ASSET MANAGEMENT - THEMATIC INVESTING
Food report "Plant-based meat"
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Plant-based meat

Investing **BEYOND** the obvious

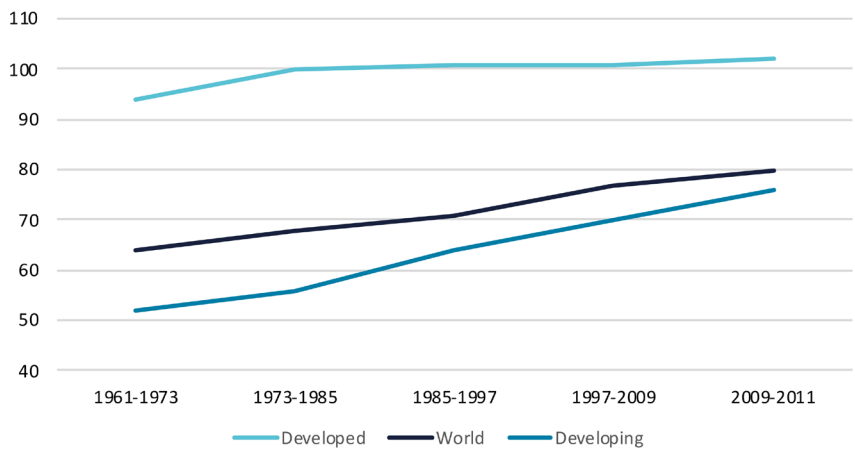
In collaboration with proveg international

From veganism to flexitarian and reducetarian diets, plants are the craze today. Films like "The Game Changers" released in June 2019 profile top vegetarian athletes touting the health benefits of this movement and debunking the myth that muscles require meat. Consumers are becoming much more conscious about health, animal welfare environmental issues and they are consuming more and more plant-based food. This article aims to take a sober-minded and fact-based look at the topic and to illustrate how investors can benefit from investing smartly into the theme of plant-based meat.

Global protein demand to accelerate further…

The global protein consumption demand is estimated at 226 million tons (2018) and has grown by around 40% since 2000,[1] thereby clearly outgrowing global population over the same period (+24%).[2] This over-proportional growth of protein demand is driven by urbanization and the so-called "wealth effect". As people become richer, the portion of their income spent on food declines. In the US, this portion dropped from 43% in 1901 to around 13% in 2017.[3] As a result, their diet gradually transforms towards the Western world's diet. This "westernization" of the diet drives the higher demand for protein. This partly explains why we see significant differences between the average protein consumption in developed countries (around 100g per capita per day) and emerging markets (76g)[4] as well as China's shift from 40-50g in the 60ies to 100g today. Chart 1 illustrates the development of the protein demand per capita in developed and developing countries over time. Driven by a growing consumer class in emerging countries, the protein demand growth is expected to accelerate from 1.8% (2000-2018) to 2.7% (2018-2025), resulting in a global protein demand of 271 million tons by 2025.[5]

Chart 1: Evolution in protein consumption per capita (g per capita per day)
Source: Henchion, Hayes et al. (2017)

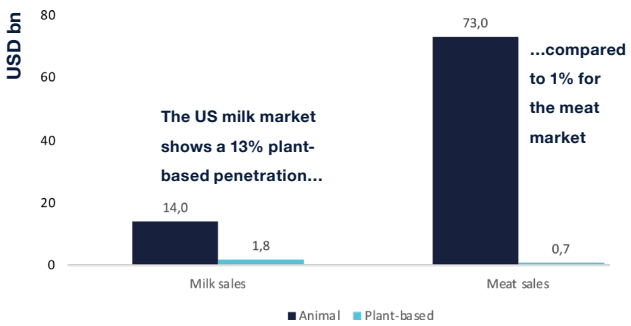


...resulting in significant implications for the supply side

Meat has been the main source of protein in developed markets for years. After growing around 2% p.a. from 2008-2017, the estimated global meat consumption is expected to grow at half this growth rate over the next decade.[6] Plant-based food is part of a wider theme of protein alternatives, similar to aquaculture and dairy. Unlike those two categories, alternative proteins (the largest source of which is plant-based), which grew by 17% in 2018, are still at the early stage of their development. In the US, plant-based meat retail sales amounted to some USD 0.7bn (2018), accounting for only ~1% of the USD 73bn US meat market. Comparing this to the dairy market, where plant-based penetration has already reached 13% of the overall milk market, illustrates the growth potential for plant-based meat (chart 2).[7]

Chart 2: Animal vs. plant-based milk and meat sales comparison (2018)

Source: Berenberg (2019); By the meat of our plants



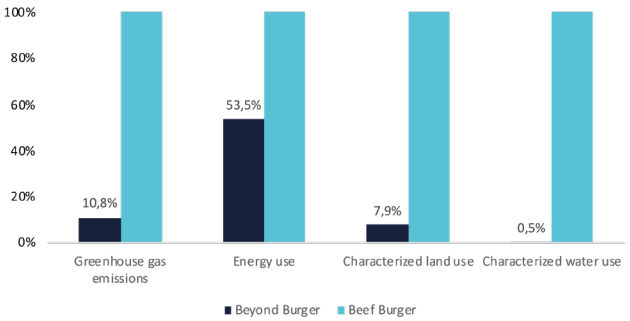
One of the key drivers behind the emergence of plant-based milk was widespread lactose intolerance (which affects 75% of the world's adult human population).[8] While this is not a relevant driver for plant-based meat, we see the following structural themes driving and even accelerating future growth of these emerging meat alternatives:

1. Environmental constraints and regulations

The environmental benefits of plant-based proteins are enormous, both in terms of CO_2 emissions as well as in terms of water and land usage. Livestock like cows require 8-10 units of underlying grain input to produce one unit of protein. This is why meat, aquaculture, eggs, and dairy use ~83% of the world's farmland and contribute 56 to 58% of food's different emissions, despite providing only 37% of our protein and 18% of our calories.[9] These numbers illustrate the sustainability challenge of meeting an over-proportionally growing protein demand while keeping our current meat-dominated diet unchanged. According to Beyond Meat Inc. their plant-based burger (or pea-based to be more specific) generates 90% less greenhouse gas emissions and requires 92% less land and 99% less water than a standard beef burger (chart 3).[10]

Chart 3: The Beyond Burger vs. Beef – Use of resources and production of emissions

Source: Beyond Meat Inc. IPO filing



One can expect that policymakers around the world will introduce incentives for a more efficient use of resources. Unsurprisingly, countries such as Germany, Denmark or Sweden are already discussing the introduction of a meat tax. Or as Christian Rauffus, owner of the traditional German sausage producer 'Rügenwalder Mühle', put it: "The sausage is tomorrow's cigarette".

> *"The sausage is tomorrow's cigarette!"*
>
> *Christian Rauffus, owner of the German sausage producer 'Rügenwalder Mühle'*

2. Health and ethical reasons

While studies examining the health risks of consuming red and processed meats have yielded conflicting results, most experts now agree that meat over-consumption can be directly linked to a number of cardiovascular diseases and different forms of cancer.[11] Studies have shown a 16% higher cancer risk and 21% increased heart disease risk associated with consuming processed meats.[12] An additional and topical health-related aspect is the threat of pandemic shocks to the food and economic systems. There is growing evidence that the current Coronavirus crisis is related to sourcing of animal protein, and there is established evidence of the health and economic threats posed by the avian flu and swine flu.

Together with the increasing antibiotic resistance, which according to the Center for Disease and Control and prevention (CDC) is "one of the most urgent threats to public health", aspects of individual health and stability of health-care systems add very strong reasons for a systemic change towards more plant-based proteins in the future - making this a massive growth sector.

The growing awareness the health benefits of a plant-based diet in combination with ethical aspects around animal welfare, have resulted in a significant increase in reducetarianism, vegetarianism and veganism, particularly in developed countries. In the UK for example, the number of vegans has increased to 600'000 (2018), up from 150'000 in 2006.[13] According to a survey of 1'040 British adults, 49% of those interested in cutting down on their meat consumption said they would do so for health reasons and 23% mentioned animal welfare.[14]

3. Economic considerations

Besides environmental, regulatory, health and ethical considerations, there is also a powerful cost argument, which suggests a growing plant-based penetration of the meat market. Today, plant-based meat is priced at an average price premium of 200% compared to traditional meat alternatives in the retail channels.[7] As a result, the current consumer mix is heavily skewed toward higher-income households. According to Beyond Meat, almost 40% of households with income above USD 100'000 per year buy plant-based protein products, while this number drops to around 10% for households earning less than USD 50'000 per year.[15] As an increasing number of players are entering the market and production is being scaled up, we expect plant-based meat to eventually reach price parity, resulting in a significantly higher plant-based penetration in lower-income segments.

Despite stagnating volumes, the US meat market is expected to grow to almost USD 100bn in 2021, driven by higher prices (following the swine flu in China). Higher meat prices will further fuel demand for plant-based meat, which is expected to reach USD 2bn by 2021 (2% of the meat market).[16]

How to invest smartly into plant-based meat?

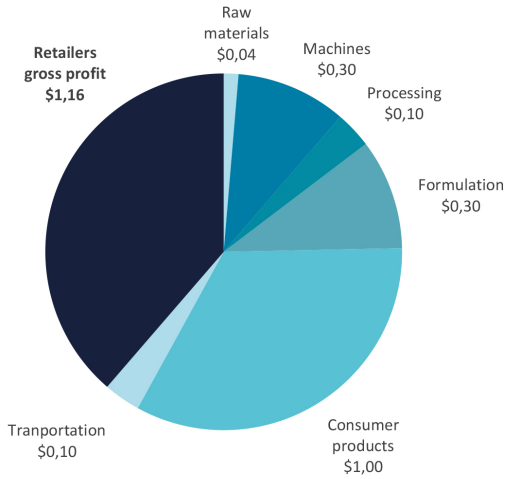
So far, investors' focus has mainly been on the "obvious" candidates in the plant-based space, i.e. the early movers in the field like Beyond Meat. Looking ahead, we see more attractive investment opportunities further up the value chain, where we identified a number of players that should benefit from the growing plant-based end-demand and the resulting shortages in raw materials and other inputs.

Beyond Meat's IPO highlighted the current retail and fast food appetite for plant-based meat. A quick look at the value chain explains why. Retailers and fast food are not only embracing the trend by adding exposure to a fast growing category that can lift their health and environmental credentials, but they also make a lot more money selling a veggie burger than a traditional (mostly commoditized) quarter pounder. Based on our estimates and as illustrated in chart 4, a retailer would book a gross profit per burger of USD 1.16 (39% gross margin) on a veggie burger, compared to USD 0.16 for a meat burger (13% gross margin) today.[17] Even IKEA jumped on the bandwagon and has started selling veggie meatballs. Elior and Sainsbury are also capitalizing on this trend.

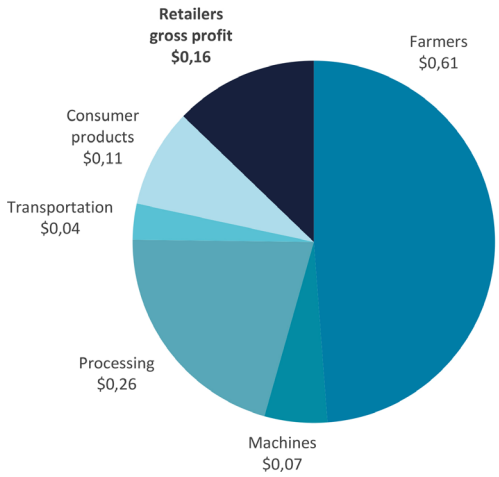
Chart 4: Retail price break-down comparison between plant-based and meat-based burger patty

Source: Landolt research and channel checks

For a USD 3 Beyond patty



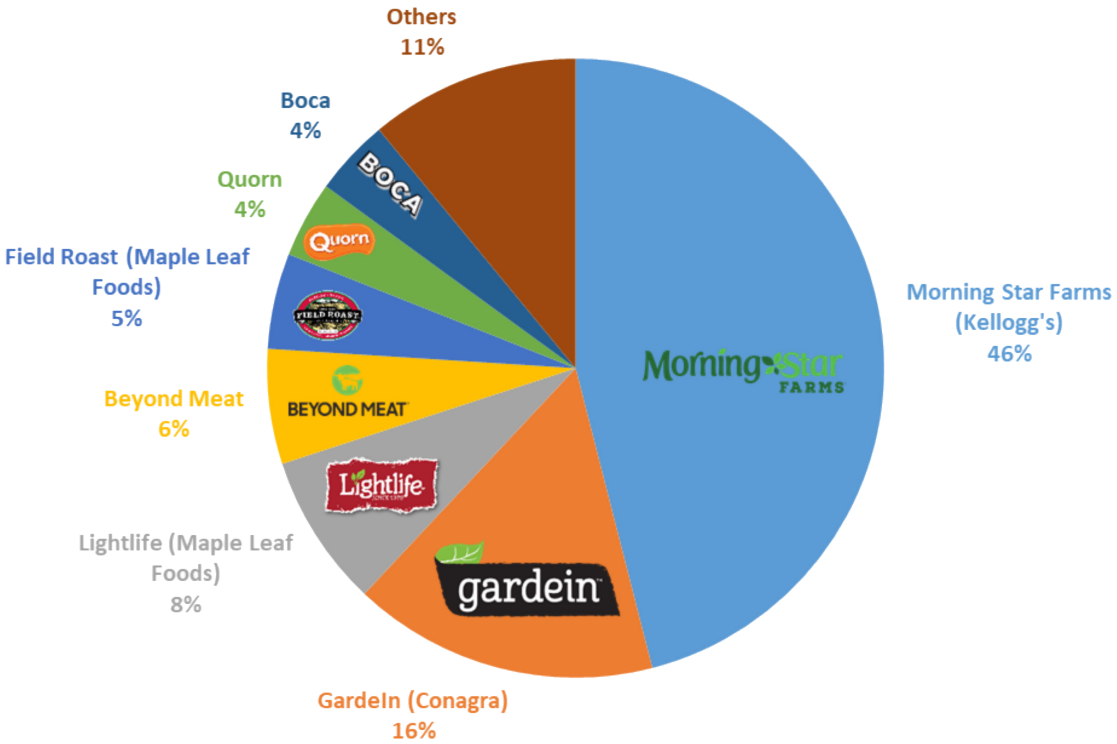
For a USD 1.25 beef patty



Beyond Meat growth is currently driven by food services demand rather than booming demand at the retail end. Indeed, to further penetrate retail shelves, it has to remove Kellog's Morning Star Farms or Conagra's Gardein and a long tail of brands, often backed by FMCG behemoths such as KraftHeinz or Nestlé (chart 5).

Chart 5: Plant-based protein brands by US market share

Source: Berenberg (2019); By the meat of our plants



More innovation and supply will undoubtedly raise consumer awareness and grow the category, but it will also bring down the price of the burgers as scale grows. Retailers will benefit from this, while the likes of Beyond Meat will see their sales per tonne gradually fall. Scaling up might result in a supply bottleneck challenge as every major food company is entering the plant-based market and building capacity, thereby pointing to potential competitive pressures and margin erosion down the line.

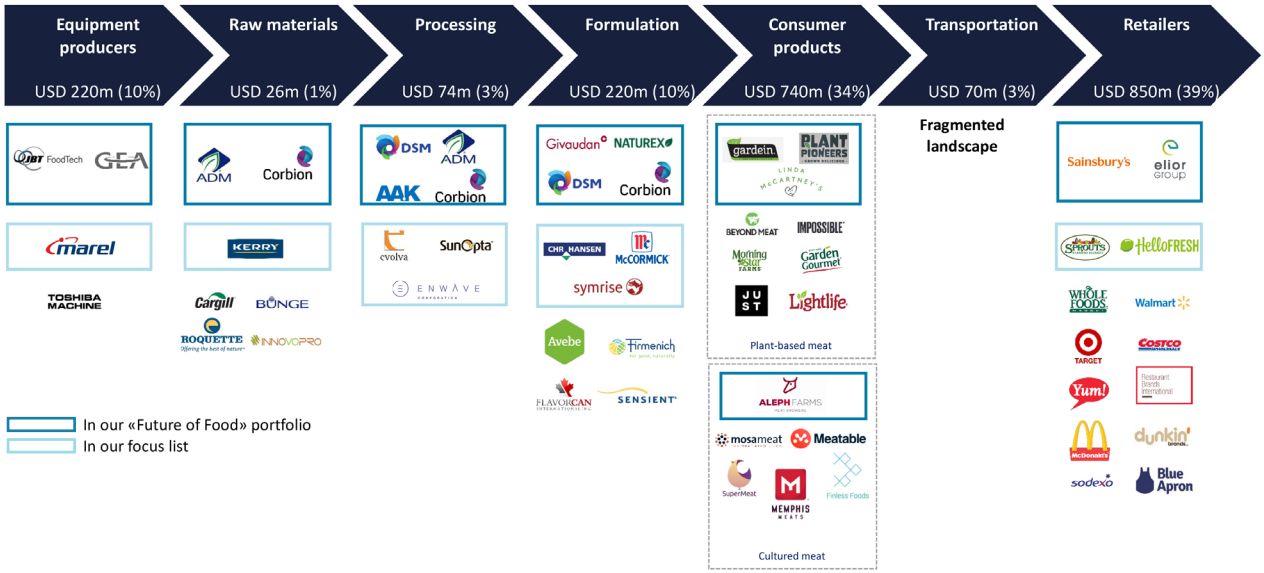
Accordingly, we are avoiding the segment, with the exception of frozen food leader ***Conagra***, whose acquisition of Pinnacle is not only driving material cost synergies but also making the company a clear market share-grabbing leader in the category, at a fraction of the multiples paid for Beyond Meat.

In a gold rush, we believe the best places to benefit are not the gold diggers, but the ones that sell them the picks and shovels. Going down the supply chain, one can see that the three key components of a Beyond Meat's burger are pea protein, fats and flavors (including spices).

"In a gold rush, we believe the best places to benefit are not the gold diggers, but the ones that sell them the picks and shovels."

Chart 6: The alternative protein value chain – a USD 2.2bn market

Source: Landolt research; Berenberg; JPMorgan; McKinsey; annual reports of GEA Group, AAK AB and Givaudan



The pea protein refining space is currently dominated by two privately owned companies: Roquette and Puris, both of which are suppliers of Beyond Meat. Refining capacities are quickly filled, resulting in likely bottlenecks at Beyond Meat. A surge in the price of pea protein would certainly eat into Beyond Meat's margin, while capacity could struggle to meet demand on time. ***Raisio***, one of our core investments, is investing EUR 35m in a new factory, aimed at producing protein. ***ADM*** is also investing in the space. ***Corbion*** is leveraging its fermentation capabilities and announced a deal with Nestlé to supply algae based protein, which could soon be seen as a another key alternative to pea protein, should the pending demand surge causes capacity bottlenecks.

Capex in extrusion machines for peas and fermentation tools (for soy) is clearly set to grow. ***GEA*** and ***John Bean*** are designing machines for meat packers and dairy industry. Both are aware through their clients of the plant-demand rush and have (currently still small) exposure to this capex segment, which we expect to grow in the years to come. Growing automation of food manufacturing processes (both for labor cost reduction and health & safety improvements) is indeed a major theme we are investing in.

The second biggest component is fats, which are key to add texture and taste that simulate meat. The world's leading specialty fat producer, Sweden's ***AAK***, is a clear winner here. It is already the leading supplier of most of the world's chocolate and confectionary industry.
Plant-based meat is set to add a new leg of growth to what has been a rather linear 3% p.a. organic growth path. ADM, the world's largest oil seeds play and one of the world's largest commodity trader and agri-commodity processor, is another beneficiary of increasing demand for fat and so is Raisio.

The third biggest component and perhaps the most important one is flavor. If it does not taste as good as the real thing, all the good intentions and rational benefits fueling the current momentum could just settle like a failed soufflé. ***Givaudan***, the world's leading flavor and fragrance company with a market share north of a quarter of the world's market, has invested in the last three years in the category, fully aware that soy burgers have a texture and fermented after taste that does not please all palates and that pea burgers are a bit bland and dry. Today, Givaudan's estimated sales in plant-based flavor is USD 20-40m a year. However, the company sees the market opportunity at USD 500-1'000m. This is also good news for Symrise and Kerry Group. Spice king ***McCormick*** is also seeing growth in its B2B business from plant based makers.

The IPO of Beyond Meat has captured the imagination of both the market and consumers alike, like Tesla might have done in its time for electric cars when it launched the Model S. The economic incentives for the retailers and the rational benefits for health or saving the planet clearly explain the demand pull. At the same time, the theme remains mostly the realm of relatively well-off early adopters, who can afford paying a premium for a veggie treat. The ramping up of scale will lower the costs and the price points. It will keep the retail space interested and enlarge the market opportunity. That said, we are still at the early stage of the plant-based meat revolution. The plant-based meat industry is still a fraction of the food and beverage global spend and a dwarf compared to the meat and dairy industry.

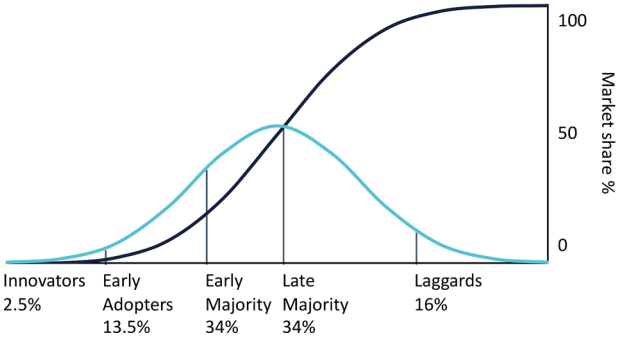
According to the "Diffusion of Innovations" theory, the sweet spot of the adoption S curve will take place when 2.5% of meat consumption will be replaced by plant based alternatives (Chart 7), which could already be reached in 2022 at current growth rates.

It will take many trials and errors before we get there, hence our reluctance to play the theme with the „pure plays“, whose early movers‘ competitive advantages will be challenged by ever changing consumer tastes, competitive pressures from both new entrants and incumbents as well as potential supply chain bottlenecks. In the meantime, this new gold rush will help the retail end lift its margins and make those companies selling the picks and shovels richer.

Most great business opportunities are not just based on needs but on wants. You cannot extinguish bad habits, you can only change them. The formation of longstanding new habits rely on cues, routines and rewards (dopamine). Indeed, it took the introduction of the addictive Iphone to make mobile internet a reality. When it comes to food, taste and pleasure are more often than not where the money is, because this is where the consumer habit battle is won. Coca Cola might be bad for you and the planet, but it remains one of the holy grails in the food and beverage universe. We have not found the Coca Cola of plant-based meat yet, but we certainly should keep our eyes open on this rapidly evolving landscape. Meanwhile, we have positioned our portfolio on the receiving end of that theme through the ingredient space.

Chart 7: Diffusion of innovations

Source: Rogers (2003); Diffusion of Innovations



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