

# Beyond Meat

## Plant-based meat substitute

### INTRODUCTION

The single most powerful lever available to both optimise human health and environmental sustainability is food. However, food itself is currently threatening the planet and its people (Willett et al., 2019). In supporting a growing population, humanity is faced with an immense challenge of how to feed people healthy diets from sustainable food systems.

Mounting evidence shows that red meat is by far the single biggest contributor to climate change and environmental degradation within food supply chains (Marlow et al., 2009; Machovina et al., 2015; Clark, M. & Tilman, D., 2017). In addition to contributing to environmental degradation, red meat also threatens our health. It has now been well-established that over consumption of red meat is linked with risks of heart disease, type 2 diabetes (Micha et al., 2012), stroke (Kaluza et al., 2012), cancers (IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2018), and all-cause mortality (Zheng et al., 2019). In 2015, the World Health Organisation announced that consumption of processed meat is “carcinogenic to humans” and that consumption of red meat is “probably carcinogenic to humans” (WHO, 2015). Concern around the environment and health effects of red meat has led to a growing number of people attempting to reduce their red meat intake. This demand has seen rapid growth in the meat substitute category now the third fastest growing category in plant-based foods behind milk and dairy plant-based substitutes (Good Food Institute, 2020).

Beyond Meat (BYND) has developed a plant-based meat substitute that closely resembles the flavour and mouthfeel of animal-based meat and has seen a rapid rise in the popularity of its products in recent years. Analysing BYND gave us several challenges outside of normal company analysis. We needed to understand the science behind the health effects, environmental benefits, and demand drivers of plant-based meat substitutes and also to understand these factors in the context of animal meat. We then needed to discern the longevity of the trend to these substitutes with the rapid rise in competitors entering the space and form an educated view of how BYND would perform in this environment over time. There was also an issue of discerning the materiality of a legal case involving Don Lee Farms and the IP of BYNDs burger. This report focuses on our approach and findings to these challenges.

### Sustainability Thesis

Globally, one in five deaths are associated with poor diet. These deaths are caused by insufficient amounts of whole grains, fruits, nuts, and seeds and are exacerbated by high levels of trans fats, sugary drinks, red meat, and processed meat (Ashkan et al., 2019). In its current state, global food production threatens climate stability and the viability of ecosystems and is the single largest contributor to environmental degradation. Together, the health and environmental effects of the status quo are dire and in urgent need of transformation (Schmidt-Traub et al., 2019). Without action, there is a real risk the world will fail to meet the UN Sustainable Development Goals (SDGs) and our children will inherit a world severely deteriorated where many suffer from preventable disease and malnutrition (Foley, et al., 2011; Poore & Nemecek, 2018; Willett et al., 2019).

### Red Meat Consumption Single Biggest Target

In tackling both the health and environmental issues at play, reducing red meat consumption represents the biggest single target in achieving real progress. A mounting body of research links red meat consumption, in particular, to increased risks of heart disease and type 2 diabetes (Micha et al., 2012), stroke (Kaluza et al., 2012), many cancers, especially colorectal (IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2018), and all-cause mortality (Zheng et al., 2019).

As research intensifies into gut microbiota and the effects of dysbiosis it has been found that the consumption of compounds found in red meat can increase the prevalence of harmful intestinal microbes. For example, L-carnitine, a compound found mostly in red meat, promotes the growth of microbes that produce metabolites found to increase the risk of developing cardiovascular disease and inflammatory bowel disease (Kowth et al, 2019).

In regard to environmental effects, ruminant meat is a standout contributor. Beef is particularly land-intensive, due, in part, to the slow reproductive cycle of cattle and their inefficient feed conversion compared to other meats (Nijdam et al., 2012). With few exceptions, more water, pesticides, and fertilisers are needed to produce the same amount of calories and protein in meat compared to plant foods (Marlow et al., 2009). Livestock production also contributes more to biodiversity loss than any other food source (Machovina et al., 2015). Figure one below examines the environmental impact of various food groups on a per kilocalorie basis as researched by Clark and Tilman (2019).

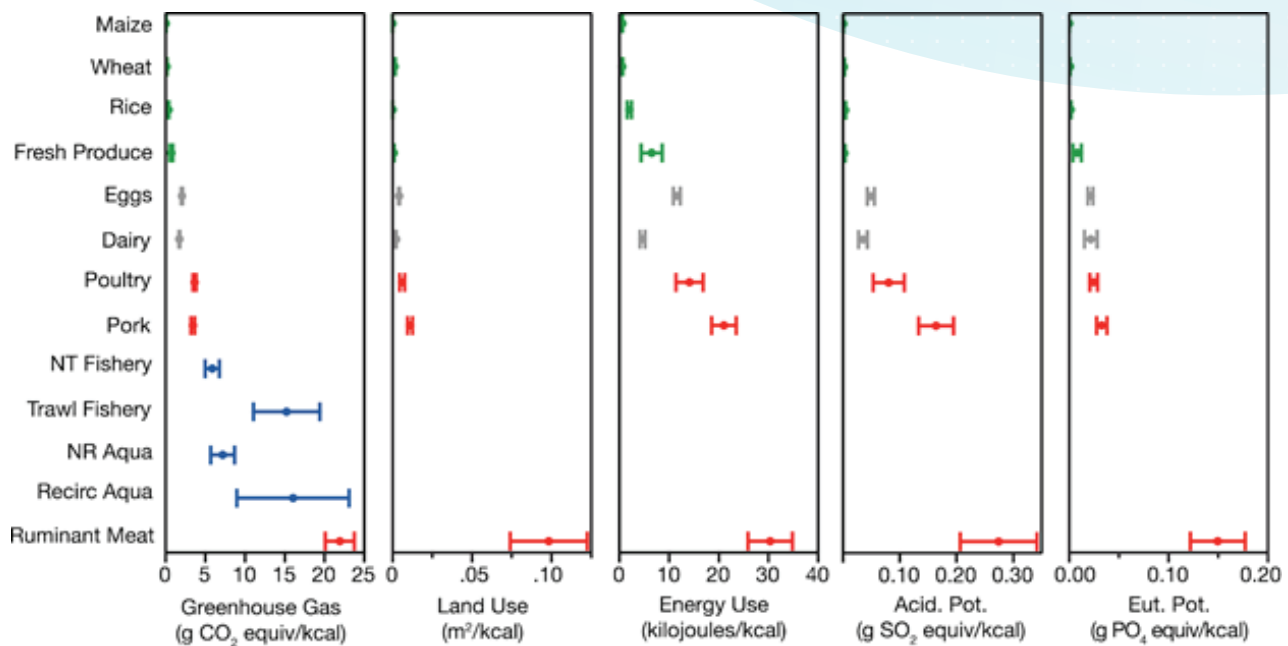


Figure One. Environmental impacts of food groups per kilocalorie (Clark, M. & Tilman, D., 2017). Metrics given are greenhouse gas emissions, land use, energy use, acidification potential (Acid. Pot.) and eutrophication potential (Eut. Pot.). The bars represent means and standard errors. Trawl Fishery = bottom-trawling fisheries; NT Fishery = all other fisheries (e.g. line, purse net, seine net, etc); Recirc Aqua = recirculating aquaculture; NR Aqua = non-recirculating aquaculture (e.g. pond, net pen, flow-through, etc).

As can be seen in figure one, ruminant meat is a standout contributor in every category, far above other meat types and much greater than plant types.

## EMERGENCE OF MEAT SUBSTITUTES

Sales of plant-based meats in the United States grew 40% from 2017 to 2019 and is accelerating with the category rising 57% year over year to June 2020, according to SPINS data. In Europe, the meat alternatives sector has grown 451% in four years between 2013 to 2018 (Transitions to Sustainable Legume Based systems in Europe, 2018) and in Asia the sector is growing rapidly too. In China, meat alternatives grew 35% from 2015 to 2019 and across Asia was up 19% over the same period (Yee, 2020). We expect sales velocities to increase in Asia and advanced meat substitutes are only just now moving into the region.

The number of different brands and products entering the category is rising rapidly to meet accelerating demand. This is to be expected and encouraged for four main reasons:

1. The current global meat market is worth around \$1trillion USD per year (Gerhardt et al, 2018). For a significant portion of the global population to move away from animal-based protein, a number of substitute players will be required to service demand in the market.
2. Tastes preferences amongst people are nuanced and a variety of players in the market can provide a multitude of flavours to meet that diverse demand. The goal for many will be to develop their own flavour varieties. For example, BYND and Impossible Foods (IFDS) have created burgers resembling the taste and mouthfeel of beef with distinctly different flavours and yet there are significant portions of those surveyed that prefer one to the other.
3. More players help to grow the category. As diversity of meat substitutes increases and the sector begins to appeal to a wide range of taste and health profiles, more consumers are drawn to the category. As the category pulls more consumers away from animal-based meats, spending within the category grows benefiting it as a whole.
4. Different products will dominate in different regions. For example, in China there is a particular flavour preference within the pork category distinct to that region. In the US, the largest market is for a product that closely resembles the taste and mouthfeel of beef.

### Demand for Plant-based Meats Driven by Four Main Factors

An internal literature review at Blue Oceans Capital covering numerous journal articles highlighted four main drivers of consumption of plant-based meats. Taste was found to be by far the highest contributing factor followed by health, price, and finally environment and ethics. There are two standout products that most closely match these requirements, BYND and IFDS. Using available research and our own testing we reviewed these two products against the criteria as shown in Figure Two overleaf.

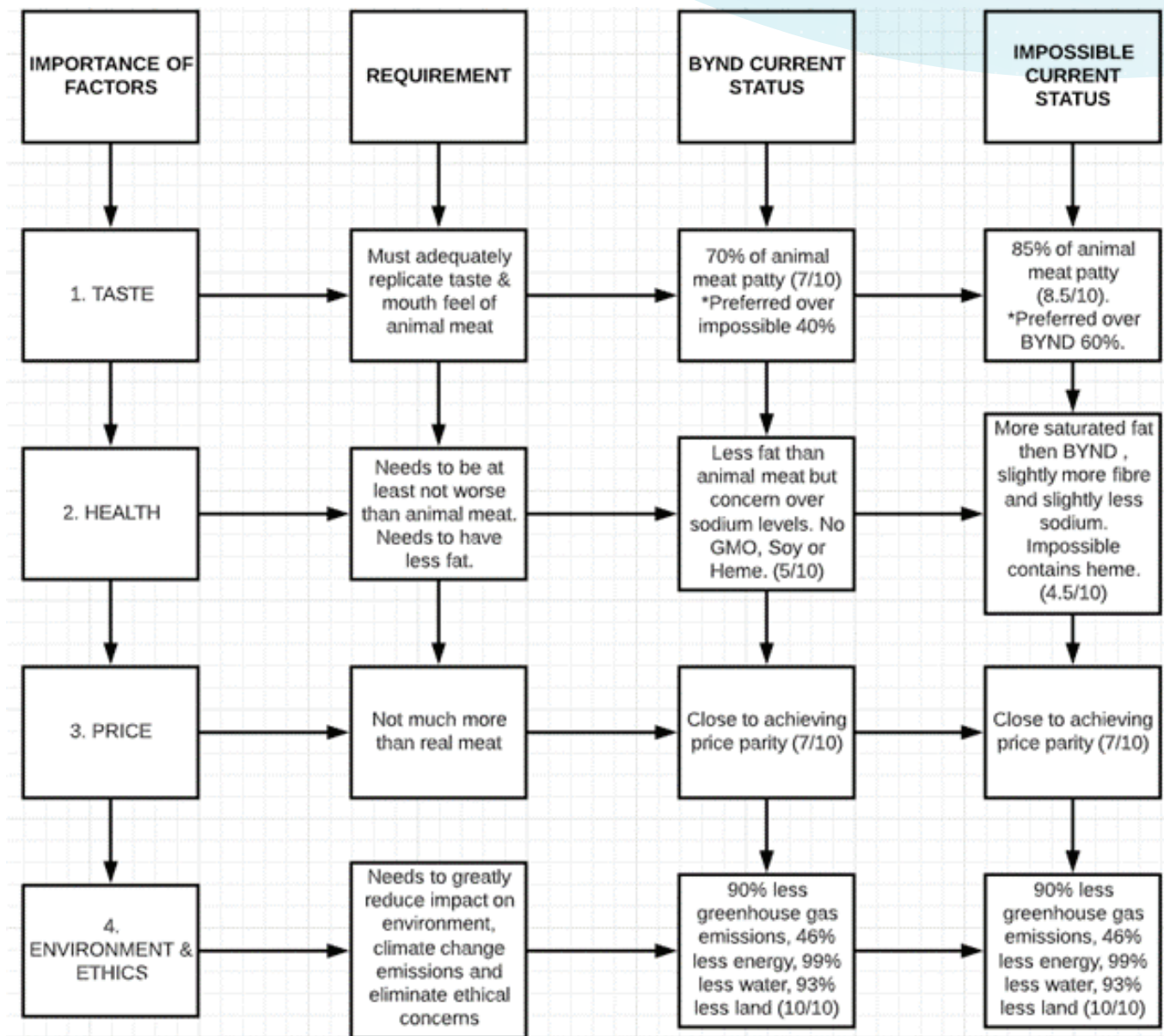


Figure Two. Current status of BYND and IFDS against the requirement of consumers of four main demand drivers. Source: Blue Oceans Capital internal research.

### Taste

Taste needs to closely resemble the flavour and mouthfeel of real meat. This is by far the most important category. IFDS is preferred by 60% of respondents over BYND (40%) where comparison testing is done between the two options. IFDS more closely resembles the meaty taste of real meat, however it has a distinct smokey flavour that some people don't prefer. BYND has a mouthfeel that more closely resembles animal meat but a taste that resembles more plant-like flavours and is less meaty than IFDS.

### Health

In general, plant-based meats have intrinsic benefits over animal meats in that they are free of zoonotic diseases, hormones, and antibiotics. Consumers demand that alternative meats be at least as healthy if not healthier than animal meat. They are particularly concerned around saturated fat and sodium levels. BYND has less saturated fat than IFDS and animal meat. BYND has less sodium and more fibre than IFDS however both have far more sodium than animal meat and this remains

a point of contention amongst nutritionists. The key benefit of BYND over IFDS in regards to health, is that it does not contain any soy, genetically modified (GMO) ingredients and particularly Heme Iron that are found in IFDS. Consumption of Heme Iron has been linked with Colorectal cancer (Seiwert et al., 2020) cardiovascular disease (Minghui et al, 2020 ) and all cause mortality (Etemadi et al., 2017) which greatly lowers the health score of IFDS. Some studies are now being done on the health effects of eating plant-based meats with one being published recently. In August 2020, Crimarco et al. conducted a randomised trial of the effects of eating plant-based and animal-based meat. They studied the effects of trimethylamine-N-oxide (TMAO) and other cardiovascular disease risk factors in healthy adults consuming plant-based meat substitutes as opposed to animal meat. The results found that those fed plant-based meats had improved several cardiovascular disease risk factors including TMAO and that there were no adverse risk factors associated with eating plant-based meats over the trial period.

## Price

The plant-based meat category is price sensitive and the higher price of these products compared to animal-meat is holding back their sales potential (Sha & Xiong, 2020). Both IFDS and BYND are close to achieving price parity with animal meat but are still marginally higher in the US where their manufacturing occurs. All products shipped outside of the US are much more expensive than animal meat in those regions, in some instances twice as much. It is expected that when prices match and become cheaper than animal meat, consumption will greatly increase. Price decreases are expected to come with scale efficiencies in manufacturing and supply chains over the coming years.

## Environment and Ethics

Environment and ethics are of concern to consumers, however, the factors above must be satisfied first. Both IFDS and BYND rank similarly in providing a significant benefit. IFDS uses 96% less land, 87% less water and 89% less greenhouse gas emissions. BYND uses 93% less land, 99% less water and 90% less greenhouse gas emissions (Newburger & Lucas, 2019) as shown in Chart One below.

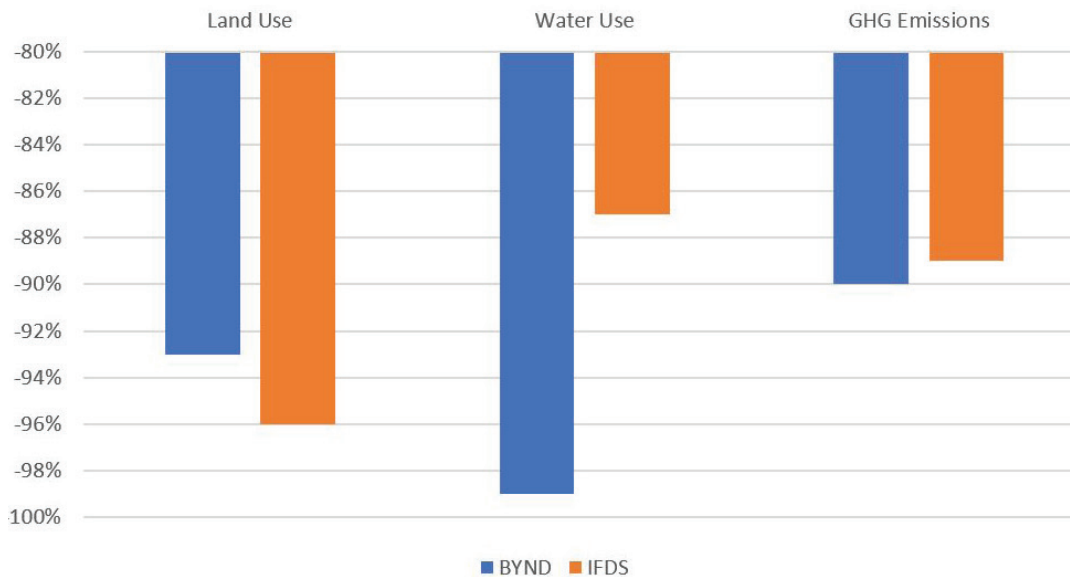


Chart One. Reduction in land and water use and GHG emission of BYND and IFDS compared to animal meat (Newburger & Lucas, 2019).

## IFDS vs BYND

IFDS beats BYND in regard to the most important factor, taste. BYND performs better than IFDS for health and both score equally for price and environment. To say one is the overall winner would be misleading as the reality is not a binary decision. A significant portion of the population prefer the taste of BYND over IFDS and a significant portion will choose BYND based on health concerns even if they prefer the taste of IFDS. Our analysis of the data indicates BYND will maintain a significant portion of the meat substitute market.

## OTHER COMPETITORS ENTERING THE MARKET

As mentioned above, many products from various brands have been launched to satisfy the new demand for plant-based meats and more are coming to market every month. However, creating a product that closely resembles the flavour and mouthfeel of real meat is very difficult, as is creating a global supply chain and achieving meat price parity. Our understanding through research is that IFDS and BYND are in a league of their own in satisfying these demands. As they are established in the meat shelf and become a trusted, regular purchase by consumers, we feel these brands will take the first mover advantage, particularly when it comes to western tastes in beef and possibly chicken.

## LITIGATION INVOLVING DON LEE FARMS VS BYND

In May 2017, Don Lee Farms, a previous manufacturer of BYND's burger, filed a complaint against BYND asserting breach of contract, misappropriation of trade secrets, unfair competition and unpaid invoices. Of these claims, in our opinion, the one that could represent a material threat to BYND is misappropriation of trade secrets. The trial is set to begin in June 2021.

Don Lee claims that the process for manufacturing BYND's burger product was developed in consultation with Don Lee and utilised its IP and that by breaking the manufacturing contract with Don Lee and moving to another manufacturer, BYND took with it IP belonging to Don Lee.

Our analysis indicates that BYNDs core IP in producing woven protein through heat, rapid cooling and pressure was developed over the years before its relationship began with Don Lee. We have doubt that Don Lee could have contributed significant IP in the development of the product for four main reasons:

1. Don Lee has failed to produce a quality meat substitute of its own attempting to roll out its "Better Than Beef Burger," that does not match taste and texture BYNDs product.
2. BYND brought much of its own equipment designed specifically for production of woven protein to Don Lee's facilities on commencement of co-manufacturing.
3. BYND has continued successful iteration of the product in the years after manufacturing with Don Lee.
4. BYNDs product is now significantly different than what it was in 2017 adding to the difficulty of Don Lee claiming a substantial stake in the IP of BYNDs current product.

For these reasons we believe Don Lee will not be able to clearly assert that it provided significant IP in the development of BYND products. Whilst other claims by Don Lee may prove successful, such as money owing from unpaid invoices and breach of contract, we believe the settlement of these cases will be immaterial to BYNDs operations.

## BYND SHOWING EXCEPTIONAL GROWTH WITH EARLY CASH FLOWS FROM OPERATIONS

Since launching in 2016, BYND has seen revenues grow from \$16m USD to \$300m USD in December 2019. In FY2019 the business returned positive funds from operations for the first time. It has achieved this even amongst what is probably going to be the most capital-intensive years of the business as the company pursues rapid global expansion whilst scaling up manufacturing capacity.

### BYND Revenue Growth and Funds From Operations

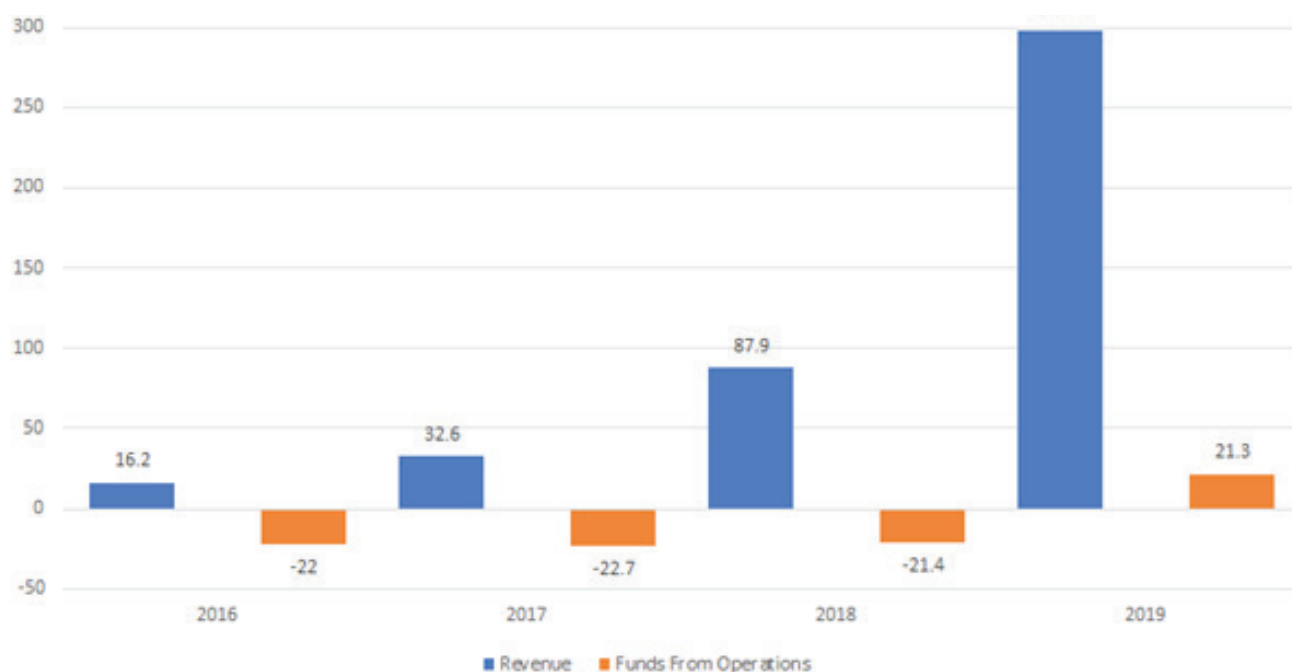


Chart Two. BYND revenue growth and funds from operations from 2016 to 2019 (\$M USD).

It should be noted that during this time BYND was the only real option on supermarket shelves offering a product that truly acted like a meat substitute. IFDS is now rolling out through supermarkets around the US and this will give consumers real choice in the category for the first time. We believe BYND will continue to hold and grow significant market share due to the factors outlined above and also due to four important trends driving its growth.

1. Consumers demand diversity in foods. Shoppers active in the plant-based meats category will consume a diverse range of products and not just one brand or flavour. They will likely purchase from multiple brands within the category each week or month as they enjoy a diverse range of flavours and products.
2. More households are buying BYND products.

3. Average spend per household of BYND products is increasing.
4. Repeat purchases are increasing.

It also needs to be noted that US household penetration for BYND is still only at 4.9% and repeat purchasers stand at 50% in June 2020 versus the sector at 20 - 40%. BYND is barely scratching the surface in penetration outside of the US having only recently entered Europe, China, and Brazil.

### Partnership Manufacturing Will Yield Substantial Margin Gains

BYND meat currently has a return on invested capital (RIOC) of 5% which is extraordinary given that the company is likely in the midst of the highest spending years of its life as it grapples with upscaling manufacturing capacity and rapid global rollout. BYND has a capital-light model of manufacturing woven protein at its own factories and then shipping that protein

to a distributed network of global manufacturing partners who add flavour and nutrients depending on local tastes. We believe this model will yield significant margins as it minimises BYND’s internal manufacturing requirement to their core IP while utilising the existing facilities of global partners to complete products close to where they’re being consumed. Over the next 2 to 3 years we would expect BYND to maintain a low ROIC while significant investment is made to support growth and the company’s goal of underpricing animal meat. After those hurdles, and as supply chains gear up in meeting this new demand for plant protein, we expect the company to exhibit substantial ROIC.

**Conservatively Capitalised**

As of June 2020, BYND has \$222.3m in cash and short-term investments and \$50m of debt in a revolving credit facility. Total shares outstanding and has been largely flat over its period as shown in Chart Three below.

**BYND Total Shares Outstanding**

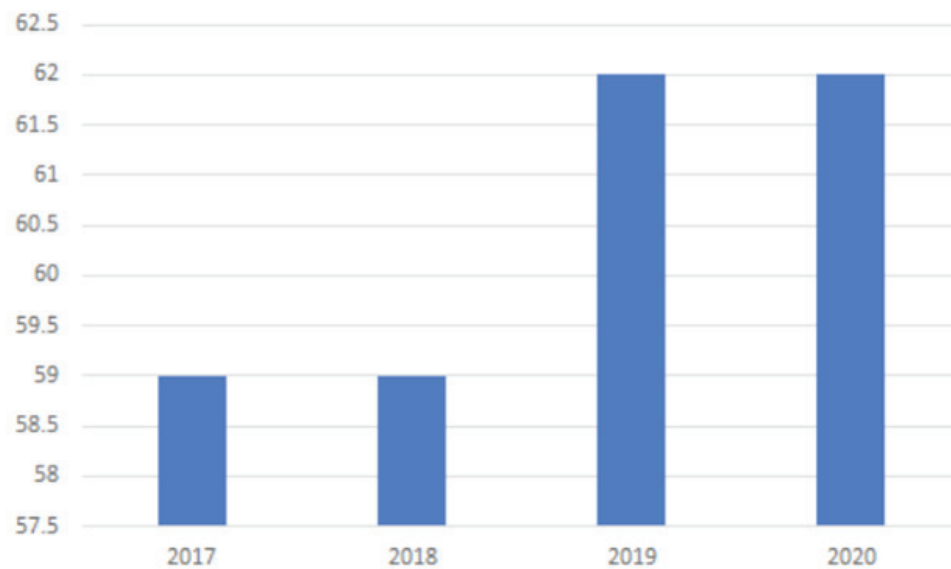


Chart Three. BYND Total Shares Outstanding from 2017 to 2020.

As the company matures and begins to produce significant cash flows from operations post the current growth phase, we expect substantial gains will be made by long-term shareholders as those cash flows find their way to equity holders through an increased valuation brought about by rising earnings per share and retained earnings.

**VALUATION**

In the second quarter of 2020 our assessment of distributable earnings for the company came in at approximately \$11m USD giving us a fair valuation at \$130 per share in the current status of the business. Considering the potential for BYND to improve margins, even while decreasing the selling price of its products, and to increase the number of different products and volume sales of products, we felt the opportunity to enter a position at that valuation was compelling. We opened our position in BYND on the 15/09/2020 at a price of \$144 per share as shown in Chart Four below.

**BYND Stock Price Since IPO and Entry Point**



Chart Four. Blue Oceans entry point into BYND on the 14/09/20 at \$144.

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