

A Work Project, presented as part of the requirements for the Award of a Master Degree in Finance from the  
NOVA – School of Business and Economics.

EQUITY RESEARCH REPORT: VALUATION OF  
BEYOND MEAT

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## Abstract

This equity report aims at analyzing the recently listed company Beyond Meat, and the latest development in the plant-based meat alternatives landscape. By thoroughly analyzing the company and its industry, we conceived a valuation model that encompasses all the drivers which will underpin the growth of the company and the industry. Throughout the report, we present drivers as well as the methodology used to arrive at our underlying model assumptions. Having analyzed the current and the potential future environment for Beyond Meat, our results suggest that the company is trading at a discount and recommend investors to buy the stock.

## Keywords

*Beyond Meat, plant-based, meat alternatives, high-growth*

## BEYOND MEAT, INC

*PLANT-BASED MEAT ALTERNATIVES*

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## COMPANY REPORT

03 JANUARY 2020

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### Hype of a new industry

*First-mover or future market leader*

- Beyond Meat is the current flagship of the plant-based meat industry. Following the company's IPO in May 2019, investors pushed the share price up to a peak of 840% of the initial offer price in only three months' time, making the IPO one of the most successful of the last years.
- The company was able to show impressive top-line growth rates of 101% and 170% in the years 2017 and 2018 and delivered positive net income for the first time in Q3 2019.
- The market is expected to grow significantly over the next five years at a CAGR of 14.8%, reflecting consumers increased concerns about healthier lifestyles, animal welfare and the environment. Competition however, is going to be fierce, with major food conglomerates with high firepower about to enter or already penetrating the market.
- Key to survive under these conditions will be to retain a sufficiently high market share of the plant-based meat market. In order to forecast BYND market share we used an analogy to the plant-based milk market and specifically its player Almond breeze.
- Given our assumed market share and the forecasted inputs in our DCF analysis we consider the stock to be undervalued and issue a **BUY** recommendation at a predicted share price of USD 90.05.

#### Company description

Beyond Meat is a producer of plant-based meat alternatives. The current product portfolio includes beef and pork substitutes, with proteins of the products being entirely extracted from peas.

**Recommendation: BUY**

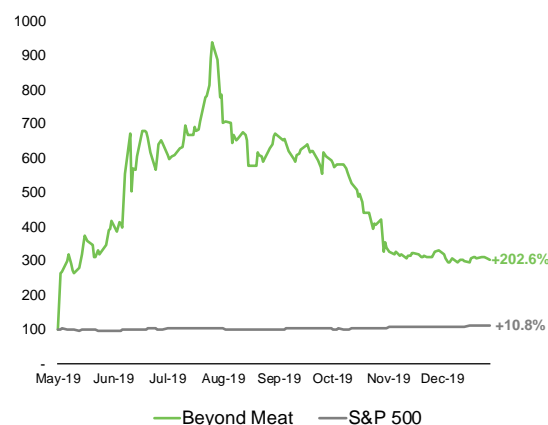
**Price Target FY20: 90.05 \$**

**Price (as of 2-Jan-20) 75.64 \$**

*Bloomberg: 02/01/2020*

52-week range (\$)	25-75.6
Market Cap (\$m)	4,581
Outstanding Shares (m)	60,565,840

*Source: Bloomberg as of 02/01/2020*



*Source: Bloomberg as of 02/01/2020*

(in \$ millions)	2017A	2018A	2019E
Net Revenues	32.5	87.9	321.9
Gross Margin	(7%)	20%	31.2%
EBIT	(28.5)	(27.9)	(7.1)
Net income (loss)	(30)	(30)	(8.7)
R&D as % of sales	17.6%	10.9%	5.4%

*Source: Beyond Meat, own estimates*

**THIS REPORT WAS PREPARED EXCLUSIVELY FOR ACADEMIC PURPOSES BY STEFAN MAYRL AND ANDREA VERZEGNASSI, MASTER IN FINANCE STUDENTS OF THE NOVA SCHOOL OF BUSINESS AND ECONOMICS. THE REPORT WAS SUPERVISED BY A NOVA SBE FACULTY MEMBER, ACTING IN A MERE ACADEMIC CAPACITY, WHO REVIEWED THE VALUATION METHODOLOGY AND THE FINANCIAL MODEL. (PLEASE REFER TO THE DISCLOSURES AND DISCLAIMERS AT END OF THE DOCUMENT)**

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## Executive summary

Beyond Meat is the first plant-based meat company to draw worldwide attention to the plant-based industry given its recent IPO and innovative product portfolio. Driven by health, environmental, sustainability, and animal welfare concerns, the global plant-based meat market is expected to grow significantly over the next few years and reach USD 30.9 billion in revenues by 2026.

By being an early mover in the market, and with its healthier and more sustainable product offerings, the company is well positioned to respond to this 'old-but-new' trend spreading across the packaged food industry.

However, given the size and appeal of this market opportunity, competition is going to be aggressive, and major food companies such as Nestlé, Unilever or Kellogg's have already entered the market. Therefore, factors such as brand positioning, product innovation, pricing policy, and market expansion are crucial for Beyond Meat to attain a high market share in the long-term.

In order to attract consumers and retailers, as well as foodservice companies, Beyond Meat has to consistently innovate and introduce new products, making it heavily dependent on its R&D expenses. The next upcoming product being the *Beyond Chicken*, which was already tested at KFC. Additionally, the company is currently in trial phases with McDonald's and Subway. On Beyond Meat's product pipeline, there are further animal-meat and seafood substitutes that are expected to be introduced in the following years. With an expansion strategy primarily focused on Europe and Asia, which will be led through the establishment of co-manufacturing facilities in the Netherlands and China, Beyond Meat wants to be a market leader in plant-based meat alternatives.

In order to forecast the market share of Beyond Meat in our model, we used the analogous development of the plant-based milk industry starting from 2004, given that timing and stage of the market, as well as the main factors underpinning the growth of the industry in the past, are deemed to be comparable. In particular, we considered the market share of the almond milk producer Almond Breeze to be a good approximation of the market share Beyond Meat will be able to obtain in the future.

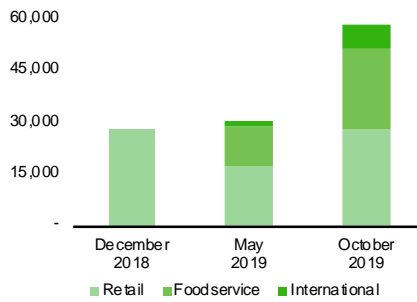
Taking into account these factors and conducting a DCF analysis, we found a value per share of USD 90.05 at December 31, 2020 for Beyond Meat, which implies a buy recommendation at the current share price of USD 75.64.



**BEYOND MEAT®**

**Beyond Meat is continuously increasing its product availability.**

Figure 1: Points of distribution evolution per year



Source: Company

Figure 2: Major sales points for Beyond Meat



Source: Company

Figure 3: 2019 revenues breakdown by channel



Source: Company

## Company overview

### Company description

Founded in 2009 by Ethan Brown, Beyond Meat is a producer of plant-based meat alternatives. The company is incorporated in Delaware and headquartered in El Segundo, California. The business first started selling chicken substitute products in 2013 at Whole Foods supermarket in the US and introduced a beef alternative product for the first time in 2014. The company's current product portfolio includes beef and pork substitutes, namely the *Beyond Burger*, *Beyond Beef*, *Beyond Sausage* and *Beyond Beef Crumbles*. The proteins of all current plant-based meat alternative products are extracted from peas. Beyond Meat separates its business units into retail and foodservice in North Americas as well as international sales. As of October 2019, the products were available at 58,000 points of distribution (28,000 retail, 23,000 foodservice and 7,000 international – see Figure 1).

The most important US retailers offering Beyond Meat products are Walmart, Whole Foods, Kroger, Target, Albertsons and Meijer. The most important restaurant and foodservice chains offering Beyond Meat products are TGI Friday's, Sysco, Carl's Jr., Del Taco and Dunkin Donuts. Moreover, the company is in product trial phases with McDonald's, Tim Hortons, Subway, KFC, Courtyard by Marriott, Denny's, Hello Fresh and Blue Apron.

Major international sales points include Lidl, TESCO, Metro, Tim Hortons, Coop, Edeka, Coles (Australia), Ahold Delhaize (Belgium) Albert (Netherlands) and Continente (Portugal).

For the fiscal year ended 2018 and the nine months ended September 2019, Beyond Meat reported net revenues of USD 88 million (58% retail, 42% foodservice) and USD 199 million (52% retail, 48% foodservice – see Figure 3), respectively, 7% and 14% of which coming from international sales.

### Funding, IPO and Payout policy

Beyond Meat went public on NASDAQ stock exchange on May 2nd, 2019 under the ticker symbol BYND at a share price of USD 25. Net proceeds of the IPO amounted to USD 252 million. On the first trading day, the stock tripled its share price to USD 65 and surged to a peak of USD 235 on July 26, 2019 (see Figure 4). On August 5, 2019, the company completed a secondary public offering in which it sold 250,000 shares at a price of USD 160, amounting to total net proceeds of USD 37,5 million.

**Figure 4:** Beyond Meat share price performance since IPO



Source: Bloomberg

Although Beyond Meat was able to deliver positive results in Q3 2019 for the first time, concerns about increasing competition and the ending of the post-IPO lockup period of 180 days for early investors at the end of October 2019 led to a sharp decrease in the stock price.

The company has continuously declared to invest all future earnings into operations and not to pay out any dividends in the foreseeable future, making stock appreciation the only means of capital gain for investors. We don't expect this payout policy to change any time soon.

### Production process

The production process is partly conducted internally and partly outsourced to third-party co-manufacturers. Beyond Meat is getting delivered a dry blend containing the pea protein. In a first step, the pea protein passes through an extruder, where water and steam are added. Heating, cooling and application of pressure then weave the pea proteins together. Subsequently, the woven protein is cut into smaller pieces, frozen and then mostly sent to co-manufacturers, which combine it with flavours and other ingredients according to Beyond Meat's formula to obtain the finished products. All manufactured goods are then distributed directly from co-manufacturers to the desired destination.

Beyond Meat only manufactures the *Beyond Burger* for the foodservice channel itself. All other products are assembled by co-manufacturers in California, Texas, Georgia and Pennsylvania. In order to protect intellectual property of Beyond Meat, all co-manufacturers are required to sign non-disclosure agreements.

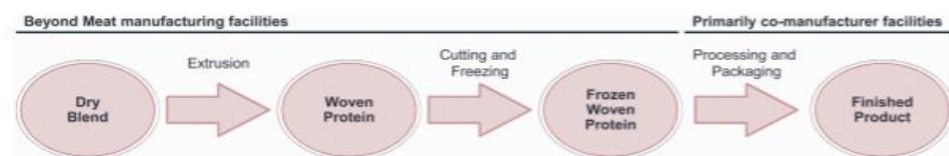
Beyond Meat recently announced to partner with the Dutch company Zandbergen to have its first European based co-manufacturer. Production in the Netherlands is expected to start in early 2020, with Zandbergen covering all capital expenditures required to manufacture Beyond Meat products. After the release of the Q3 2019 results, Beyond Meat announced plans to have a co-manufacturer in China by the end of 2020 to easily serve Asian markets. In the long-term, the company announced to set up its own woven protein production facilities in Europe. We expect these expansions to be a crucial driver for future market share increases.

**Pea protein is delivered to Beyond Meat and processed to woven protein.**

**Woven protein is shipped to co-manufacturers who add ingredients according to BYND's formula and package the finished goods.**

**Zandbergen will be the first co-manufacturer outside of the US.**

**BYND is planning to expand production to China by end of 2020.**



Source: Company

### Sourcing

***The base of all current products is protein sourced from peas.***

***BYND has two existing sourcing contracts with Roquette and Puris. Minimum pea protein purchase commitments in 2020 and 2021 amount to USD 24 million in both years.***

The key ingredients of the company's products are pea protein and plant-based flavours. Pea protein is sourced from two different suppliers, Roquette America Inc. and Puris Proteins, LLC.

Roquette, one of the world's biggest pea protein providers, sources peas from Canada and France. Beyond Meat has entered into a one-year supply agreement with Roquette that expires on December 31, 2019.

Puris, the biggest US pea protein provider, is sourcing domestic protein under a supply agreement that will expire on December 31, 2021.

Roquette and Puris have both independently announced to more than double their pea protein production levels in the following two years to meet demand (Bloomberg 2019).<sup>1</sup> With additional global players, like the Belgian supplier Cosucra or American ADM, which also declared to expand operations, and the generally growing demand, the global pea protein market is expected to reach a volume of around USD 313 million by 2025 (Grand View Research 2019), almost tripling in size by then.<sup>2</sup>

Despite these announced expansions, Beyond Meat's capabilities to renegotiate terms with Roquette as in the past, and the statement of Puris CEO, Tyler Lorenzen, who believes pea producers will be able to meet future demand, we believe that the company may face some challenges in the supply of raw materials in the future. In point of fact, Beyond Meat has already faced supply problems in 2017 and 2018, and now that more plant-based manufacturers are basing their products on peas (CNBC 2019)<sup>3</sup>, the downstream risk throughout the supply chain may be higher for the time ahead.

## Research & Development

Beyond Meat has a research team of currently 71 employees, who are dedicated to improving existing product formulas and find new ways to mimic animal-based meat. In 2018 the company opened its new 30,000 square foot research centre, the "Manhattan Beach Project innovation centre", in El Segundo, California. Beyond Meat was investing roughly 11% of sales in R&D in 2018, well above the packaged goods industry median of 0.5% (see Figure 16, page 13). The key areas on which the research team is continuously working on include: better fat adipose

***The "Manhattan Beach Project" is a state-of-the-art innovation centre which is driving steady product development.***

<sup>1</sup> Bloomberg. 2019. "Plant Protein Boom Gets Beyond Meat Supplier Thinking Bigger." Accessed December 27. <https://www.bloomberg.com/news/articles/2019-10-20/beyond-meat-supplier-mulls-fava-beans-to-tap-plant-protein-craze>.

<sup>2</sup> Grand View Research. 2019. "Pea Protein Market Size Worth \$313.5 Million by 2025." Accessed December 27. <https://www.grandviewresearch.com/press-release/global-pea-proteins-market>.

<sup>3</sup> CNBC. 2019. "Beyond Meat's pea protein supplier receives additional \$75 million investment from Cargill." Accessed December 27. <https://www.cnbc.com/2019/08/28/beyond-meats-pea-protein-supplier-receives-additional-75-million-investment-from-cargill.html>.



and saturated fat mimics, alternative functional proteins, connective tissue equivalents, encapsulation materials and technology, and materials to support flavour and texture.

## Marketing and Sales

Beyond Meat is marketing its products in the meat case at grocery retailers in order to better attract consumers who are accustomed to buy animal-based proteins but may also be in favour of buying plant-based meat for dietary needs, environmental and sustainability concerns (refer to pages 10-11).

As of October 2019, Beyond Meat was able to expand its points of distribution by 30,000 (13,000 in retail, 11,000 in foodservice, and 6,000 international) when compared to the year-end figure of 28,000 in 2018. We expect especially international points of distribution to further increase in the future to support growth.

The primary tools through which the company is attracting customers is via social media, its website as well as its digital newsletter. Beyond Meat also uses its extensive network of company ambassadors to promote products.

## Product Portfolio

The company sells products in two categories, referred to as fresh platform (ready-to-cook products) and frozen platform (ready-to-heat products). Even though the company started off with ready-to-heat products, the recent growth was mainly driven by the fresh platform. Beyond Meat is expecting only a small percentage of the overall sales volume to come from its frozen platform in the future. At December 31, 2018, 84% of sales were coming from the fresh and 16% from the frozen platform. As of the nine months ended 2019, 94% of sales are generated from the fresh and 6% from the frozen platform. (see Figure 5) When considering this evolvement in terms of volumes produced, the percentage points of the fresh platform are slightly lower, in 2018 78% were generated by the fresh platform and 92% in the nine months ended 2019.

According to a global study conducted by Vomad (2019), the main reasons for people to start a vegan diet are animal welfare (68%), health issues (17%) and environmental concerns (10%) – see Figure 6.<sup>4</sup> The American Heart Association (2019) pointed out in a recent research paper, that people who eat a plant-based diet have a 16% lower risk of having cardiovascular diseases (like heart attacks,

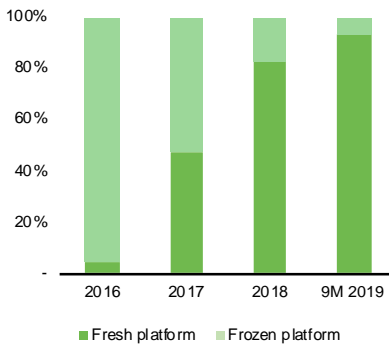
***BYND fresh products, in particular the Beyond Burger are sold in the meat case.***

***Social media is a key tool to enhance product awareness and strengthen the brand recognition.***

***Brand ambassadors who continuously promote BYND products are partially awarded with restricted stock grants.***

***The company separates its products into two platforms, the fresh platform and the frozen platform.***

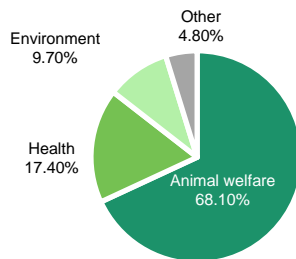
Figure 5: Revenues breakdown by platform



Source: Company

<sup>4</sup> VOMAD. 2019. "Why People Go Vegan: 2019 Global Survey Results." Accessed December 27. <https://vomadlife.com/blogs/news/why-people-go-vegan-2019-global-survey-results>.

Figure 6: Main reasons to go vegan in 2019



Source: Vomad

strokes, etc) and a 25% lower risk of death from those diseases, as meat is high in saturated fats and cholesterol, which both are linked with heart diseases.<sup>5</sup>

All of the company's products are free of gluten (about 1% of global population is considered to have a gluten intolerance) and genetically modified organisms (GMOs, which use is heavily discussed in society), and lower in saturated fats and cholesterol than animal-based meat. However, currently some Beyond Meat products, especially the *Beyond Burger*, are higher in sodium than normal minced beef, which is a link to higher blood pressure and therefore to cardiovascular diseases (World Health Organization 2019).<sup>6</sup>

By looking at the price of plant-based meat, it can be regarded that it is significantly more expensive than normal minced meat or processed meat products for the following reasons:

- **Higher production costs:** Beyond Meat is still not in the position to make use of economies of scale to the same extent as mature food companies. Additionally, the company is lacking bargaining power for their ingredient cost component.
- **Higher R&D costs:** The company is heavily reliant on R&D, as increasing competition is demanding improved and innovative product formulas. Mature food companies do not have the same R&D/sales ratio.
- **Higher marketing costs:** Beyond Meat is selling a branded product and is therefore spending a relatively higher amount of money on marketing. Minced beef in contrast is usually not branded at all.

***Beyond Burger is the company's flagship product.***



## Fresh platform

### ▪ Beyond Burger

The *Beyond Burger* is currently the main product, representing 70% and 55% of gross revenues, in 2018 and in the nine months ended 2019, respectively. It is also expected to remain the leading fresh platform product in the foreseeable future. The *Beyond Burger* is solely marketed within the meat section at retailers.

As can be regarded in the comparison table below (see Table 1), the *Beyond Burger* has less saturated fats, no cholesterol, and about the same amount of

<sup>5</sup> Kim, Hyunju., Caulfield, Laura E., Garcia-Larsen, Vanessa., Steffen, Lyn M., Coresh, Josef., and Rebholz, Casey M. 2019. "Plant-Based Diets Are Associated With a Lower Risk of Incident Cardiovascular Disease, Cardiovascular Disease Mortality, and All-Cause Mortality in a General Population of Middle-Aged Adults". *Journal of the American Heart Association* 8 (1).

<sup>6</sup> World Health Organization. 2019. "Reducing sodium intake to reduce blood pressure and risk of cardiovascular diseases in adults." Accessed December 27. [https://www.who.int/elena/titles/sodium\\_cvd\\_adults/en/](https://www.who.int/elena/titles/sodium_cvd_adults/en/).

protein when compared to its biggest competitor, the *Impossible Burger* or to usual minced beef (80% lean / 20% fat) that can be purchased in supermarkets. However, the *Beyond Burger* has 5x the amount of sodium and costs about 4x as much as the retail price of minced beef in the US.

- **Beyond Beef**

*Beyond Beef* was introduced in March 2019 and is designed to imitate ground beef.

- **Beyond Sausage**

The *Beyond Sausage*, launched in December 2017, comes in two flavours (*Hot Italian* and *Brat Original*). Around 14% of gross revenues in 2018 were coming from these two products. When comparing the *Beyond Sausage* to *Johnsonville Bratwurst*, which according to a US consumer survey is the most often eaten bratwurst brand (Statista 2019)<sup>7</sup>, it can be observed that the *Beyond Sausage* contains less total and saturated fat, no cholesterol, less sodium, and more potassium as well as proteins. However, the *Beyond Sausage* is currently about more than 4x the price of the *Johnsonville Original Brats*.

***Beyond Sausage is the number two in terms of percentage of sales.***



**Table 1: Nutritional values comparison table**

Serving size 113g	Beyond Burger-Retail	Impossible Burger	Minced Beef (80% Lean / 20% fat)	Serving size 76g	Beyond Sausage - Brat Original	Johnsonville Original Brats
Calories	250	240	287	Calories	190	241
Total fat	18g	14g	22,6g	Total fat	12g	19,4g
Daily value	23%	18%	29%	Daily value	15%	25%
Saturated fat	6g	8g	8,7g	Saturated fat	5g	7,4g
Daily value	30%	40%	44%	Daily value	25%	37%
Cholesterol	0mg	0mg	80mg	Cholesterol	0mg	60mg
Daily value	0%	0%	27%	Daily value	0%	20%
Sodium	390mg	370mg	76mg	Sodium	500mg	680mg
Daily value	17%	16%	3%	Daily value	22%	30%
Potassium	300mg	610mg	305mg	Potassium	230mg	0mg
Daily value	6%	13%	6%	Daily value	5%	0%
Total carbohydrate	3g	9g	0g	Total carbohydrate	5g	2g
Daily value	1%	3%	0%	Daily value	2%	1%
Dietary fiber	2g	3g	0g	Dietary fiber	3g	0g
Daily value	8%	11%	0%	Daily value	12%	0%
Sugars	0g	<1g	<1g	Sugars	0g	1g
Daily value	0%	1%	1%	Daily value	0%	1%
Protein	20g	19g	19,4g	Protein	16g	14g
Daily value	40%	38%	39%	Daily value	32%	28%
Price per pound	\$ 12.0	\$ 12.0	\$ 3.8	Price per pound	\$ 12.5	\$ 3.8

Sources: *Beyond Meat website, Impossible foods website, Johnsonville website*

### Frozen platform

- **Beyond Beef Crumbles**

***The frozen platform is diminishing in percentage of sales as BYND is strongly focusing on fresh products.***

<sup>7</sup> Statista. 2019. "U.S. population: Which brands of fresh bratwurst do you eat most often?" Accessed December 27. <https://www.statista.com/statistics/279813/us-households-most-eaten-brands-of-fresh-bratwurst/>

**Beyond Beef Crumbles are the only frozen product.**



Beyond Beef Crumbles were the company’s first products on the market. However, the percentage of frozen products have declined over the last two years (from 52% of gross revenues in 2017 to 16% in 2018 and 6% in the nine months ended 2019). Given the focus of the company on its fresh product line, we expect the frozen platform to still co-exist next to the fresh platform in the future, although accounting for a lower level of gross revenues, as per 2019 data.

Beyond Beef Crumbles come in two varieties, *Beyond Beef Crumbles Beefy* and *Beyond Beef Crumbles Feisty*.

### Upcoming products

**Beyond Chicken will be the next upcoming product line extension.**

- Beyond Chicken

Beyond Meat has partnered with KFC to try out the *Beyond Chicken* in a KFC store in Atlanta, Georgia on August 26, 2019. No official nutritional details have been made public yet, but according to a statement of a company spokesman, the *Beyond Chicken* is made from wheat protein mixed with spices and flavours, and has the following nutritional details in comparison to KFC traditional nuggets:

- 60 calories vs. 90 calories, 3 grams (g) of fat vs. 5 g of fat, 0 milligrams (mg) of cholesterol vs. 10 mg of cholesterol, 145 mg of sodium vs. 300 mg sodium, 5 g protein vs. 5 g protein – per 27-gram nugget.

- Further potentially upcoming products

**The trial with KFC in August 2019 was a remarkable success with Beyond chicken products being sold out in five hours.**

**Potential future products include Beyond Hot Dog, Beyond Ham, Beyond Crab or Beyond Turkey.**

The company has filed for application of several trademarks with the US Patent and Trademark office including for example *Beyond Hot Dogs*, *Beyond Ham*, *Beyond Tuna*, *Beyond Crab*, *Beyond Turkey* or *Beyond Shrimp*. This might give an indication about possible product line extensions, which will be crucial for Beyond Meat to retain and increase its market share in the future. For a full list of registered trademarks and pending applications refer to Appendix 1.

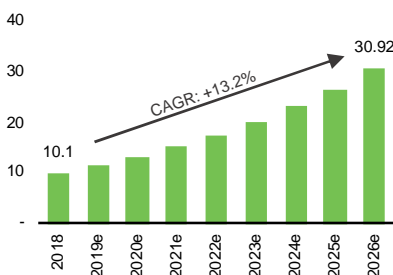
**A shift towards healthier lifestyles and increased concerns on environment and sustainability to be the main drivers for growth**

## The plant-based industry

The new hot trend in food is without any doubt the rise of plant-based diets, and in particular the growing popularity of meat-substitute products. After Beyond Meat’s successful IPO, the plant-based meat producer is now in the spotlight and a lot of attention is drawn on the many uncertainties that this market portrays, which will affect the future profitability of the company. Will Beyond Meat be able to maintain its position as a pioneer of this new niche-market with high growth potential or will other major food manufacturers take the lead?

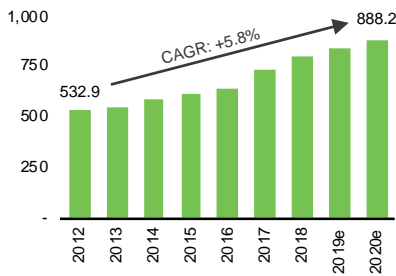
### The market at a glance

Figure 7: Global plant-based meat market revenues forecast (in \$bn)



Source: Euromonitor

Figure 8: US plant-based meat market revenues forecast (in \$m)



Source: Euromonitor

Besides being a trend in the food industry, the plant-based meat market is also currently growing at an incredible pace. Since its expansion in the US (started back in 2012) it has grown by as much as 50.3% until 2018, and the last 2 years it has been growing at a pace of +25% and +10% y/y for 2017 and 2018, respectively. There is a high potential for growth for this type of product given the increased concerns that animal-meat poses with respect to our health and the environment. These two, are the main drivers expected to underpin the growth of plant-based meat worldwide. Forecasts estimate the US and global plant-based meat market to reach \$880.2 million and \$30.9 billion in revenues by 2026, respectively (see Figure 7 and 8).

### Health

To better understand where medical opinion stands with regard to the concerns resulting by meat consumption on our health, we have to go back to 2015 when for the first time the International Agency for Research on Cancer (2015) issued a press release classifying processed meat as “carcinogenic to humans”.<sup>8</sup> In the articles published, there is evidence for health-related diseases as a result of red meat consumption. Boada et al. (2016), presented epidemiologic studies highlighting the increased incidence of obesity, type 2 diabetes, cardiovascular diseases, and cancers, linked to red meat consumption.<sup>9</sup>

Additionally, there are many other factors which encourage the switch or a reduction of animal-meat intake. Among those, there are: no use of hormones, no antibiotics, and low cholesterol. Evidence in favour of these factors are found in a report drafted by the European Commission (2002), which states that the use of hormones poses a health risk to consumers, and in the research published by the Centers for Disease Control and Prevention (2019) – according to which antibiotic-resistant infections are one of the biggest public health challenges of our time.<sup>10</sup> In light of the evidence presented above, and on the rise of “flexitarian”, vegetarian, and vegan diets, (Nielsen, 2015)<sup>11</sup>, we expect health to be one of the main pillars to drive demand for plant-based meat products among consumers.

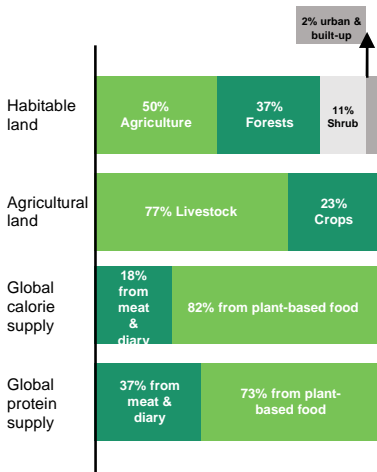
### Environment and sustainability

**“After thoroughly reviewing the accumulated scientific literature, a Working Group of 22 experts from 10 countries classified the consumption of red meat as probably carcinogenic to humans”**

**World Health Organization  
26 October, 2015**

**No hormones, no antibiotics, and low cholesterol are among the main reasons for a switch towards plant-based products**

Figure 9: Global land use for food production



Source: FAO

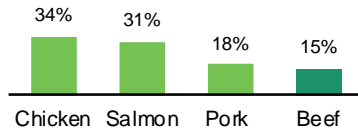
<sup>8</sup> IARC. 2015. “IARC Monographs evaluate consumption of red meat and processed meat.” Accessed December 27. [https://www.iarc.fr/wp-content/uploads/2018/07/pr240\\_E.pdf](https://www.iarc.fr/wp-content/uploads/2018/07/pr240_E.pdf)

<sup>9</sup> Boada, Luis D., Henríquez-Hernández, L.A., Luzardo, O.P. 2016. “The impact of red and processed meat consumption on cancer and other health outcomes: Epidemiological evidences”. *Food and Chemical Toxicology* 92: 236-244.

<sup>10</sup> European Commission. 2002. “Growth promoting hormones pose health risk to consumers, confirms EU Scientific Committee.” Accessed December 27. [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_02\\_604](https://ec.europa.eu/commission/presscorner/detail/en/IP_02_604); CDC. 2019. “Antibiotic / Antimicrobial Resistance.” Accessed December 27. <https://www.cdc.gov/drugresistance/index.html>.

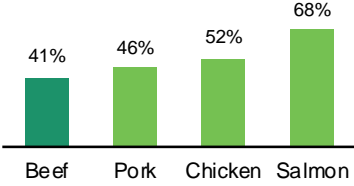
<sup>11</sup> Nielsen. 2015. “Global Health and Wellness Report.” Accessed December 27. <https://www.nielsen.com/wp-content/uploads/sites/3/2019/04/Nielsen20Global20Health20and20Wellness20Report20-20January202015-1.pdf>

**Figure 10: Protein retention**



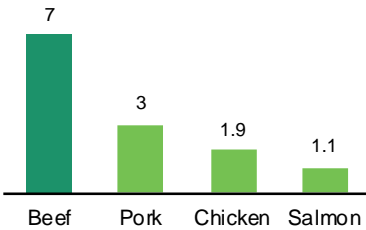
Source: Mowi

**Figure 11: Edible yield (edible meat to total body weight)**



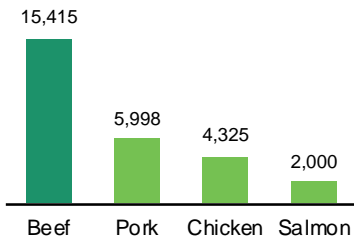
Source: Mowi

**Figure 12: Feed conversion ratio by category**



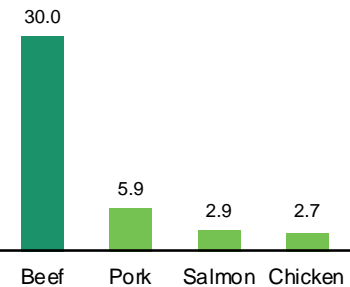
Source: Statista

**Figure 13: Amount of water per kilogram of edible food**



Source: Statista

**Figure 14: Carbon footprint (kg of CO2 per kg of edible meat)**



Source: Statista

Another touching point for the potential future growth of the plant-based meat market lies behind the environmental impact that meat, and particularly beef production has been known to have on our planet. According to a study conducted by the FAO (2019), livestock is using 77% of agricultural land, however producing only 18% of global calories and 37% of global proteins (see Figure 9). Additionally, studies estimate greenhouse gas emissions of livestock to lie in between 18%-51% of total global volume (Independent 2009)<sup>12</sup>. To highlight how cattle farming is resource intensive and not sustainable, and in particular, how inefficient it is when compared to other animal farming categories, metrics such as protein retention, feed conversion ratios, edible yields, and water and carbon footprints are presented, outlining a sustainability problem for this specific category (see Figure 10–14). This issue is even exacerbated when considering the constant increase in food demand arising from the overall growth of the worldwide population.

In addition, the worsening conditions of animal welfare, which were reported on the news over the last couple of years, have been playing a role in growing consumer awareness and concerns on the dreadful practices spread across the animal farming industry. As outlined earlier, a survey conducted by Vomad (2019) presented animal welfare to be the main response why consumers are shifting towards healthier and more sustainable diets (see Figure 6 above). We therefore expect environmental, sustainability, and animal welfare concerns to drive growth for plant-based food meat products among consumers.

## Competition

To better understand what is happening in the plant-based meat industry it is worthwhile to look at some relevant events to get to know where consumer demand stands for these products and also what stakeholders expect from major food companies in terms of strategy for plant-based products. For example, Green Century Equity Fund, an investor in Kraft Heinz, has recently filed a shareholder proposal asking the board of directors to outline the company’s strategic plan towards the plant-protein market, as a consequence of the lack of response to the rising demand for plant-based products (Green Century Funds 2019)<sup>13</sup>. By considering that Kraft Heinz is the third largest food company in North America, this action describes investors’ concerns about the prospective positioning of the company in light of the shift the industry is experiencing. Ultimately, the increase

<sup>12</sup> Independent. 2009. “Study claims meat creates half of all greenhouse gases”. Accessed December 27. <https://www.independent.co.uk/environment/climate-change/study-claims-meat-creates-half-of-all-greenhouse-gases-1812909.html>.

<sup>13</sup> Green Century Funds. 2019. “Green Century Squeezes Kraft Heinz To Diversify Its Protein Products”. Accessed December 27. <https://www.greencentury.com/green-century-squeezes-kraft-heinz-to-diversify-its-protein-products/>.

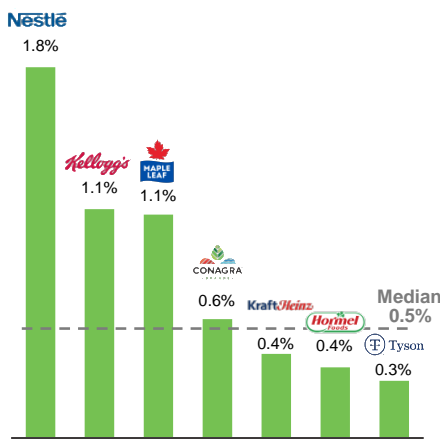
Figure 15: Plant-based meat products currently in the market



in demand for plant-based products is supported by the fact that more retailers and food chains are introducing plant-based meat alternatives. For example, the September roll-out of the *Impossible Burger 2.0* in 27 US grocery stores or the partnership of Unilever with Burger King to offer the *Rebel Whopper* in around 2,500 European Burger King restaurants (Reuters 2019)<sup>14</sup>.

The plant-based meat market does not present high barriers to entry, therefore, some major food players have already positioned their products on grocery store shelves or distributed them to foodservice chains in the US and around the World. Other players instead, are planning to launch some products during the next year. Among these companies, besides **Impossible Foods** and **Unilever** mentioned above, there are **Nestlé**, **Maple Leaf Foods**, **Kellogg’s**, **Hormel Foods**, **Tyson Foods**, **Conagra**, and the lacklustre **Kaft Heinz**. These are the companies with which Beyond Meat will likely have to compete in the plant-based meat landscape. Facts and strategies unveiled by three of the major competitors of Beyond Meat, namely, Impossible Foods, Nestlé, and Kellogg’s, are outlined below.

Figure 16: R&D spending as % of \$ sales



Note: R&D expense as a % of \$ sales according to annual 2018 figures as reported on companies' financial statements  
Source: Companies, Bloomberg

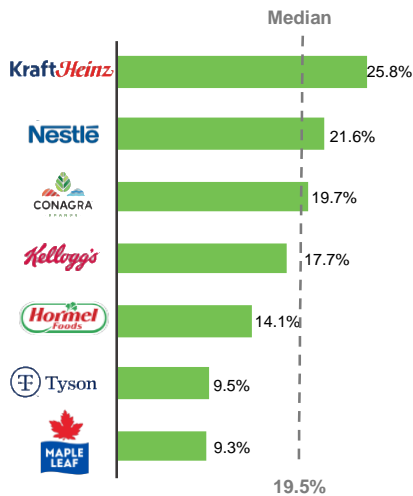
**Impossible Foods** – Deemed also to be one of the pioneers of plant-based burgers, Impossible Foods is the direct competitor of Beyond Meat in the US, given that the GMOs concerns around its products do not enable the company to sell in Europe yet. Since its first product launch in 2016, the company has been focusing only on the foodservice channel. However, this September, it has rolled out its *Impossible Burger 2.0* in 27 US grocery stores at USD 9 per a 12-ounce box. This signals that there is enough consumer interest in plant-based meat for grocery stores to stock another brand. In addition, in May, the company has secured its last round of investment of USD 300m, dedicated to expansion capacity and R&D (an average of USD 56m per year between 2013 and 2015 was spent to develop its products). In 2018, the company generated revenues of USD 44.9m. For its future expansion, Impossible Foods is targeting Asia and especially China. The company has recently faced some short-term challenges arising from the surge in demand for its products given its limited production capacity. To avoid such an issue in the future, Impossible has signed a partnership with OSI, a US meat producer, to use one of its production facilities to manufacture its products (McKinsey & Company 2019).<sup>15</sup>

**Nestlé** – With USD 313.3bn in market cap and USD 93bn in revenues, the Swiss multinational has already made its move in the plant-based meat space and is offering its plant-based products in grocery stores across Europe and the US

<sup>14</sup> Reuters. 2019. "Burger King picks Unilever to make plant-based Whoppers in Europe". Accessed December 27. <https://www.reuters.com/article/us-unilever-burger-king/burger-king-picks-unilever-to-make-plant-based-whoppers-in-europe-idUSKBN1XM00C>

<sup>15</sup> McKinsey & Company. 2019. "An incredible year for Impossible Foods". Accessed December 27. <https://www.mckinsey.com/industries/agriculture/our-insights/an-incredible-year-for-impossible-foods>

**Figure 17:** EBITDA margin of major packaged food players / competition



Note: EBITDA margin according to annual 2018 figures as reported on companies' financial statements; industry median from North America packaged food industry

Source: Companies, Bloomberg

through its brand, Garden Gourmet. The main products offered are the *Incredible Burger* and *Incredible Mince*, which are soy and wheat-based products, while its pea protein variants, the *Awesome Burger* and *Awesome Ground*, have been recently launched in both the US and Switzerland. The latter having been launched under the brand Sweet Heart Food. Nestlé has the highest R&D spending per dollars of sales generated as shown in Figure 16, and it is also better positioned to generate earnings given its higher EBITDA margin (see Figure 17), with respect to the above-mentioned group of competitors. The multinational is also moving its attentiveness for plant-based meat to China and has recently opened a new R&D centre in Beijing as well as a Technology centre in Shenzhen (Nestlé 2019)<sup>16</sup>.

*Kellogg's* – The American multinational, with USD 21bn in market cap and USD 13.5bn in revenues was one of the first to enter the plant-based market with its Morningstar brand. The company is now focusing on frozen plant-based products but has announced in September that it is going to launch its fresh line in early 2020. Products will include the *Incogmeato Burger*, *Chik'n Nuggets*, and *Chik'n Tenders*. Kellogg's, which has a R&D spending of 1.1% (see Figure 16), being second after Nestlé, will also focus on product innovation and is targeting to become 100% plant-based with its brand by 2021. (Kellogg's 2019)<sup>17</sup>.

### Cultured meat

Cultured meat, another name for meat grown in the laboratory, has the potential to become a growth impediment for plant-based meat as it is considered another substitute product for conventional meat. As industrialised cultured meat is currently under development and expected to be available in the market only in the next few years, potential impact on the plant-based meat industry is not fully clear. However, by analysing the market forecasts of cultured meat and plant-based meat, we don't expect our valuation to be materially impacted by the rise of cultured meat.

### Private label

By analysing the drivers of private label penetration and of consumer behaviour towards purchasing private brands, we do not expect Beyond Meat's market share to be materially impacted by private label competitive offerings in the future.

## Where does Beyond Meat stand?

In the arguments presented above we have discussed the main potential drivers for the growth of the plant-based meat industry, however, in order to better

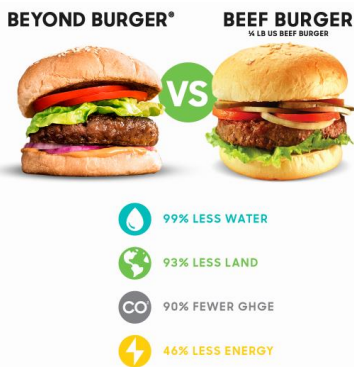
<sup>16</sup> As stated on the company website. <https://www.nestle.com/investors>.

<sup>17</sup> As stated on the company website. <https://investor.kelloggs.com/>.



**The Beyond Burger generates 90% less greenhouse gases, and has almost a 100% less impact on water scarcity**

Figure 18: Beyond Burger environmental footprint vs. traditional beef burger



Source: Beyond Meat, University of Michigan

understand where Beyond Meat stands within this landscape, we decided to present its competitive advantages along with the potential threats and issues that the company may have to face in the near future.

**Competitive advantages**

*Health, environment & sustainability* – The growth in demand for plant-based meat arising from increased concerns on health, environment, and sustainability, is expected to increase demand for Beyond Meat products, which are well-positioned to answer consumer needs. A study conducted by the University of Michigan (2018), pointed out that the *Beyond Burger* generates 90% less greenhouse gas emissions, requires 46% less energy, and has 99% less impact on water scarcity and 93% less impact on land use than a quarter pound of US beef (see Figure 18). To put that into numbers, a 41-square-foot plot of land can produce just one beef burger for every 15 Beyond Burgers.<sup>18</sup>

*First mover advantage* – Being a first mover in a disruptive and high growth market has helped the plant-based meat manufacturer growing as well as gaining international exposure. We believe this factor will positively affect the company’s revenues in the medium-term.

*Brand awareness* – By promptly placing its products in the market, Beyond Meat will also benefit from the relationships that the brand may be able to generate with its customers. If the product wins the ‘repeat purchase’ phase, this will likely help the company suffer less from competition in the future.

*Cutting edge R&D* – The newly opened Research & Development facility follows the company’s strategy to continuously innovate and improve the meat-less experience of its products. We believe that an in-house research team is extremely valuable in order to differentiate competitive offerings in the future. Beyond Meat has spent 7% of its sales in R&D in 2018 and it is estimated to spend 5% for 2019.

**Potential threats and issues**

*Competition* – The threat of new entrants into the market is high because of low barriers to entry. In support of this view, we can look at what has happened recently to Impossible Foods and its plant-based patties, which have already been replaced with *Lightlife* burgers (produced by Maple Leaf Foods) at Dave & Buster’s. Beyond Meat will have to differentiate, adapt and innovate its products to retain market share in the future given the firepower of big players such as Nestlé and Kellogg’s.

<sup>18</sup> Heller, Martin C., Keoleian, Gregory A. 2018. “Beyond Meat’s Beyond Burger life cycle assessment: a detailed comparison between a plant-based and an animal-based protein source.” *CSS Report, University of Michigan*: Ann Arbor 1-38.

Figure 19: Price for a 2-plant-based burger pack (c. 225g)

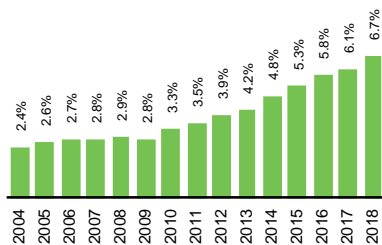
Company	Product	Price
Lidl	Next Level Burger	€2.99
Nestle	Incredible Burger	€3.49
BYND	Beyond Burger	€4.99

Source: Lidl, Nestlé, Beyond Meat

**Price** – As a consequence of more players entering the market, prices are expected to be lower in the future. Given that e.g. plant-based patties offered by Lidl and Nestle are sold at a discount (see Figure 19) when compared to the *Beyond Burger*, we expect prices to converge in the future and therefore for Beyond Meat to market its products at a lower price. Additionally, it is also important to mention how income levels affect purchases of healthier and more sustainable products among consumers. As pointed out in a study from Fanzo and Davis (2019)<sup>19</sup>, these categories of products are not as accessible for lower-income households as for medium- or higher-income groups. Given that the current price of the *Beyond Burger* is about 4x higher than animal ground beef, we believe the company will have to take this socio-economic factor into account if it wants to reach a broader customer base in the future and therefore keep its market share growing.

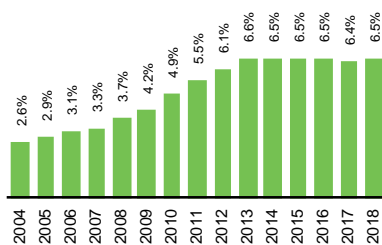
**Highly processed food** – With its 19 ingredients and high sodium and fat content, Beyond Meat’s products are deemed to be highly processed (Gelsomin, 2019)<sup>20</sup>, however, the evidence is mixed regarding to what extent processed foods are bad for our health, as pointed out by the National Health Service (2019).<sup>21</sup> This ‘drawback’ may potentially steer some consumers away from purchasing the product solely for health reasons.

Figure 20: US plant-based share of the milk market



Source: Euromonitor

Figure 21: World plant-based share of the milk market



Source: Euromonitor

## Forecast

### Market forecast

Besides relying on market estimates for the plant-based meat category published by various market research organisations, in order to forecast the future size of the plant-based meat market and the potential market share of Beyond Meat, we decided to look at what happened (and what is currently happening) in its closest comparable market, the plant-based milk industry.

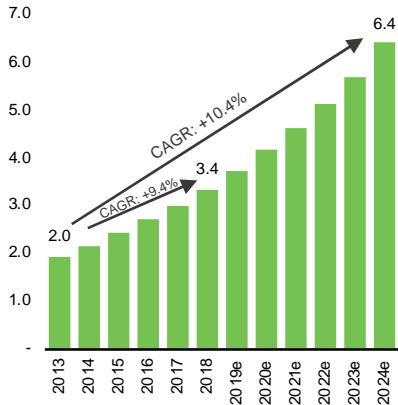
As for the meat-alternative category, dairy-alternatives were mainly driven by sustainability, environmental, and health concerns, as well as by the swell of vegan diets. Over a 14 years period, we can see how plant-based milk alternatives grew and increased their share in percentage of the total dairy milk market. In 2018, according to Euromonitor data, the penetration rate of plant-based milk in its

<sup>19</sup> Fanzo, Jessica., Davis, Claire. 2019. “Can Diets Be Healthy, Sustainable, and Equitable?” *Current Obesity Reports* 8: 495-503.

<sup>20</sup> Harvard. 2019. “Impossible and Beyond: How healthy are these meatless burgers?” Accessed December 27. <https://www.health.harvard.edu/blog/impossible-and-beyond-how-healthy-are-these-meatless-burgers-2019081517448>.

<sup>21</sup> NHS. 2019. “Eating Processed Foods.” Accessed December 27. <https://www.nhs.uk/live-well/eat-well/what-are-processed-foods/>.

**Figure 22:** US plant-based milk market revenues and forecast (in \$bn)



Source: Statista

animal-based antagonist market was 6.7% and 6.5% in the US and the world, respectively (see Figure 20 and 21). Even though dairy-alternatives were also partly driven by food-intolerances, we believe that the mentioned factors such as health, environment, and sustainability played an important role in pushing consumers towards these types of products, which market reached USD 3.4bn in 2018 (see Figure 22). A recent study conducted in 2017, which aimed at analysing the drivers of consumer choices with respect to dairy milk versus plant-based alternatives, pointed out that ‘lactose-free’ is an attribute for plant-based milk consumers, but it also highlighted that by purchasing this type of product consumers felt they were contributing to the goal of limiting the consumption of animal products, and therefore supporting animal welfare. Moreover, plant-based milk consumers also perceived a lesser impact on the environment, while maintaining a balanced diet and a healthy lifestyle (McCarty et. al, 2017)<sup>22</sup>. Mintel also conducted a study in the US on the subject and the results showed that 65% of the respondents bought plant-based dairy-alternatives because they deemed those products to be healthier, while only 24% reported to buy them because they are lactose-free (see Figure 23). The link between plant-based milk and plant-based meat is therefore not far apart. The question to be answered is to what extent plant-based milk consumers and normal meat consumers can be convinced to purchase plant-based meat products.

**Figure 23:** Reasons for buying plant-based milk among consumers

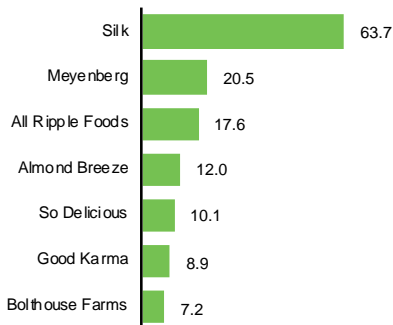


Source: Mintel

### Sales Forecast

As mentioned before, the plant-based meat market is a new and high-growth landscape, where there is not only headroom for new players to jump in, but also potential for Beyond Meat to consolidate its position and retain a good portion of the costumers therein.

**Figure 24:** Sales of milk alternatives in 2018, by major brands (in millions of \$)

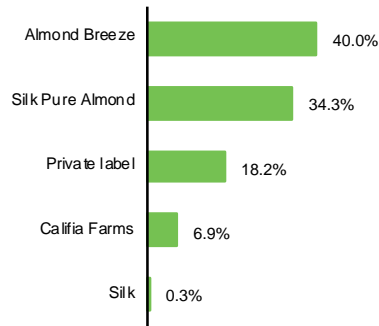


Source: Statista

Given the ‘new-born’ type of company we are analysing and, in particular, by considering the significant top-line growth showed in the past, and the one we are modelling in the future, we did not observe any listed consumer company that is currently comparable in terms of growth or nature to Beyond Meat. Most of the packaged-food manufacturers that will enter the market are bigger, more mature, and diversified than Beyond Meat, and the business of smaller high-growth consumer staples companies is too different to be considered a good comparable company. However, when applying our approach with plant-based milk products we considered two brands of dairy-alternatives in order to better understand how the market share of Beyond Meat may evolve over time. Silk and Almond Breeze

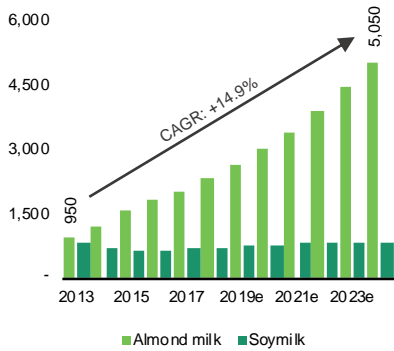
<sup>22</sup> McCarthy, K.S., Parker, M., Ameerally, A., Drake, S.L., Drake, M.A. 2017. “Drivers of choice for fluid milk versus plant-based alternatives: What are consumer perceptions of fluid milk?” *Journal of Dairy Sciences* 100: 6125-6138.

**Figure 25:** Market share of key almond milk brands in the US in 2019 (in % of \$ sales)



Source: Statista

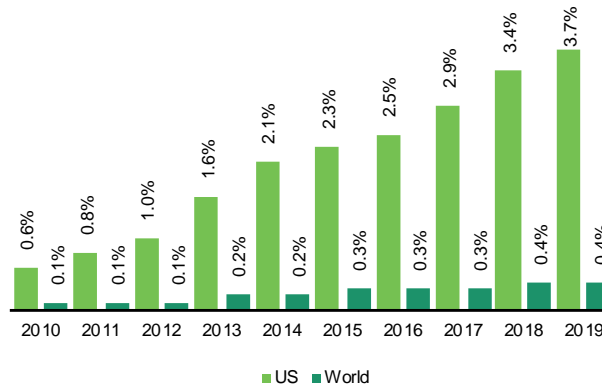
**Figure 26:** Evolution of sales of almond milk and soy milk in the US (in millions of \$)



**Almond Breeze was among the first movers in the almond milk market.**



**Figure 27:** Almond Breeze market share evolution in plant-based milk products



Source: Euromonitor

are two dominant brands in the plant-based milk industry, and for almond milk in particular (see Figure 24 and 25). These two brands belong to the companies WhiteWave Foods and Blue Diamond, respectively. We consider almond milk and especially the brand Almond Breeze to be a good approximation of the situation that Beyond Meat is in right now. Almond milk turned out to be a new category in the already longer existing plant-based milk market and led Almond Breeze to completely turn over the whole industry, being able to attract new consumers and gaining traction from soy milk. In 2010, almond milk started to become popular and by 2013 it had already surpassed soy milks sales by USD 150m (see Figure 26).

Beyond Meat in comparison is also operating in the already longer existing alternative meat market. Through its innovative pea-protein food and its unique marketing approach, Beyond Meat is also, in analogy to Almond Breeze, significantly changing the industry, leading to an opening of the market to attract new consumers as well as competitors.

▪ Almond Breeze – Blue Diamond

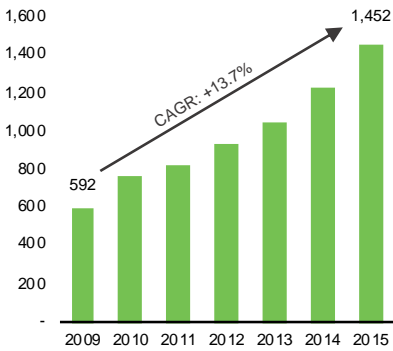
Blue Diamond is a California-based almond grower which history goes as far back as the 1850's. With its brand Almond Breeze, which was introduced to the market in 2008, the company has managed to excel in the almond milk market and became one of its main players, as shown in Figure 25 above.

As presented in Figure 27, the brand had a market share of 0.6% in 2010, when Almond milk products started to gain traction in the US. We consider Almond Breeze to be the first mover in this new, high-growth market back in 2010.

▪ Silk – WhiteWave Foods

Silk is a Colorado-based company that started back in 1977 with tofu-based products to then begin the journey into milk-alternatives with soy milk at the end of the 90's under WhiteWave Foods. Even though there is no public financial data

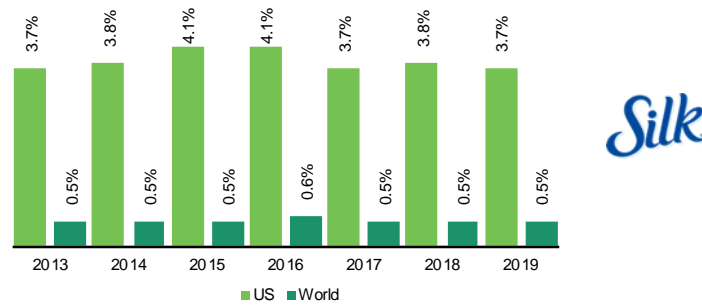
**Figure 28:** WhiteWave Foods' plant-based sales (in millions of \$)



Source: Euromonitor

available for WhiteWave during these periods, we know the company was acquired by Dean Foods in 2002 for a deal value of EUR 209m with revenues standing at USD 125m. After that, the company became public in 2012, and in 2016 was sold to Danone for EUR 10,881m with revenues of c. USD 3.9bn, of which approximately USD 1.5bn coming from its plant-based category in 2015 (see Figure 28). By exploiting its advantage as an early-mover in the plant-based dairy alternatives, WhiteWave was able to grow its sales from USD 592m to USD 1.5bn in 7 years.

**Figure 29:** Silk market share in plant-based meat products



Source: Euromonitor

**As a first mover back in 1996, Silk has been able to fight competition in a high-growth market by updating its product portfolio over the years.**

Silk launched *PureAlmond* in the market in 2010, and accordingly, is also considered to be one of the first companies to enter the almond milk category. However, besides almond milk, the company has evolved and updated its product portfolio to meet changing consumer tastes and demands, and started offering other milk alternatives like coconut, nut or soy milk throughout the years. This continuous development of its product portfolio has helped the brand retain its market share in a high-growth market with increasing competition (see Figure 29). We believe that by expanding its product portfolio, Beyond Meat will be able to do the same and retain its market share in the future. For this reason, and for the fact that Silk is an early-mover in the dairy-alternative market, we believe the long-term evolution in market share of this brand to be a good approximation of what we could see for Beyond Meat in the future.



**Value drivers**

In order to determine the valuation of Beyond Meat we considered a 10-year explicit forecast horizon, followed by a 10-year annuity and a terminal value. This long time-span was chosen due to Beyond Meat's rapid recent growth, which we expect to prolong in the future as well as the high level of uncertainty around the overall plant-based meat market development. We expect the company's growth to slow down after the 10-year forecast, to be lower in the annuity period, and to only reach a stable state after 20 years. The main value drivers we deemed appropriate to forecast Beyond Meat's financial performance are outlined below.

To make assumptions accordingly, we separated the core business into the two platforms, fresh and frozen. If assumptions differ per platform, both approaches are stated.

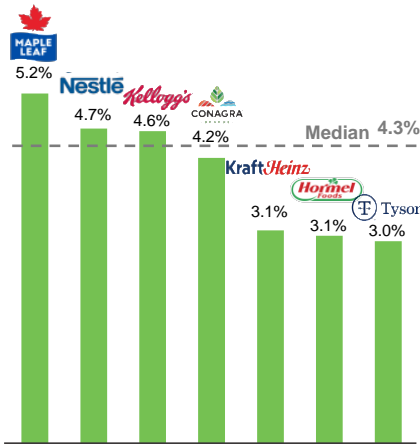
As outlined in the valuation section, we performed a scenario analysis on crucial input drivers. The following input drivers reflect our base case assumptions, while the deviations of the management case as well as downside case are stated in the scenario analysis section.

- Value drivers- Balance sheet

**Property, Plant & Equipment**

Property, plant & equipment (PPE) is expected to increase with the scaling up of the company’s operations. In the years 2017 and 2018 CAPEX in percentage of sales was equal to 21.6% and 24.3%, respectively. In these two years, Beyond Meat was increasing its production facilities, adding one plant and expanding the other one in Columbia, Missouri. As the company’s current business model is focused on rapid expansion mostly through contracting co-manufacturers to produce the finished products, Beyond Meat is not expected to significantly increase its PPE and maintain the high CAPEX/Sales ratio in the foreseeable future. In fact, in the nine months ended 2019, the CAPEX/Sales ratio was found to be 5.3%. Assuming a CAPEX/Sales ratio of 6% for 2019, we are forecasting the ratio to be 4% at the end of the forecast horizon. This is slightly below the industry median of 4.3% for packaged goods companies (see Figure 30), reflecting that Beyond Meat’s business model is less capital intensive due to its partial reliance on sub-manufacturers. Depreciation is expected to stay at the value of the first three quarters of 2019 at 17% of prior year PPE, reflecting an average useful life of circa 6 years.

**Figure 30:** Capital expenditures as % of \$ sales for major packaged food players in North America



Note: Capex as % of \$ sales according to annual 2018 figures as reported on companies’ financial statements  
Source: Companies, Bloomberg

**Figure 31:** Beyond Meat’s Cash Conversion Cycle in 2030e

CCC	DSO	DIO	DPO	Total
2018	33.6	105.6	-64.7	74.6
2030	30.1	66.1	-39.3	57.0

Note: The Cash Conversion Cycle is given by the sum of Days of Sales Outstanding (DSO), Days of Inventory Outstanding (DIO), and Days of Payable Outstanding (DPO).

**Net working capital**

The main drivers in Net working capital consist of Accounts receivable, Inventory and Accounts payable. Receivables are expected to be driven by revenues and inventory as well as payables by COGS. In all three cases, the collection period in days, the inventory holding period in days and the payables period in days are expected to approach the medians of the packaged food industry at the end of the forecast period. This would in effect reduce the cash conversion cycle from 75 days to 57 days (see Figure 31). This assumption reflects that with gained size, Beyond Meat is able to strengthen its bargaining position and take advantage of efficiency improvements.

- Value drivers - Income statement

## Revenues

The crucial value drivers for our model are the ones underpinning revenue generation for Beyond Meat. By highlighting that the type of market we are dealing with is new and with high-growth potential, as well as the length of our forecast horizon, there is significant uncertainty involved. Our forecast is based on sales volumes in pounds for both platforms and focused specifically on two regions, the US (Beyond Meat's main market), and the rest of the world. To arrive at an estimate for revenues, we have taken the following steps:

First, we found total meat consumption in the US and the rest of the world. We obtained data from the OECD for the forecast of total meat consumption (beef, veal, pork, poultry, and sheep) per capita and multiplied those numbers for the population forecast extracted from the WorldBank databases.

Second, we applied a percentage (reflecting the plant-based share) to the total meat consumption estimated, to find the plant-based meat consumption in pounds. As outlined earlier, we considered the plant-based milk market a good approximation of how the plant-based meat market may develop. Thus, we applied the percentage of retail sales in volume of the plant-based share of the milk market to retail meat consumption volumes. By looking at the data extracted from Passport for plant-based milk sales between 2002 and 2018, and by considering that the stages of the two markets are similar in terms of development, we took the market share of milk alternatives as of 2002 and applied it to the size of the meat market in 2019 to get an estimate for the plant-based meat market. The logic for this approach stems from the fact that dairy-alternatives started to disrupt the animal-milk market around the end of the 90's, and that the early-mover Silk entered the market with soy milk in 1996. Therefore, by starting circa in 1996 and following 6 years' time, dairy-alternatives registered a market share of 1.86% in the US. On the other hand, meat alternatives started to become popular in the US market around 2012, and by looking at the share of plant-based meat versus the total US meat market after 6 years, plant-based meat alternatives registered a market share of 1.02% for 2018 (see Appendix 2). Considering the hype created by Beyond Meat around plant-based meat products and the announcement of several major packaged food players to enter this high-growth industry in the near future, we deem the share of 1.9% of the dairy-alternatives market in 2002 to be attainable and comparable to the plant-based meat share in 2019.

As described earlier, a certain number of plant-based milk consumers were purchasing it due to intolerances. However, by taking into account existing meat intolerances and the fact that consumer habits are changing over time, as well as

the main drivers for consumers to buy milk and meat alternatives, which nowadays are environmental, sustainability and health reasons (McCarthy et. al, 2017)<sup>23</sup>, we do not think that an adjustment to the dairy alternatives market share is required.

Third, given that competition will likely have a negative impact on both Beyond Meat's product price and market share, and that there is a high level of uncertainty on how many players will enter the market (besides the ones we already covered) in the future, we decided to look at comparable companies to forecast BYND's market share. As outlined earlier, Almond Breeze and Silk are the two brands we will focus our attention on. We decided to look back at what share of the market Almond Breeze was able to capture after entering the high-growth dairy-alternatives market with almond milk in 2008. By looking at the data we obtained from Euromonitor (see Appendix 3) we decided to take the market share of Almond Breeze as of 2014 (6 years after launch) as our starting point for our market share forecast in 2019. The main reason we decided to start from 2014 is because by comparing the timing and stage of development of the two markets (plant-based meat and milk) we discovered that year to be the closest comparable for our forecast. 2014 was six years after the disruptive launch of Almond Breeze products in the dairy milk industry, whereas Beyond Meat started to sell its first products in 2013, which also represents a six-year time-span until 2019. Moreover, we assumed that the stage of development of the plant-based milk market, and in particular of the market for almond milk, was similar to the one of the plant-based meat market today. By comparing the CAGR between 2013 and 2018 of the sales of plant-based milk alternatives [+9.4%] and of almond milk [+16.3%] in the US with that of plant-based meat between 2018 and 2023e [+14.8%] we can observe that both plant-based industries represent high-growth markets with similar attributes and are therefore at a comparable stage of development.

More precisely, by looking at the actual numbers, Beyond Meat had a market share of 1.93% in the US in 2018 (and 0.75% in 2016 – one year after the launch of the *Beyond Burger*). Almond Breeze, in comparison, had according to the data gathered, a share of 0.6% in the US in 2010 (two years after it introduced almond milk to the market), and of 2.1% four years after in 2014, which represents our starting point in 2019 (therefore assuming a gain in market share for BYND of 0.2 percentage points). Ultimately, by looking at the market share of Almond Breeze after 10 years in 2019 and of that of Silk, which was an early-mover in the dairy-alternatives market starting in 1996 with soy milk, and by observing how these values have stagnated around circa 3.7% because of the more aggressive

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<sup>23</sup> McCarthy, K.S., Parker, M., Ameerally, A., Drake, S.L., Drake, M.A. 2017. "Drivers of choice for fluid milk versus plant-based alternatives: What are consumer perceptions of fluid milk?" *Journal of Dairy Sciences* 100: 6125-6138.



competition, which saw more and more players entering the market throughout the years, we expect Beyond Meat market share to behave the same during the final years of our forecast and stabilise around 4.0% for the US and 0.5% worldwide.

Fourth, to arrive at gross revenues, we need to take the sales volumes that we obtained from the respective market share and multiply them by an assumed price. As already discussed, due to increased competition and Beyond Meat’s announcement to sell less expensive products, we expect prices to decrease slightly over the forecast horizon. Currently, the *Beyond Burger* package sells for USD 12 per pound in retail, which is about 4x as expensive as normal minced beef, or about one dollar more expensive than the *Incredible Burger* of Nestlé (which sells for USD 11 per pound). By assuming that competition will grow fast in the next few years, we expect the nominal price to decrease more in the near future than in the long-term. Starting from the average price of the first three quarters of 2019, we forecast prices to drop by 3% in the following three years and reach a sales price of ca. one dollar less than in 2018, reflecting the price difference of one dollar between the *Beyond Burger* and the *Incredible Burger*. In the remaining years of the forecast, we expect the nominal price to decrease by a lower percentage of 2% y/y, arriving at a reduction of an additional dollar less at the end of the forecast horizon. This price erosion is partly offset by inflation forecasts (of the US, as our main market) obtained from the IMF and used to obtain real prices (see Figure 32).

**Figure 32:** Nominal and inflation adjusted prices forecast

Prices (in \$)	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Nominal price	6.9	6.5	6.3	6.1	5.9	5.8	5.7	5.6	5.5	5.4	5.3	5.2	5.1	5.0
Inflation adjusted price	6.9	6.5	6.5	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.5	6.5	6.5	6.5

Note: Current dollar prices are adjusted for the change in price level forecasted by the IMF

**Costs of goods sold**

For the year ended 2018, after separating core and non-core businesses, we are assuming COGS to be of USD 4.7 and USD 3.1 for fresh and frozen platform respectively. Taking into account data collected and our own estimates, we broke down COGS into five categories, which represent the following percentage of total COGS: pea protein costs (11.3%), tolling fees (19.5%), spices, flavours and other ingredients (23.5%), packaging costs (7%) as well as other costs (38.6%, include e.g. direct labour costs, rent and other utility costs). By applying the concept of learning curve, which assumes that by doubling the output (in our case the volumes manufactured) the costs will fall by a certain percentage, we forecasted the evolution of COGS per pound sold. According to research studies, the average

cost reduction of raw material lies between 5% and 7%<sup>24</sup>. For our base case assumption, we assumed the learning rate to be 6.5%.

### R&D Expenses

Beyond Meat is heavily dependent on research and development, as improved and new products are expected to be presented by the company in the upcoming years. Therefore, R&D expenses are forecasted to exceed the median industry R&D/Sales ratio of 0.5%. By assuming a steady increase in R&D personnel (the main cost factor in R&D expenses) and a slightly rising R&D/employee rate, R&D spending is forecasted to be approximately 5% of sales in 2019. This percentage is expected to decrease over the forecast horizon, reaching a value of 3% at the end of the period.

### SG&A

SG&A expenses consists primarily of outbound freight and personnel costs. SG&A in percentage of revenues declined sharply from 2016 to 2018, dropping from 78% to 39% overall. In the nine months ended 2019, this trend continued with SG&A expenses representing 24% of net revenues. We expect the ratio to approach the industry median of 17.5% in the forecast period.

## Valuation

### WACC

Given the type of company we are analysing (high-growth, early stage), we assumed two different target capital structures to compute the weighted average cost of capital for Beyond Meat. The assumptions made to calculate the cost of capital for the explicit 10 years forecast period, and the annuity and perpetuity period, are outlined in the table below (see Table 2). The values found for Beyond Meat for the two periods are 6.1% and 5.8% respectively and are presented in Appendix 5.

**Table 2:** Assumptions for the calculation of the weighted average cost of capital of Beyond Meat

Assumptions	General	Rationale
<b>Asset beta</b>	The unlevered beta used to calculate the WACC is an equally-weighted average of two different betas coming from 1) a set of peers of Beyond Meat 2) a set of high growth consumer staples companies in the US <sup>24</sup>	1) In light of the type of company we are analyzing, we used data for major packaged food players which are assumed to be comparables of Beyond Meat in the long-term, given the objective of the company to become a leader in the plant-based meat space. It is also important to note that all of these players are entering or have already entered the plant-based meat market. These asset betas were also adjusted for cash to better reflect the riskiness of operations of the companies 2) Beyond Meat is a high-growth company and as such it will incorporate a greater risk in its operations, at least in the medium-term, with respect to more mature packaged food players. To correct for this factor we have taken the asset beta of a set of high-growth consumer staples companies in the US
<b>Risk free rate</b>	The risk-free rate used in the WACC calculations is the yield of a 10-year US treasury note as of November 2019. The yield is equal to 1.94%.	Beyond Meat is based in the US and as per in its last available financial statements, 83% of its sales are coming from this geography. According to the company's management, the US will remain the main target market while trying to expand and grow internationally in Europe and Asia
<b>Market risk premium</b>	The market risk premium used is the equity risk premia of US companies in 2019 taken from Damodaran NYU Stern database. The premium equals 5.96%	By following the same rationale assumed for the risk-free rate, Beyond Meat is undertaking and will focus most of its operations in the US

<sup>24</sup> Strategos. 2014. "Learning & Experience Curves in Manufacturing." Accessed December 27. <http://www.strategosinc.com/downloads/learning-curves-dl1.pdf>

<b>Cost of debt</b>	The cost of debt used in our WACC computations is obtained by adding to the 10-year US risk free rate, an implied credit spread found using the following formula: $YTM - Probability\ of\ Default \times Loss\ Given\ Default$ ; the credit spread was computed by looking at the current bond outstanding in the market for the same set of peers used for the unlevered betas in 1)	The rationale behind this approach stems from the fact that in the long-term, we expect Beyond Meat to have a credit quality which will be similar to the one of major US packaged food companies. The financial risk incurred by Beyond Meat's bondholders in the future is therefore reflected in this credit spread
<b>Capital structure: target D/E</b>	Given our approach to compute Beyond Meat's discounted cash flow, it is reasonable to assume two different capital structures for Beyond Meat: 1) for the first 10 years of operations, given its high-growth stage 2) for the following years, a different capital structure to be reflected in the annuity (over 10 years) and perpetuity calculations	The rationale behind the use of two different target D/E ratios, lies behind the fact that the implied capital structure forecasted by our model in 2031 presents a D/E ratio of 1.1%, which is not in line with the packaged food industry median of 21%, and therefore may well not reflect the capital structure that Beyond Meat will likely have in the future when it will be a more mature player. 1) For the explicit forecast period we have used the D/E ratio implied by our model at the end of 2031 to compute the WACC. According to our model, the D/E ratio of is 2.2%; 2) For the following years, we have instead used the median D/E ratio of the packaged food industry of 21%
<b>Implied debt beta</b>	Given that in the annuity and perpetuity period we assumed a target D/E ratio for our model, we had to calculate the riskiness of the debt of the company in order to compute the levered beta of Beyond Meat	Usually, a constant debt level would imply that the debt bears no risk, as it is the case in the explicit forecast period. On the other hand, a constant D/EV ratio would imply that the company repurchases equity by issuing new debt every time the firm value rises, and issues equity to retire debt every time the firm value decreases. Therefore, and in the extreme case, the tax savings from debt issuance are perfectly correlated with the value of the unlevered assets of the firm, implying $B^U = B^{TS(1)}$ . Both assumptions are deemed to be too simplistic for our model in the annuity and perpetuity period, and thus we have calculated the riskiness of the debt of the company given the cost of debt and the equity risk premia
<b>Re-levered equity beta</b>	The re-levered equity beta for Beyond Meat was computed for both target D/E ratios. Therefore, once we re-levered the asset beta with a D/E ratio of 2.2% (for the first 10 years), while the second time we re-levered the asset beta with a D/E ratio of 21% (annuity and perpetuity)	
<b>Cost of equity</b>	The cost of equity was computed by following CAPM, given the risk-free rate and the equity risk premia outlined above	

Note: The table presents the assumptions made to calculate the discount rate used (WACC) for Beyond Meat's valuation; (1) the two sets of companies are presented in the section above "Beta"; (2)  $B_U$  refers to the asset beta while  $B_{TS}$  refers to the beta of the tax shield. All the formulas used are presented in the financial model; and the values presented in the table are sourced from Bloomberg as of November 2019. Refer to Appendix 4 for the implied credit spread used in the calculation of the cost of debt; and to Appendix 5 for the two WACC obtained.

**Table 3:** Assumptions for the calculation of the weighted average cost of capital of Beyond Meat

Peers	Unlevered beta
Nestlé	0.58
Kellogg's	0.35
Tyson Foods	0.49
Conagra	0.60
Hormel Foods	0.35
Kraft Heinz	0.51
Maple Foods	0.33
<b>Median</b>	<b>0.49</b>
<b>Average</b>	<b>0.46</b>

Note: The table presents the unlevered betas for the major packaged food players in North America, these are also considered to be competitors of Beyond Meat

**Table 4:** Assumptions for the calculation of the weighted average cost of capital of Beyond Meat

High growth peers	Unlevered beta
Shake Shak	1.33
Five Below	0.90
GrubHub	1.02
Canada Goos	2.00
Lululemon	1.13
Wing Stop	0.74
Boot Barn	1.11
Ulta Beauty	0.81
Planet Fitness	0.87
Capri Holdings	0.65
Sprouts Farmer Market	0.56
<b>Median</b>	<b>0.90</b>
<b>Average</b>	<b>1.01</b>

Note: The table presents the unlevered betas for a set of high-growth consumer staples companies in North America; the values are sourced from Bloomberg

## Beta

To estimate the beta, we utilised the historical approach on two different sets of companies. On one hand, direct competitors of Beyond Meat, which are mature players in the packaged-food industry, on the other, a set of high-growth (s)mid-cap consumer staples.

After having calculated the beta for each of these companies by having regressed individual weekly excess stock returns on excess market returns – calculated with respect to the relevant market index, which was dependent on the location of the company's operations – over a period of 3 years, we unlevered and adjusted them for cash, and looked at the medians of the two sets. By computing an equally weighted average of these two values we came up with an initial asset beta of 0.7 for Beyond Meat's operations. Ultimately, by re-levering the beta with the two different target D/E ratios presented in Table 2 above, we obtained a levered beta of 0.7 and 0.8 for the explicit forecast period and the annuity and perpetuity period, respectively. Table 3 and 4 on side show the unlevered betas for the two sets.

### Discounted Cashflow Method

In order to find a price per share for Beyond Meat at year-end 2020, we applied the discounted cashflow method, using the forecast values described above. The DCF valuation can be split into three parts, the explicit forecast period of 10 years, the annuity period of 10 years, and the terminal value. The annuity value formula was applied in the year of 2031. The period of 10 years was chosen, as we believe the company will still be able to show higher than economy growth rates throughout the annuity time frame.

The assumed annuity growth rate and RONIC of the fresh platform for the base case are 7% and 25%, respectively, following the development in the last years. The terminal growth rate used is 3% and reflects a weighted average of the latest GDP growth forecasts of our assumptions of BYND’s prospective main markets, US (50%), Europe (40%) and Asia (10%), as we believe that the US will remain the main market, while Europe and Asia will follow afterwards. Assumed fresh platform base case RONIC for the terminal value is 12.5%, as we expect the company to retain competitive advantage and a strong brand in the future. By discounting these values at a mid-year discount rate equal to the WACC (see Appendix 5) we arrived at the value of the core business, and by adding the value of non-core business as well as excess cash we arrived at the enterprise value. When dealing with high-growth companies, and therefore being confronted with a high level of uncertainty, the best approach is to find the value per share as a weighted average of different scenarios (Koller et al., 2010)<sup>25</sup>. As outlined in the forecast section, in our case, we assumed three different scenarios: base, management, and downside case. All details in the forecast section are stated for the base case. For the management and downside cases, we focused on the value drivers considered to be of crucial importance for success or failure. Reasons for inclusion and derivations of the most important drivers thereof to the base case are outlined in the paragraph below.

### Scenario Analysis

- Market share of Beyond Meat

Market share is in our point of view the most important value driver, as Beyond Meat’s prospective success depends heavily on how much share of the market the company can grasp. We assume in the Management case that the company’s US and worldwide market share will converge to 5% and 1%, respectively. We believe, that these values represent an

**Figure 33:** Beyond Meat’s market share in the US

Market share in the US	2029E	2030E	2031E
Management case	4.90%	4.95%	5.00%
Base case	4.00%	4.00%	4.00%
Downside case	3.70%	3.70%	3.70%

<sup>25</sup> Koller, Tim., Goedhart, Marc., and David Wessels. 2010. *Valuation: Measuring and Managing the Value of Companies*. New York: John Wiley & Sons, Inc.

Figure 34: Beyond Meat's market share in the World

Market share in the World	2029E	2030E	2031E
Management case	0.95%	0.98%	1.00%
Base case	0.50%	0.50%	0.50%
Downside case	0.40%	0.40%	0.40%

upper bound of future market share considering the competitive environment Beyond Meat will be facing. For the downside case, US and worldwide market share will converge to 3.7% and 0.4%, respectively (reflecting the market share Almond Breeze was able to capture). The factors for success are deeply linked with Beyond Meat's ability to introduce new product lines and to expand into new markets in the future.

- COGS learning rate

The development of COGS and therefore the Gross Margin, is a crucial cost metric for the company to turn profitable. We assumed the learning rate for the management case to equal 7%, which according to research studies is the highest achievable learning rate for raw materials. For the downside, we believe the learning rate to be equal to 6%, 0.5% lower than in the base case. These assumptions led to a Gross Margin of 42%, 38% and 36% for the three scenarios, respectively, at the end of the forecast period. The company itself announced to target a Gross Margin in the upper region between 35% and 40%. Decisive factors for this development will be the company's ability to make use of higher bargaining power and economies of scale.

- Annuity and Terminal value

Annuity RONIC for the fresh platform is assumed to be 30% and 15%, while annuity growth rate is assumed to be 10% and 6% for management and downside cases, respectively. Terminal value RONIC is assumed at 15% and 7.5% for management and downside cases, respectively. Reflecting the long-term development of the company under each scenario.

Deducting from the enterprise value the market value of debt and the value of employee stock options, gives us three equity values for the respective scenarios. The total value of employee stock options is found by forecasting outstanding stock options at year-end 2020 and valuing them with the Black-Scholes formula. By dividing the three equity values by stocks outstanding of 60,565,840, we arrived at value per share of 219.3, 60.0 and 20.9 for the management, base, and downside cases, respectively. As we believe the base case to be the most likely outcome, weights for the scenarios were assumed to be 25%, 50% and 25% respectively, to find a value per share for Beyond Meat at December 31, 2020 of USD 90.05.

## Appendix

### Appendix 1: Trademarks registered and filed

Name	Status	Name	Status
BEYOND BURGER	Registered	BEYOND SPLIT SAUSAGE	Application
BEYOND SAUSAGE	Registered	BEYOND DAY	Application
THE FUTURE OF PROTEIN BEYOND MEAT	Registered	BEYOND BURRITO	Application
THE COOKOUT CLASSIC	Registered	BEYOND JERKY	Application
THE BEYOND BURGER	Registered	BEYOND BURRITO	Application
THE FUTURE OF PROTEIN	Registered	BEYOND NUGGETS	Application
BEYOND BEEF	Registered	BEYOND HOT DOGS	Application
BEYOND CHICKEN	Registered	BEYOND GROUND	Application
BEYOND MEAT	Registered	BEYOND LAMB	Application
BEYOND MEAT	Registered	BEYOND TUNA	Application
BYND	Application	BEYOND SHRIMP	Application
GO BEYOND	Application	BEYOND FISH	Application
BEYOND FRIED CHICKEN	Application	BEYOND CRAB	Application
BEYOND BONELESS WINGS	Application	BEYOND HAM	Application
BEYOND BRUNCH	Application	BEYOND PORK	Application
BEYOND MEATBALLS	Application	BEYOND TURKEY	Application
BEYOND CHILI	Application	BEYOND BREAKFAST SAUSAGE	Application
BEYOND MEATBALL	Application	EAT WHAT YOU LOVE	Application

Source: Company

### Appendix 2: Plant-based meat market share over the last 3-years

Plant-based meat market	2016	2017	2018
Growth of plant-based meat \$ sales	-	25.2%	10.0%
US Plant-based retail meat market (in million \$)	584	731	801
US Retail meat market (in million \$)	76257	76693	78459
<b>US Plant-based share (% of retail volume sales)</b>	<b>0.77%</b>	<b>0.95%</b>	<b>1.02%</b>

### Appendix 3: Almond Breeze and Silk brand market share penetration since 2010

Plant-based milk brands penetration	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Market share (in %)</i>										
<b>US</b>										
Almond Breeze	0.6%	0.8%	1.0%	1.6%	2.1%	2.3%	2.5%	2.9%	3.4%	3.7%
Silk (WhiteWave Foods)	-	-	-	3.7%	3.8%	4.1%	4.1%	3.7%	3.8%	3.7%
<b>World</b>										
Almond Breeze	0.1%	0.1%	0.1%	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%	0.4%
Silk (WhiteWave Foods)	-	-	-	0.5%	0.5%	0.5%	0.6%	0.5%	0.5%	0.5%

### Appendix 4: Implied credit spread for packaged food peers

Peers	Weighted average YTM	Weighted average maturity	Rating (Moody's / S&P)	PD	LGD	Implied credit spread
Conagra	3.8%	9	Baa3/BBB-	3.11%	54%	2.15%
Kellogg's	2.5%	7	Baa2/BBB	2.41%	54%	1.17%
Kraft Heinz	4.3%	13	Baa3/BBB-	4.32%	54%	1.95%
Nestle	1.5%	9	Aa2/AA-	0.66%	54%	1.17%
Tyson Foods	3.3%	12	Baa2/BBB	4.06%	54%	1.15%
Hormel Foods	2.2%	10	A1/A	1.28%	54%	1.54%
<b>Averaga</b>	<b>2.9%</b>					<b>1.52%</b>
<b>Median</b>	<b>2.9%</b>					<b>1.36%</b>

Note: The table presents the average and median credit spread implied by the formula  $[Credit\ spread = YTM - (PD \times LGD)]$ , where PD is the 'probability of default' and LGD is the 'loss given default', or recovery rate, for a given credit rating and maturity. These two values were sourced from S&P Global and Moody's, respectively. The weighted average Yield to Maturity (YTM) and weighted average maturity are calculated with respect to the portfolio of bond outstanding as of November 2019 for each peer.

**Appendix 5: Weighted average cost of capital used in the valuation**

WACC	Explicit forecast period	Annuity / perpetuity
Asset beta	0.70	0.70
Risk-free rate	1.94%	1.94%
Market risk premium	5.96%	5.96%
Cost of debt	3.30%	3.30%
Target D/E	1.1%	21%
Implied debt beta	-	0.23
Re-levered equity beta	0.70	0.80
Cost of equity	6.14%	6.69%
<b>WACC</b>	<b>6.10%</b>	<b>5.83%</b>

Note: The table presents the WACC used in the valuation of Beyond Meat; the market risk premia is taken from Damodaran and the risk-free rate is taken from Bloomberg as of November 2019. The cost of debt is obtained by summing the risk-free rate and the median implied credit spread showed in Appendix 5. All the formulas used are presented in the financial model.

**Appendix 6: Pro-forma Income Statement**

	Actuals			Financial Forecast													
	2016A	2017A	2018A	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	
<b>Fresh Platform</b>																	
Fresh Platform Revenues	813	18 109	81 686	331 527	452 516	507 245	604 523	803 315	892 854	1 124 988	1 275 265	1 452 596	1 614 837	1 630 271	1 645 605	1 661 914	
Discount	(122)	(2 458)	(8 076)	(29 837)	(40 726)	(45 652)	(54 407)	(72 298)	(80 357)	(101 249)	(114 774)	(130 734)	(145 335)	(146 724)	(148 104)	(149 572)	
Net revenue	691	15 651	73 610	301 689	411 789	461 593	550 116	731 017	812 497	1 023 739	1 160 491	1 321 863	1 469 502	1 483 547	1 497 500	1 512 342	
COGS, net	902	15 526	55 777	208 101	279 632	314 396	373 092	484 061	532 911	658 927	739 115	832 766	917 382	923 876	930 284	937 175	
Gross Profit	(212)	125	17 833	93 589	132 157	147 197	177 024	246 955	279 586	364 812	421 377	489 097	552 120	559 671	567 216	575 166	
R&D expenses, net	242	2 639	7 078	15 300	18 975	22 750	26 625	28 800	31 025	33 300	35 625	38 000	40 425	42 900	46 413	50 000	
SG&A, net	517	7 460	27 249	72 405	96 599	105 782	123 088	159 605	172 994	212 426	234 516	259 966	281 042	275 692	270 174	264 660	
Stock-based compensation	30	240	1 842	6 631	8 145	8 116	8 463	9 640	8 929	9 000	8 927	8 716	9 689	8 151	8 228	8 310	
Depreciation and amortization	56	1 239	3 818	4 774	6 983	9 807	12 511	15 443	19 336	23 068	27 705	32 373	37 184	41 919	45 542	48 232	
EBT	(1 057)	(11 454)	(22 154)	(5 522)	1 455	742	6 337	33 468	47 302	87 019	114 604	150 042	183 780	191 008	196 860	203 965	
NOPLAT Fresh platform	(691)	(7 475)	(17 019)	(5 522)	(504)	(1 054)	5 400	31 418	44 698	77 725	88 823	116 886	143 354	149 390	153 999	159 596	
<b>Frozen Platform</b>																	
Frozen Platform Revenues	18 236	19 588	15 896	22 198	30 612	34 668	41 743	55 469	61 652	77 681	88 058	100 302	111 505	112 571	113 630	114 756	
Discount	(2 745)	(2 658)	(1 572)	(1 998)	(2 755)	(3 120)	(3 757)	(4 992)	(5 549)	(6 991)	(7 925)	(9 027)	(10 035)	(10 131)	(10 227)	(10 328)	
Net revenue	15 491	16 930	14 324	20 201	27 857	31 548	37 986	50 477	56 103	70 690	80 132	91 275	101 470	102 439	103 403	104 428	
COGS, net	19 552	16 246	10 583	13 466	18 141	20 296	24 049	31 202	34 601	42 783	47 990	54 070	59 564	59 986	60 402	60 850	
Gross Profit	(4 060)	684	3 741	6 735	9 716	11 252	13 937	19 275	21 502	27 906	32 143	37 205	41 905	42 453	43 001	43 578	
R&D expenses	5 366	2 802	1 288	2 147	2 624	3 101	3 578	3 816	4 055	4 294	4 532	4 771	5 009	5 128	5 486	5 844	
SG&A, net	11 595	8 070	5 303	5 328	7 181	7 945	9 340	12 111	13 127	16 119	17 795	19 726	21 325	20 919	20 501	20 082	
Stock-based compensation	670	260	358	444	551	555	584	666	617	621	616	602	669	563	568	574	
Depreciation and amortization	2 018	1 942	1 103	415	607	853	1 088	1 343	1 681	2 006	2 409	2 815	3 233	3 645	3 960	4 194	
EBT	(23 709)	(12 389)	(4 311)	(1 599)	(1 247)	(1 202)	(653)	1 339	2 022	4 867	6 790	9 291	11 668	12 198	12 486	12 884	
NOPLAT Frozen platform	(15 569)	(8 100)	(3 267)	(1 599)	(1 247)	(1 202)	(653)	1 200	1 863	4 322	5 243	7 223	9 088	9 529	9 756	10 069	

**Appendix 7: Pro-forma Balance Sheet**

	Actuals			Financial Forecast												
	2016A	2017A	2018A	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
<b>Core invested capital</b>																
Operating cash	502	1 010	2 726	10 277	14 028	15 725	18 740	24 903	27 678	34 875	39 533	45 030	50 060	50 538	51 014	51 519
Accounts receivable	879	3 581	12 626	29 553	40 212	44 935	53 385	70 671	78 248	98 214	110 906	125 841	139 354	140 139	140 905	141 744
Inventory	6 185	8 144	30 257	62 212	81 060	88 246	101 313	127 037	135 062	160 994	173 850	188 289	199 059	192 048	184 902	177 730
Prepaid expenses and other current assets	437	1 209	1 472	3 109	4 151	4 549	5 297	6 869	7 445	9 142	10 092	11 188	12 095	11 864	11 627	11 390
PPE, net	10 277	14 118	30 527	44 651	62 706	79 991	98 738	123 632	147 992	177 140	206 990	237 748	268 024	291 186	308 389	320 634
CAPEX	-	7 022	21 330	19 313	25 646	27 945	32 346	41 680	44 878	54 721	59 963	65 946	70 694	68 726	66 704	64 671
Accounts payable	(2 540)	(6 276)	(17 247)	(37 884)	(49 050)	(53 037)	(60 448)	(75 203)	(79 277)	(93 633)	(100 102)	(107 237)	(112 020)	(106 656)	(101 197)	(95 701)
Wages payable	(395)	(547)	(1 255)	(1 720)	(2 000)	(2 400)	(2 800)	(3 600)	(4 050)	(4 500)	(4 950)	(5 175)	(5 400)	(6 250)	(6 250)	(6 250)
Accrued expenses and other current liabilities	(387)	(505)	(2 391)	(5 710)	(7 623)	(8 353)	(9 727)	(12 613)	(13 671)	(16 787)	(18 533)	(20 544)	(22 209)	(21 787)	(21 351)	(20 915)
Invested capital core business	15 117	21 110	57 111	105 938	145 465	171 876	207 146	265 215	302 839	370 374	423 374	481 504	536 039	558 227	575 249	587 432

**Appendix 8: Management and key board members**

Ethan Brown, CEO and President	Mark J. Nelson, CFO	Sanjay Shah, COO
Mr. Brown is the founder of Beyond Meat and has served as CEO and President since 2009. Mr. Brown began his career with a focus on clean energy and the environment, serving as an energy analyst for the National Governors' Centre for Best Practices. He then joined Ballard Power Systems, a hydrogen fuel-cell company where he worked for several years before leaving to found Beyond Meat.	Mr. Nelson is CFO and Treasurer at Beyond Meat and had previously held the role of COO in 2017 as well. In September 2018, when he was appointed as Treasurer, he also resigned from the COO position to solely focus on the IPO. He served briefly as CFO at Biolase, a medical device company, and also at Farmer Bros, where he had the role for two years.	Mr. Shah recently joined the company in September 2019 as COO. Before working in energy operations at Tesla as Senior Vice President, he held a variety of leadership roles at Amazon from 2011 to 2018, another high-growth business. His curriculum also counts two other important roles in the sales and operations spectrum: as Managing Director for MFG Southeast Asia, and as Executive Director at Dell. As COO, Mr. Shah is potentially a capable candidate to lead Beyond Meat through its capacity expansion to match planned sales.

Note: Bio of key management as stated on the company website. <https://investors.beyondmeat.com/corporate-governance>.

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<b>Buy</b>	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
<b>Hold</b>	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
<b>Sell</b>	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

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A Work Project, presented as part of the requirements for the Award of a Master Degree in Finance from the  
NOVA – School of Business and Economics.

Cultured meat: Impact on the  
valuation of Beyond Meat

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A Project carried out on the Master in Finance Program, under the supervision of:

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## Abstract

“Cultured meat: Impact on valuation of Beyond Meat” outlines the current position, the production process and the environmental and sustainability aspects of cultured meat. Additionally, potential market size and the impact of cultured meat on the plant-based meat industry and especially on the valuation of Beyond Meat are discussed. Cultured meat is expected to be on commercial sale in the next decade and claim a significant portion of the meat market in the next two decades, however having no material impact on the valuation of Beyond Meat, as the plant-based market is deemed to be growing strongly too.

## Keywords (up to four)

Cultured meat, Beyond Meat, plant-based meat, sustainability

## **Introduction**

Cultured meat, also referred to as “lab-grown meat”, “clean meat” or “in-vitro meat” is besides plant-based meat the newest trend in the food category. Cultured meat is defined as synthetically made meat out of animal muscle tissue, which is destined for human consumption. In contrast to plant-based meat, cultured meat is currently not commercially available yet, however, there are an increasing number of companies working on making products ready for the market. (ATKearney 2019)

The purpose of this report is to outline the development of cultured meat and state effects that the rise of cultured meat might potentially have on the plant-based meat market and in particular on the valuation of Beyond Meat.

## **Production process**

Mosa Meat, one of the leading companies in the sector, describes the production process as follows. In a first step, stem cells of muscles are taken from an animal under anaesthesia. These stem cells, also called “myosatellite” cells usually are responsible to regenerate tissue in case of an injury of a muscle. The cells are then placed into a cell culture medium in a bioreactor and nurtured with nutrients, including amino acids, vitamins, sugar, salts, lipids and growth factors in order to proliferate. The stem cells automatically convert into simple muscle fibre, called “myotubes” when growth factors are taken out of the nutrition formula. The myotubes naturally tend to contract, and by putting them into a hydrogel, they start to grow together to form muscle tissue. (Mosa Meat 2019). Currently, products like ground beef are considered easier to replicate due to their structure. Products such as steak or chicken breast have a much more difficult texture to imitate. (Cassidy 2018)

## **Historical development**

The in-vitro meat industry began in 2013, when the Dutch scientific pioneer Mark Post presented the first lab-grown burger patty to the public. The single patty was equivalent to a cost of 250,000 Euros at that time. Following this innovation, several companies have started

to work on making cultured meat accessible to the market. The Dutch company Mosa Meat, Californian Memphis Meats and Finless Foods (which focuses on lab-grown fish), the Israeli Aleph Farms (which specialises on steak production) and Supermeat (which focuses solely on chicken meat) are at the moment the leading companies working on the development of the products. According to their own statements, Mosa Meat is expecting to be able to sell at a low scale in 2021 and at higher scale starting in 2023. (Düthmann, 2019, 30) Mosa Meat is currently estimating the price of a hamburger patty to be around 9 Euros when produced on an industrial scale. (Mosa Meat 2019)

### **Environment and sustainability**

The average conversion rate of feed to meat production lies, according to the management consultancy ATKearney, around 15%, which means that for 1 kg of meat approximately 6.7 kg of feed, like crops, maize or soy are required. Cultured meat, on the contrary, is believed to be able to reach a conversion rate of around 70%, meaning that 1 kg of cultured meat needs an equivalent of 1.5 kg in nutrients. (ATKearney 2019) The Good Food Institute, a US non-profit, pointed out that there are currently three studies on the environmental impact of cultured meat available, which all support the concept that cultured meat is more environmentally friendly. Compared to normal beef, cultured beef is expected to need at least 95% less land, while reducing greenhouse gases by 74% - 87% and decreasing nutrient pollution by as much as 94%. The sustainability rates for cultured chicken are assumed to be lower, resulting in 35%-67% less land used and a reduction of 70% in nutrient pollution. (Good Food Institute 2018) The most recent study by Mattick, C.S. et al highlighted that the production of clean meat has a side effect of a much higher energy use compared to conventional meat. (Cassidy 2018) Nevertheless, ATKearney claims that energy savings of as much as 80% can be achieved on a higher scale manufacturing process. (ATKearney 2019)

Cultured meat companies also argue not to need any antibiotics or hormones in their production. A negative effect, and against the idea of slaughter-free meat, is the usage of “Fetal Bovine

Serum” (FBS) in most cell media. Bovine serum is commonly used for the cultivation of cells and is taken from calf foetuses hearts, after slaughtering a pregnant cow. (Cassidy 2018) Some companies, including Mosa Meat, claim to have developed animal-free cell media without FBS, however admitting it is still not as efficient as casual cell media. (Mosa Meat 2019)

### **Comparison to plant-based meat – market potential**

Research claims that the production of plant-based meat is even more environmentally friendly than cultured meat. Meat alternatives from plants are considered to have a conversion rate of 75%, meaning that for 1 kg of plant-based meat, 1.3 kg of crops are needed. (ATKearney 2019) Considering the potential market size of cultured meat, the outlined studies below concentrate on a range of timeframes and point to very different estimates on how big the cultured meat market is expected to become. According to a BCC Research, the clean meat market is expected to reach USD 20 million by 2027, growing at a CAGR of 4% from 2022 on. (BCC Research 2019) Reports and Data believe the market to reach USD 19 million by 2026, growing at a CAGR of 4.4% from 2021 onwards. They point out the early stage of the market, the long approval times and the massive financing requirements to achieve desired results. (Reports and Data 2019) A MarketsandMarkets study is forecasting the market to reach USD 214 million by 2025 and then growing at a CAGR of 15.7% to USD 593 million in 2032. Technological innovation, the high number of established, financially sound food companies investing into the industry as well as sustainability factors are considered to be the main drivers of such fast growth. The study concludes that especially chicken products, will be the dominant cultured meat, with North America and Europe being the main markets. (MarketsandMarkets 2019)

The equity research team of the investment bank Barclays is suggesting that meat alternatives, both plant-based and cultured meat together, make up around 10% of the global meat market in 2030 (market share in percentage of revenue), albeit most growth in the next years coming from plant-based alternatives. (Barclays 2019) ATKearney believes that meat alternatives can already make up 28% of the global meat market in 2030, with plant-based substitutes

accounting for 18% and cultured meat for 10%. By 2040, the consultancy is expecting cultured meat to be as much as 35% and plant based 25% of the overall meat market. (ATKearney 2019)

### **Impact on Beyond Meat valuation**

As described in the section above, there is a lot of uncertainty involved in how the cultured meat and the plant-based meat market are going to develop. Beyond Meat emphasised that the plant-based meat market has a potential of reaching at least the plant-based share of the dairy milk market (13% in percentage of revenue). In our valuation forecast we considered the plant-based share in percentage of volume, resulting in a lower percentage since plant-based products are more expensive. For cultured meat, this analogy is not possible as cultured dairy is also just under development and lacking behind cultured meat in terms of technological progress.

Even though the reports of BCC Research, Repots and Data and MarketsandMarkets assume different market size outcomes, they all conclude that the growth potential of cultured meat in the next decade is limited, and market size is expected to be significantly below the expected market size of plant-based meat, which is forecasted to be around USD 32 billion by 2026. The research conducted by Barclays points in the direction of the assumed share of the plant-based milk market, with the plant-based share of the total meat market being close to an estimated 10% by 2030. The most progressive forecast of ATKearney assumes that by 2036, cultured meat will overtake plant-based meat. However, mostly on cost of market share of conventional meat, as plant-based meat is forecasted to stagnate around 25% of the meat market by 2040.

Considering it is highly uncertain how long it will take cultured meat producers to manufacture on large scale, when or even if the products will be allowed by regulatory authorities in the US and EU and also taking into account that plant-based production is more environmentally friendly and energy efficient, cultured meat is not presumed to be an existential threat to Beyond Meat and the plant-based meat industry. Even if the most optimistic forecast of ATKearney turns out to be true and cultured meat will overtake the market size of plant-based meat by 2036, the plant-based industry is still predicted to grow until 2040 and reach 25% of the overall meat



market. This would make it much higher than the market potential we are assuming in our valuation model. Therefore, it can be concluded that cultured meat might limit the growth potential of plant-based meat in the future. However, Beyond Meat is not expected to significantly suffer from loss of sales and therefore our target price is assumed to remain intact.

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