and venture capital support. In April 2021 it launched an alliance called the ‘Green Monday ESG Coalition’, designed to unify businesses with plant-based solutions in order to achieve net-zero targets and build a stronger and more resilient food ecosystem.

ProVeg is an international nonprofit focused on building a sustainable food system, investing in and nurturing talent and startups developing alternative proteins and sustainable food solutions. It runs food innovation challenges and incubators to accelerate the future of food.

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**US$163 MILLION**

Value of APAC's plant-based meat market

PETA Asia seeks to recognise businesses driving positive change for animals, people and the planet. Its campaigns include promoting veganism, ending the use of fur and animal experimentation, and many more. This year, PETA Asia listed the top vegan burgers across the region, including Hong Kong, Taiwan, Malaysia, Vietnam, and Indonesia, proving that demand for healthy, cruelty-free vegan meals is skyrocketing. Nirali Shah, Media & Marketing Manager at PETA Asia, adds: “We’ve launched billboards in the Philippines and Malaysia with the message “Tofu Never Caused a Pandemic”, encouraging people to ditch meat and choose vegan foods like tofu instead, and in honour of Chinese New Year, campaigned on the streets of Manila, the Philippines and Jakarta, Indonesia, to urge passersby to be kind to cows by going vegan. Last year when Taiwan began to export pork for the first time since the 1997 food-and-mouth disease outbreak, we put up a billboard to remind everyone to leave pigs and other animals off their plates. In South Africa, we launched billboards across the country to call for an end to the horrific live-export
trade. PETA Asia named Green Monday our 2019 ‘Company of the Year’ for saving millions of pigs’ lives with OmniPork. It’s so exciting to see incredible vegan products developing across Asia and around the world right now. By pushing innovative vegan foods forward, companies are helping tackle the meat industry and driving animal agriculture further toward obsolescence.”

Veggieworld provides dedicated exhibitions and conferences for plant-based and sustainable businesses in China, and is expanding this year to accommodate even more exhibitors. It has also developed the first New Protein Landscape in China’s Market.

Three Singapore agencies, Nanyang Technological University (NTU), Singapore Food Agency (SFA) and the Agency for Science, Technology and Research (A*STAR), worked together to set up a new Singapore body in April 2021. The Future Ready Food Safety Hub (FRESH) is designed to accelerate food safety research, support food science capabilities and enable regulatory responsiveness to speed up the commercialisation of novel foods in the Asia region.

Dr Sandhya Sriram, CEO and co-founder of Shiok Meats, announced in July 2021 that APAC cellular agriculture companies are coming together to set up the APAC Society for Cellular Agriculture, which could potentially accelerate enormous change within the cell-based sector.

**FUNDS & ACCELERATORS: CONTRIBUTING CAPITAL AND NETWORKS**

New York and Singapore-based accelerator and venture capital firm Big Idea Ventures’ team currently comprises fifteen people, and it has expanded its reach with an additional accelerator in Paris, France, and the establishment of a satellite office in Shanghai to support Chinese portfolio companies. Big Idea Ventures is aiming to invest in and accelerate up to 100 startups globally, and to date has supported 47, of which over 50% are led by female founders, through three cohorts. The companies within its portfolio hail from over 15 countries, across the U.S., Europe and Asia-Pacific.

Big Idea Ventures, alongside supporting startups focused on the future of food, hosts a yearly Big Foodivate Challenge, a national pitch competition designed to encourage Singaporean students and alumni to innovate solutions to food security and food sufficiency issues in Singapore.
Big Idea Ventures is a global fund and accelerator working to solve the world’s biggest challenges by supporting the world’s best entrepreneurs, scientists and engineers. Based in New York, Paris and Singapore, Big Idea Ventures has already invested in more than 50 companies poised to lead the alternative protein category - companies developing plant-based, cell-based and fermentation-enabled innovations that are revolutionizing the food and protein landscape. Big Idea Ventures’ first fund saw support from global corporate leaders in the food industry, including Japanese confectionary brand Meiji Holdings, the Bühler Group, Givaudan, AAK, Temasek, Tyson Foods and Bel groupe. Additional investors include family offices and individuals who are committed to a sustainable food future for our planet and our oceans.

**INVESTING IN THE FUTURE OF FOOD**

Big Idea Ventures’ investment thesis is focused on the future of food: plant-based, cell-based and fermentation-enabled foods that deliver the same traditional flavors and experiences we love, but in a far more sustainable way. “Our goal is to bring consumers the foods and meals that they grew up with but in far more sustainable ways. Entrepreneurs in the food industry are only constrained by their creativity and imagination. Every day, Big Idea Ventures sees products with global implications for our food system and the planet, and we are committed to ensuring they are brought to the world. Big Idea Ventures, along with our portfolio companies and partners, is dedicated to providing the best, most sustainable food around the world for decades to come”, said Andrew D. Ive, Founder and General Managing Partner, Big Idea Ventures.

“Every day at Big Idea Ventures, we see products that have positive global implications for our food system and our planet, and we are committed to ensuring they are brought to the world.”

*Andrew D. Ive, Founder and General Managing Partner, Big Idea Ventures*

Dr. Matthew Zhao, Food Scientist at Big Idea Ventures, said that each startup backed by Big Idea Ventures is extremely innovative, and actively developing technology for a sustainable future. “Every company in our portfolio has its own strengths, and a technology or an idea in development which differentiates it from the rest of the industry.”
Dr. Dalal AlGhawas, Program Director Singapore, explains what the fund is looking for in an investment:

“Number one is the entrepreneur. Do they have the vision, passion and tenacity to take their big idea and make it a reality? We look for companies making a global impact. It’s true they can be unicorns, but they need to be able to deliver their vision around the world.

Number two is the macro aspects. What are they tackling? Is there a large total addressable market, and what is the geography that they are looking to expand into? Is this company scalable?

Number three is the product that they’ve created. Is there any defensible moat, or is there something that could be patentable? And the last one, and I think this is really key, is: how can we help? Because we don’t just provide capital. If startups are going to partner with us, how can we accelerate their business? Once we make an investment, can they hit all growth goals across the board during the Accelerator to give them a strong foundation for growth on their journey for global success?”

Big Idea Ventures invests in its accelerator companies with ticket sizes of US$200,000, as well as a potential further allocation of funds for the strongest performers in each cohort. They welcomed their latest group of seventeen startups in July 2021, with global teams developing everything from peanut-based alternative chicken protein to tempeh fermentation technology and cell-based meat services that include bioreactors and software.

With headquarters in Singapore, now widely acknowledged as the food tech capital of the world, Big Idea Ventures’ startups have a unique advantage. Christian Cadeo, Managing Partner, Asia says: “We have a lot of support from the government in Singapore, as well as support from many local Limited Partners (LPs). We are partnered with Bühler and Givaudan, so our portfolio companies can access their new Innovation Centre here and benefit from their manufacturing expertise to test and scale their products globally. Working with our LPs has been instrumental in pushing our portfolio companies ahead. Our LPs have the understanding, relationships and experience to support these true food innovators to scale and take their products and technologies around the world.”
“We don’t just provide capital. We’re continually building a global ecosystem of mentors, corporate partners, government supporters and a dedicated team focused on supporting our portfolio companies during the five-month accelerator program and for the years ahead.”

Andrew D. Ive, Founder and General Managing Partner, Big Idea Ventures

ALTERNATIVE PROTEIN IS THE ANSWER TO FOOD SECURITY, ESPECIALLY IN APAC

BIV’s founders believe the alternative protein industry is the future of protein, and it will be driven by great entrepreneurs, investors and consumers. Ive views the alternative protein sector as the answer to food security, especially in Asia Pacific, where meat consumption is on the rise in some of the most populous countries in the world.

“Asia is one of the most populous continents with increasing demands on the food system and the environment. As people get more disposable income, they want better food, and often to eat more meat. Now, here’s the great thing: we don’t think any consumers eat meat because they expect it to come from a dead animal. They eat it because they’ve grown up loving the taste and the food experience. Increasingly, innovators in the alternative protein category are able to give consumers the taste and food experience they love in a more sustainable way. Consumers are increasingly trying meat with plant-based protein because the cost is going down dramatically and the taste and experience is increasingly hitting their expectations. Billions of people will eventually bypass traditional animal protein, and go straight to clean alternatives because they deliver the same taste, nutrition and satisfying experience without environmental damage or animal suffering.”

[Images of plant-based meatballs]
Christian Cadeo, Managing Partner, Asia, talks about the opportunities in Asia and its rich source of quality deal flow: “Entrepreneurs here are smart, creative and find ways to bring real innovation and improvements which are revolutionizing the food landscape. Asia is also an incredible market for launch, which means entrepreneurs and food companies have significant opportunities to scale a product and build strong companies which can go on to have a global footprint. Your ASP, average selling price, is going to be lower because the GDP is lower, but we’re seeing a vast government movement, especially in Singapore, to accept and actually celebrate and support this industry, its innovators and leading food corporations. Singapore is putting their best people to drive forward a comprehensive and forward-thinking plan with Big Idea Ventures and our partners, building the entire food ecosystem. They are bringing global leaders, entrepreneurs and investors to Singapore in a way that we haven’t seen yet in other countries or continents. For example, one of the world’s largest sovereign wealth funds, Temasek, made an anchor investment in our fund, and is putting significant focus and capital behind alternative protein. The Singaporean government is committed to improving its food security with a plan to deliver 30% of its needs domestically by 2030. Having a strategic and thoughtful plan combined with investment is a great way to not only differentiate your country from other markets but, more importantly, develop a strong and vibrant domestic food ecosystem to bring greater food security to your country and ensure your people have a reliable source of protein for generations to come.”

**GOING ABOVE AND BEYOND FOR ITS STARTUPS**

Big Idea Ventures is one of the few funds in the world providing its portfolio companies with access to in-house food scientists and business mentors who work with entrepreneurs on everything from formulation to regulatory work. Dr. Zhao said, “We work with our companies to ensure they create and deliver great tasting products which achieve what consumers and their families are looking for.”

The firm offers a wide range of subject-matter experts along the whole value chain, from early lab development and scale-up to distribution, growth-phase support and new SKU ideation. Cadeo says that BIV has a “unique tenacity to invest in good times and bad times,
Some of the most promising Asian food tech companies that the New Protein Fund has backed include China’s Haofood, delivering whole cut plant-based chicken, Australian carbon-neutral vegan “veef” maker Fenn Foods, Singapore-based jackfruit whole food meat alternative Karana, and cell-based seafood pioneer Shiok Meats. The New Protein Fund has invested in more than 50 global alternative protein companies to date and intends to seek out, invest and support many more.

AN ARMY OF MISSION Driven WINNERS

Some of the most promising Asian food tech companies that the New Protein Fund has backed include China’s Haofood, delivering whole cut plant-based chicken, Australian carbon-neutral vegan “veef” maker Fenn Foods, Singapore-based jackfruit whole food meat alternative Karana, and cell-based seafood pioneer Shiok Meats. The New Protein Fund has invested in more than 50 global alternative protein companies to date and intends to seek out, invest and support many more.

EYEING THE FUTURE

Ive and Cadeo are bullish on the cell-based and fermentation space, and Zhao and AlGhawas say they would love to see more whole cut plant-based meat alternatives, as well as companies innovating with flavours and new techniques to create even more products which will be indistinguishable from their animal-based counterparts in taste and the total delicious food experience.
Singapore-based Temasek is a major supporter of the food tech industry, particularly focused on climate change, with notable early investments in Eat Just and Impossible Foods among others. The Temasek Foundation is its philanthropic arm, a non-profit organisation that supports startups in many ways, including via its Liveability Challenge, designed to connect investors and entrepreneurs who have developed solutions to the biggest sustainability challenges facing cities in Asia in the coming years, from urban food pollution to decarbonisation strategies. Among others, it has recently supported Float Foods in its development of plant-based whole egg alternative OnlyEg, and TurtleTree Labs, the world’s first cell-based milk company that utilises biotechnology to manufacture dairy milk with the exact composition, functionality and taste without any cows needed at a 98% carbon footprint reduction.

According to Eddy Ho, Director, Enterprise Development Group, and Jia Xin Seah, Senior Associate, Temasek invests across the life cycle of companies from early stage to mature, established ones. “For each investment we make, we conduct bottom-up intrinsic value tests, with expected returns evaluated against a risk-adjusted cost of capital. We have four core investment themes in AgriFood where technology and companies can play a pivotal role in reimagining our food system: 1) Sustainable Proteins - discovering alternative ingredients and technologies to build food supply and production capabilities; 2) Supply Chain Resilience - expanding and improving the entire product chain; 3) Affordable Nutrition - providing functional and health benefits across food and feed; 4) Urban Food Systems - advancing technology in crop production, innovative solutions to food waste, and creating new knowledge on vertical urban farming.”
Temasek actively seeks out companies addressing the global food challenge and ready to innovate across the whole food chain. It provides capital that enables innovative companies to develop sustainable solutions for the betterment of our future generations.

When evaluating early stage companies, Temasek looks for several key elements: “A unique value proposition that creates potential for company to be category-leader in its segment; founders and management team with credible track records, in whom we have trust and confidence to lead the company and execute business plans; strong growth potential supported by a well-developed business model, channel and market penetration strategies; attractive financial risk-reward profile.”

LOCAL AND GLOBAL MEDIA: BUILDING AWARENESS

Social media connects like minded people, allowing them to share ideas and experiences. Alternative protein brands worldwide should not underestimate the influence of social media, events and online communities when it comes to changing consumer behaviours and raising awareness about environmental and animal welfare concerns. Consumers are looking for genuine content to help drive their decision making and, across the globe, a whole host of startups and platforms have debuted to cater to the rising number of plant-based digital citizens.

In fact, local influencers and channels are even more important in today’s society, as consumers look for relevant (to them) content that they can trust. Last year, Australia-based journalist and founder of Vegan Business Media Katrina Fox debuted a membership platform dubbed The Vegan Women’s Leadership Network with a mission to build an ethical leadership community for plant-based women around the world. Its mission is similar to that of Vegan Women Summit (VWS), a media and events company that works towards empowering women around the world to build a sustainable animal-free world. Jakarta Vegan Guide is Indonesia’s leading digital media company focused on a plant-based lifestyle, and Thailand’s Root The Future is a non-profit organisation covering plant-based and sustainability news. Leading alt protein consultancy and fund Lever Chinabillion, which started in Singapore but whose reach is now global, is a popular, trusted, social platform for user-generated content, featuring vegan food and product reviews, recommendations and updates. Plus, the young startup has a long term goal of supporting the entire alternative protein industry with its unique data and insights.
On the surface, abillion may look like a customer review app and social network. The young company, which was founded in 2018 in Singapore by ex-banker Vikas Garg, is one of the most well-funded startups in the Asia impact scene, having raised US$7 million since its inception. A popular social platform for vegan food reviews and recommendations, the company says it is on a mission to help drive the plant-based movement for a sustainable planet and convert a billion people to a more planet-conscious lifestyle. But the company’s plan is a data play, one that will support the entire alt protein industry as it continues to flourish across APAC and beyond.

65%

of abillion’s 300,000 members identify as flexitarians
As of August 2021, the platform has garnered over 900,000 consumer reviews for vegan dishes and products, spanning 100,000 brands and restaurants. A key finding: 65% of its more than 300,000 members across 140 markets self-identify as either omnivores, or flexitarians, an interesting figure in terms of consumer behaviours. For every consumer review written, abillion donates US$1 to one of its 65 nonprofit partners. To date, it has donated over $800,000 to these worthwhile causes, and its goal for this year is to donate $1 million. The main focus of these donations is animal welfare, particularly important within meat production, and raising animals humanely is actually less resource-intensive than factory farming.

**STEP ONE: CREATE THE COMMUNITY**

Garg says abillion’s journey so far has been focused on community building: “The first step has been bringing together a community of people that start creating content that helps people choose better and drives businesses to become more sustainable. The abillion app has been downloaded nearly a million times by people around the world, and we’ve delivered millions of consumer insights to nearly 100,000 restaurants and consumer products companies in 149 countries. At the center of our community are people that want to support businesses that are doing right by the planet. We’re going to build a marketplace that supports the next generation of entrepreneurs changing the world.”

**ALT PROTEIN IS NOT JUST FOR VEGANS**

According to abillion’s data, 62% of its members in Asia identify as either flexitarian or omnivore - where the ratio between flexitarians and omnivores is 40:60. This pattern holds true across all Asian markets, except for India, where the balance between flexitarian/omnivore and vegans/vegetarians is closer to 50:50.
APAC ALTERNATIVE PROTEIN REPORT 2021

Singapore is the platform’s largest market in Asia, where it has over 10,000 members, and 63% of them identify as either flexitarian or omnivore. Within Singapore, flexitarians are definitely the fastest-growing segment; in fact, new members who joined in 2020 are five times more likely to identify as flexitarian compared to members who joined the year before.

"Our promise to the world is that we will always be a force for social good."

Vikas Garg, founder, abillion

On APAC market growth, Emily Dothe, Data Scientist at abillion, says: “Asian markets, while having expanded by a factor greater than two since last year, are still lagging compared to other parts of the world. However, we expect to see rapid expansion in Asia over the next few years, as businesses double down on their investment in the plant-based lifestyle and new innovations from local talent start to establish a foothold in the region.”

PLANT-BASED MEAT IS DOMINATING THE ALT PROTEIN SPACE

abillion saw consumer demand for plant-based meats grow by more than 13 times since the start of last year, though demand for seafood alternatives grew more than 16 times in the same timeframe but starting from a smaller base. Dothe adds: “The majority of observed alternative meat demand is for plant-based beef, led by brands like Beyond and Impossible. But we have also seen very significant growth in interest for plant-based chicken and pork, which we think will be highly relevant to the East Asian market.”

Dothe thinks that development in both the type of meat as well as the form of the meat will play an increasingly relevant role in the future, too: “A lot of current options come in the form of either patties or sausages, which are really more catered towards Western tastes. But in Singapore, for example, we have seen really high growth in demand for plant-based minced meat and strip options, which are more common in Asian cuisine.”

Example of data reports by abillion.
The data shows that regional preferences will continue to drive consumer growth and a shift to a plant-based lifestyle. Dothe continues: “An interesting finding from our data deep dive into plant-based ice creams was that those with local flavours tend to do better among consumers than ice creams with generic flavours. Once we segmented different products into the regions that they’re offered in, we saw a lot of local flavours come up, which suggests that businesses should be striving to accommodate regional tastes when they’re developing their products.”

**SOCIAL MEDIA WITH AN IMPACT MISSION**

abillion shares its data publicly, as Garg notes: “Our promise to the world is that we will always be a force for social good. Social media networks connected people but went no further in their responsibility. We think it’s time for that to change, and we must not only use data responsibly, but that we must also use it for the betterment of the planet. We launched data.abillion.com to publicly share insights and help entrepreneurs, companies, investors and policymakers see the opportunities shaping up across the world and give them the confidence to support the movement.”
APAC’S FEMALE LEADERSHIP

*Cell-Based Pork in BiBim-Bap by SPACE F
The two biggest plant-based protein startups in the world are run by men. The majority of the rising cell-based protein startups are also run by men, alongside most of the vegan investment groups that fund them. The leader of the organisation which represents the interests of both, The Good Food Institute, is also a man, though admittedly he has a lot of women on his Board of Directors.

The Vegan Women Summit published a shocking statistic in March 2021: globally, less than 3% of all investment dollars go to women founders. Research from a VWS survey of female founders published in 2020 showed that 48% of female founders face bias in fundraising, while 30% have experienced harassment or discrimination. Beyond the food tech world, the numbers aren’t any better. For example, only 37 of the Fortune 500 list of companies are run by women. However, the leaders at the helm of GFI APAC and GFIC are both women, and the teams across all of GFI’s organisations are comprised of over 70% women. This is reflective of the state of the alternative protein ecosystem in Asia Pacific, where women are better represented than in other industries and regions (though still not enough!)

The Good Food Institute APAC noted in a blog post on International Women’s Day 2021 that, while female business leaders are ascendant across Asia, “China has produced an especially strong ecosystem for women, because, according to Chichi Hong, founder of plant-based meat company Hey Maet, there is greater gender equality in China than many places around the globe. Hong is part of a proud national tradition of female entrepreneurship that is deeply ingrained in the country’s culture.”
In the same blog post, Bianca Lê, PhD, director of Cellular Agriculture Australia, says that the important work of lifting up other women continues, despite all the progress that has been made, particularly in Australia and parts of the APAC region that lag behind. “You can’t be what you can’t see. If we want the most intelligent, creative, and compassionate minds working together to lead the future of food, we must ensure that the alternative protein space is as inclusive as possible. This includes having more women in decision-making roles and boosting the visibility of existing women in the space.”

For Carrie Chan, co-founder and CEO of Avant Meats, her experience so far has been positive: “I think in this community, investors are definitely more mission-driven and more open-minded. So I do not see the behaviour in the more traditional kind of VCs, in other industries. We are treated well by our investors and we get the support and we don’t feel that we are being questioned because of the gender of the founding team. So probably it is also attributable to the fact that the people who actually invest in this space are more focused on gender diversity, sustainability, and doing better for the future.”

This report has been written, edited, designed and coordinated by a small but mighty team of women: Nicola Spalding, Sonalie Figueiras, Ana Perez and Alessandra Franco.
THE FEARLESS FEMALE LEADERS OF APAC ALT PROTEIN

Jenny Ng
Executive Director, Green Monday and OmniFoods

Jean Madden
CMO, Next Gen & TiNDLE

Dr. Sandhya Sriram
Co-founder, Shiok Meats

Dr. Ka Yi Ling
Co-founder, Shiok Meats

Fengru Lin
Co-founder and CEO, TurtleTree Labs

Shama Sukul Lee
Founder & CEO, Sunfed Meats

Samantha Wong
Partner, Blackbird Ventures

Vinita Choolani
Founder and CEO, Float Foods
THE FEARLESS FEMALE LEADERS OF APAC ALT PROTEIN

Kai Yi Carrie Chan, Founder, Avant Meats

Shradhha Bhansali
Co-founder, Evo Foods

Genelia Deshmukh
Co-founder, Imagine Meats

Astrid Prajogo
Founder and CEO, HaoFood

Helga Angelina Tjahjadi
Co-founder Burgreens and Green Rebel

Chichi Hong
Founder and CEO, Hey Maet

Bree Gaudette
Founder, Hello Friend Foods

Britteny Bryan
Co-founder & CFO, Berkano Foods
THE FEARLESS FEMALE LEADERS OF APAC ALT PROTEIN

Irina Gerry
CMO, Change Foods

Natalie Lung
Program Manager, Brinc

Dr Dalal AlGhawas
Program Director, BIV

Coco Tse
VP Strategy & Operations, Hero Protein

Mirte Gosker
Managing Director APAC, Good Food Institute (GFI)

Doris Lee
General Manager, GFI Consultancy (GFIC)

Shirley Lu
Managing Director, ProVeg International (Asia)

Bianca Lê PhD
Director, Cellular Agriculture Australia
10 REGULATION & LABELLING

*KARANA Dumplings by Chef Jose Luis Del Amo from Classic Fine Foods
Regulation plays an enormously important role in food safety. A clearly-defined framework for food safety ensures that food is safe for consumption, and rigorous food regulations invoke trust, making brands which adhere to them infinitely more appealing than those who struggle to meet them. Globally, alternative protein product labelling has caused a whole host of controversy, and in Asia-Pacific it’s no different. Many of the organisations tackling regulatory frameworks and approvals are also busy defining labelling rules and fighting backlash from conventional animal industries.

For consumers, health and food security concerns are among the top drivers of the plant-based protein shift in key Asian economies, according to a report compiled by Singapore nonprofit Food Industry Asia and consultancy firm AlphaBeta, released in July 2021. The report finds that if policymakers begin to factor in food security, supply chain resilience, and sustainability, a far greater shift towards plant-based proteins will occur in the Asia-5 markets. Policies would include mandating local protein sourcing and developing a regulatory framework for new sustainable sources. It would also involve campaigns to drive public awareness over the health, safety, and food security advantages of non-animal-based protein. Researchers called this a “food security” scenario.

The most notable regulatory approval in the alternative protein space in the last 18 months has been when San Francisco-based Eat Just made history in December 2020 as its GOOD Meat cultivated chicken became the world’s first cellular agriculture-produced meat to be sold commercially thanks to the Singapore government’s Food Agency SFA’s go-ahead. The startup is the first commercial entity to get regulatory approval for cultivated meat, a process which Andrew Noyes, Head of Communications at Eat Just, describes as “the gold standard”.

Throughout Asia-Pacific, different focus groups and organisations are coming together to devise regulatory frameworks for alternative proteins, and provide clear guidance to brands and producers to follow. The World Sustainability Organisation and the Sustainable Seafood Initiative under the Good Food Institute teamed up in 2020 to establish a joint certification program for plant-based seafood. It is recognised under a new “Golden Standard” as part of the Friend of the Sea certification by the WSO, helping plant-based seafood brands better communicate to consumers the sustainability of their products.
To gain accreditation under the new Golden Standard, plant-based seafood companies must demonstrate well-organised environmental management, ecosystem conservation efforts, reduction in the use of synthetic substances, water conservation, minimising land operations, the use of renewable energy, measures to lower carbon emissions and social responsibility. These standards can also be applied to certify plant-based meat products, with companies that successfully pass these assessments being awarded a Friend of the Earth certification Golden Standard for sustainable Plant-Based Meat.

In China, an industry group established a voluntary standard for plant-based meat products, which came into effect in June 2021, marking a first for the country and a significant step forward in the mainstreaming and growth of the industry in the country, signalling the government’s increasing attention to alternative sources of protein to bolster its food resilience and security in the wake of the pandemic. Issued by the government-affiliated Chinese Institute of Food Science and Technology, the standard outlines definitions and guidelines regarding labelling, packaging and storage of plant-based meats. According to the industry standard laid out by the CIFST, plant-based meat products encompass those that are made from plant-based raw materials, such as beans, cereals, algae and fungi, which have been processed to mimic the flavour, appearance and texture of real animal meat, poultry or seafood. These products should not contain any animal-derived ingredients, including dairy and eggs, and are “encouraged” to have a high-protein, low-fat and low-sodium content. While food additives can be used by plant-based meat producers, the guidelines say that non-plant ingredients should not make up more than 10% of the total mass of the item.

With regards to labelling, the standard dictates that the product’s plant-based attributes should be “clearly reflected” using either descriptive words or indications that the product is meant to simulate its animal-based counterpart. For instance, a plant-based alternative for beef can be labelled as “plant-based beef” or use more specific descriptors for the format, such as “plant-based beef steak” or “plant-based beef hamburger”. In addition to terms like “plant-based”, “plant-derived”, “plant-made” or simply “plant”, the standard notes that “vegetable” can also be used as an auxiliary descriptive term.

The move to establish the first voluntary industry standard for plant-based meat alternatives marks a significant step forward in the mainstreaming and growth of the industry in China, and signals the government’s increasing attention to alternative sources of protein to bolster its food resilience and security in the wake of the pandemic.
In Japan, IntegriCulture Inc., a cellular agriculture company, announced the launch of its new “Uni-CulNet” framework, a standardised cell-based agriculture infrastructure system, in May 2020. The two-pronged framework involves a cultivated food tech enterprise solutions pipeline on the one hand, and a consortium scheme on the other, which promotes the joint development of industry-wide technical standards for cell-based technology.
In Singapore, three agencies, Nanyang Technological University (NTU), Singapore Food Agency (SFA) and the Agency for Science, Technology and Research (A*STAR), set up a new Singapore body in April 2021: the Future Ready Food Safety Hub (FRESH). It is designed to accelerate food safety research, support food science capabilities and enable regulatory responsiveness to speed up the commercialisation of novel foods in the Asia region.

In Australia, the Alternative Proteins Council launched in March 2021, in an effort to prioritise the sector in national policy discussions as well as act as a unified voice working on major issues surrounding the alternative proteins market. Founding members include alternative protein think tank Food Frontier alongside homegrown plant-based meat companies including Proform Foods, v2food, Rogue Foods and Sanitarium as well as larger players such as Nestlé Australia and Impossible Foods. Food Frontier’s Director of Policy and Government Relations Sam Lawrence said establishing the APC is a crucial step in the sector’s evolution: “The plant-based meat sector has taken a collaborative and evidence-based approach to best serve the interests of consumers around issues including product labelling. The APC formalises our collaboration to support the 29 companies comprising Australia’s alternative proteins sector to engage at a national level on policy issues, enabling the sector’s shared vision and continuing to serve Australians who enjoy alternative protein products.” Lawrence highlighted the need for a collective voice to address several matters, for instance, the Minister for Agriculture, Water and the Environment David Littleproud initiated the review of plant-based product labelling, and set up a working group to develop clearer signage on products. Littleproud said that he wanted all agricultural industries to have tremendous growth, but “for this to happen we need a fair playing field on food labelling. I am sympathetic to concerns from producers of genuine meat and dairy products who are forced to contend with highly creative, and sometimes misleading advertising and labelling of plant-based foods and drinks.” Food Frontier is voluntarily making labelling guidelines aligned with the Australian Consumer Law, offering consumers and producers a transparent and guiding document for reference.

In fact, in Australia, the alternative proteins industry has faced backlash from Queensland senator Susan McDonald, a former butcher and leader behind the advocacy group Parliamentary Friends of Red Meat, who launched a new inquiry into the use of meat terms on the packaging of plant-based meat products earlier this year, arguing that “makers of non-meat products” should “come up with their own distinct terms instead of trading off long-established names of animal proteins.” The APC issued a statement saying: “The APC is yet to see any evidence which justifies the broad concerns regarding plant-based product labelling and looks forward to presenting the Inquiry with evidence to the contrary.”
“Plant-based product branding continues to meet labelling requirements, demonstrating that existing frameworks are serving consumers as intended. To restrict the use of commonly understood format terms on plant-based products would instead generate confusion amongst consumers.”

In August 2021, a report funded and published by a coalition of Australian meat, poultry, and seafood industry bodies concluded that Australians are being misled by vegan brands into believing that they are purchasing real animal meat. According to the consumer survey, conducted by Pollinate, 73% of Australian consumers think that clearer labelling standards ought to be introduced for plant-based proteins. The study said that 6 in 10 consumers were effectively “duped” by the packaging on plant-based meat substitutes, and that “vulnerable” Australians were now being misled by vegan brands into purchasing products they believed were real meat.

However, separate research from data-driven think tank Food Frontier, also published in August 2021, cast doubt over the conclusions made in the coalition’s consumer survey. Analysing more than 250 plant-based meat product labels, Food Frontier experts found that 100% of all such products were branded with at least one front-of-pack term such as “plant-based” or “meat-free” to indicate clearly to consumers that it contained no animal ingredients. 85% of the 252 products examined contained two or more terms to tell consumers it was meatless, and more than half contained three or more terms on its packaging.
90% of products did not include any depictions or imagery of animals on the label, providing further evidence that vegan meat products do not intentionally present themselves as real meat products. Commenting on the findings, Food Frontier CEO Thomas King said: “There’s a lot of misinformation being circulated about labelling of plant-based products, so it’s good to have some comprehensive data to support the facts.”

Plus, The Australian Competition and Consumer Commission rejected an application proposing the use of labelling animal-based products as ‘Certified Humane’ in July 2021, proving that labelling issues are rife on both sides of the coin. Several animal rights organisations urged the ACCC to take this decision claiming that slaughtering animals is never ‘humane’. PETA Australia highlighted that calling products that slaughter animals ‘humane’ is misleading to consumers.

Plant-based milk brands in India were dealt a blow in May 2021, after the Advertising Standards Council of India struck down three petitions filed against the Indian dairy giant Amul. The complaints regarded an advertisement launched by Amul that claimed plant-based beverages “are not milk”. Campaigners launched the petition against Gujarat Co-operative Milk Marketing Federation, the company that sells products under the Amul group, arguing that the claims made in the advertisement were false. They highlighted the health and nutrition advantages of plant-based milk, as well as the cruelty and unsustainability behind traditional dairy farming.
WHERE WE GO FROM HERE: PREDICTIONS

*Peanut Plant-Based Chicken by HaoFood, a Brinc cohort company
WHERE WE GO FROM HERE: PREDICTIONS

APAC’s acceleration is glorious, inspiring, and undeniable. But it must not stop here. We foresee many and varied opportunities for further growth, for homegrown companies especially, to not just survive, but thrive.

APAC could potentially overtake the rest of the world if its regulatory regimes continue to outpace those of other markets for alternative proteins. We hope that the next 12-18 months hold the commercialisation of the first Asia-Pacific brand of cell-cultured protein. This will almost certainly be accelerated by the creation of a solid cellular agriculture supply chain. More collaboration between companies will bring about change, faster, and allow them to commercialise more affordably and effectively.

FUNDING & INVESTMENT

Plant-based funding may plateau as the space becomes saturated. There have been countless seed and Series A rounds, but later Series are rarer. Early-stage startups are popping up in every market, but they need support to ensure success. In any case, Michal Klar, Founder and CEO at Future Food Now Ventures, considers that more funding is needed: “It’s the largest protein market and the fastest growing, but still underinvested.” Differentiation with unique technology and marketing will be the biggest factors for companies to stand out and secure investment. Online brand presence, especially in countries with massive populations, will be important to grow one’s business, and appealing to powerful segments such as Generation Z should also be a key consideration.
Eugene Wang, co-founder and CEO at Sophie’s Bionutrients, agrees that on-the-ground investment is a challenge: “The investment community, in my personal opinion, is still only 60% or 70% ready, whereas the rest of the sector, including the entrepreneurs, the government, and the talent, are 90% ready. So the gap is really the thing that Singapore should be worrying about. I think a lot of Singaporean VCs are mostly previously investing in pharmaceuticals or IoT or others, so food tech is a new territory for them. Because it’s new, they are being very, very cautious. And so a lot of time you talk to them, they will say they’re only interested in growth-stage, they’re not too interested in early-stage. So that gives us an idea that they are hedging their risk a little bit, meaning that they see this sector still risky, so that could be a problem. Because if you’re not fostering an environment to get early-stage entrepreneurs to be supported by these investors, that adds up to a crash in the system down the road. And more importantly, I haven’t seen enough foreign investment communities setting up their branches here in Singapore yet, because a lot of the time, venture capitalists, or even private equity, still prefer to operate in their own home countries.”

Ryan Bethencourt, CEO of Wild Earth and early backer of notable APAC alt protein companies such as Shiok Meats and Evo Foods, thinks that Asia-Pacific needs more Future of Food entrepreneurs and more pre-seed stage angels and venture capital funds: “Singapore is getting there. China, India and Australia are emerging but need further support as emerging ecosystems.” He sees a potential opportunity in Pan Asian Funds to support Asian companies from Seed to Series B onwards, and thinks Asia will be the most important region for alternative proteins over the next decade.
Hopefully, Shiok Meats’ recent 90% acquisition of Gaia Foods, and the big raises from Green Monday, v2food, Next Gen and Shiok Meats will help new-to-the sector investors feel more comfortable backing startups in the space. We believe that some of the companies listed in this report have the funding, infrastructure and traction in place to give them a shot at unicorn status within the next couple of years. Companies such as Green Monday/OmniFoods, v2food, Shiok Meats and Next Gen are poised for huge growth and global scale with IPO potential.

As more start-ups take root in Singapore and around Asia, partnerships with co-manufacturers and distributors could help them to scale up and reduce costs. “Startups are wary of investing in costly, fixed manufacturing assets at an early stage in their growth,” say Eddy Ho, Director, Enterprise Development Group, and Jia Xin Seah, Senior Associate, both at Temasek. Brinc’s new scale-up tech accelerator program, which targets growth-stage startups, plus companies that understand Asia, such as Temasek, can help build networks and provide advice to startups on how they can navigate their expansion and operations in Asia in order to reach their full potential.

“IT'S THE LARGEST PROTEIN MARKET AND THE FASTEST GROWING, BUT STILL UNDERINVESTED.”

Michal Klar, Founder and CEO, Future Food Ventures

PLUGGING THE GAPS IN THE ECOSYSTEM

There are currently gaps in the ecosystem such as availability of pilot-scale and commercial-scale equipment that caters for growing alternative protein companies. There are some options, such as Bühler and Givaudan’s Innovation Center, but there need to be more to allow for continuing acceleration. If there is not a notable increase in investment and support in the alternative protein industry, Asia-Pacific could be at risk of losing some of its most innovative technology. Originating in Australia, Change Foods has now moved to the U.S., and Sophie’s Bionutrients is moving a significant portion of the company’s operations to Europe, as Wang explains: “We’re not giving up on Singapore, we’re still going to keep a portion of our operations here. But then again, when it comes to microalgae, when it comes to alternative protein, we consider that Europeans are really on the leading edge. A lot of corporations that we talked to, a lot of investors that we talked to, even the consumers understand more about our technology, about our value propositions, about why it is so important to promote technology like ours. Even in the States,
a lot of people just can’t get their heads around why we need microalgae to be the protein flour of the future. And the same thing here in Asia, not a lot of people understand what we’re doing. So that’s why we decided to move to Europe, so we can get close to the customers, we can get close to the partners that we’re going to work with. And at the same time, we may even end up increasing our company value as well, because we’re then based out of Europe, we will then have European investors.”

To date, there is still no precision fermentation company in the ex-Pacific Asian region, perhaps because many Asian countries do not have long traditions of consuming dairy products. We believe this will change, particularly in India, where milk and yogurt curd are key parts of the daily diet, and expect to see a new wave of startups harnessing this age-old technology to create alternative proteins.

The vast majority of APAC alt protein startups are full-stack companies with end products on the shelf or in development; they are developing brands. As the industry matures, we would expect to see more ‘support’ companies rise up to serve the industry e.g. cellular agriculture scaffold technology, or plant-based co-manufacturing service providers.

**THE NEXT WAVE**

We consider that the next wave of alternative proteins will differentiate via clean labels, health focus, or more complex product types such as whole cuts, less popular meats and seafoods, or with hybrid or new technology such as fermentation, filling in those market gaps. Louisa Burwood-Taylor, Head of Media & Research at AgFunder, is excited about “the food as medicine trend - ways to use food to combat chronic disease like diabetes, obesity etc. I think alt protein companies could pave the way and create better-for-you products than those they’re replacing.” Burwood-Taylor also thinks that Agtech could help alt protein by monitoring and improving farming practices for the core ingredients, making them even better in terms of sustainability: “Farm tech tools can help to measure emissions or carbon capture and storage. Let’s make carbon-positive alt protein products!”
Every expert we spoke to flagged the importance of products that are adapted to Asian tastes, cultures and cuisines. We predict that the importance of Western brands will drop off as homegrown brands rise to the occasion, developing innovation suited to local markets that resonates with local consumers. Temasek’s Ho and Seah explain: “Companies looking to expand into Asia will need to understand the Asian palate, which is more fragmented in terms of dietary preferences and requirements, across markets, culture, and trends. Local market understanding, data gathering, and research are needed to localise the taste of plant-based foods and culinary applications. Companies can also conduct primary consumer-insights work, with a focus on identifying changing behaviours and associated changed beliefs and motivators to get a comprehensive picture of the changing consumer decision journey.”
Future Food Ventures’ Klar considers that on a consumer front there are two major issues in most markets in Asia: “1) negative perception of mock meat 1.0 as niche (religious) and not very tasty / very exciting; 2) animal meat is seen as a status symbol for the rising middle class. In order to fix these issues, companies and the industry must promote new products as generation 2.0, distinct from mock meat, attractive and aspirational.” Affordability is also key, as he elaborates: “Plant-based products are still much more expensive, but prices are trending down and will continue to go down.”

Consumer interest and acceptance of alternative proteins have grown significantly through the past 18 months, and Temasek’s Ho and Seah consider that “consumer education will [continue to] be key to reinforcing evidence-based healthy habits and informing consumers about the benefits of reducing waste and consuming sustainable foods such as alternative protein.” Governments and academia can play a vital role in influencing consumption habits and active lifestyles, and “regulatory policies in some markets have yet to catch up with increasing consumer demand for alternative proteins or genetic modification for better quality food. Further engagement with regulators and consumers is important to help them understand the health and safety aspects of alternative protein.”
WINNING WITH FOODSERVICE

One way to win with consumers is via foodservice, something of which TiNDLE is a prime example of success. QSR brands, especially, provide mainstream consumers with affordable access to alternative proteins, and we foresee not just collaborations with Western brands, or even homegrown brands, but more of QSR’s own product development, which will generate more margin in the long term. Emily Dothe, Data Scientist at abillion, says: “We think it’s really important that quick service restaurants make an effort to improve their plant-based offerings. These restaurants have the largest reach, and can offer food at a relatively low price point. And I think we’re approaching a stage in our general cultural macro-environment where there is a certain element of reputational risk if as a business you’re not taking plant-based considerations into account. It’s definitely got to a point where it’s not only the right thing to do, it offers legitimate risk to your bottom line if you’re not offering plant-based options. And I think, as consumer attitudes continue to shift in this direction, businesses will definitely be responding in kind.”

“‘It’s definitely got to a point where [plant-based options are] not only the right thing to do, it offers legitimate risk to your bottom line if you’re not offering plant-based options.”

Emily Dothe, Data Scientist, abillion

Many companies across Asia-Pacific already stand out as game-changers. Pioneering technology, catering to local demand or addressing categories without global leaders; the industry is awash with ambition, focus and determination. Long may it accelerate.
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<td>Japan</td>
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<td>US$340k</td>
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Founded by serial social entrepreneur and eco-activist Sonalie Figueiras in 2011, Green Queen is an award-winning impact media platform advocating for social & environmental change based in Hong Kong with a global outlook and an international audience.

We’re running out of time to address the ecological & health ills of our time and we believe a circular economy, alternative protein and the food tech revolution are the solutions to our current climate crisis and the best way to advocate for global social and environmental change. Our mission is to shift consumer and corporate behaviour through our original, authentic, and groundbreaking content across Asia and beyond.

Green Queen is a multi-channel platform and a trusted global impact media brand. As an award-winning online magazine, we reach millions of readers a year and cover breaking news and product launches, share in-depth research and industry insights, and feature exclusive interviews with entrepreneurs and key ecosystem players. Green Queen is also the world’s leading source for APAC alternative protein industry news and reporting, one of the most important consumer products and investment opportunities of our time.

In 2020, Green Queen Media was awarded the prestigious Best In World Special Awards Prize by the Hallbars Sustainability Reports Awards, a Swedish organisation that recognises the best planet-led reporting in around the world for our outstanding contribution to raising awareness about climate change.

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