

THE FUTURE OF THE MEAT INDUSTRY

Opportunities in alternative proteins





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1. INTRODUCTION

Plant-based meat alternatives have attracted a great deal of attention over the last few years. This is confirmed by the fact that the IFFA, the leading international trade fair for the meat industry, now includes alternative proteins in its nomenclature. **The rapidly growing plant-based-meat sector offers numerous business opportunities for meat producers that want to future-proof their brands.**

This report outlines the fastest-growing sectors and segments, and includes relevant consumer insights as well as the most common ingredients and technologies.



2. A MARKET OVERVIEW OF PLANT-BASED MEAT

THE FUTURE IS PLANT-BASED

The plant-based-meat sector in Europe is growing rapidly, as confirmed by reliable and conclusive retail scanner data published in a study by the Smart Protein project. **Sales values of plant-based meat in Europe amounted to €1.4b in 2020, with a growth rate of 68% over the past two years.**¹ * This staggering growth underlines the future potential of the plant-based-meat sector in Europe.

Given that **the animal-based-meat sector is stagnating, entering the plant-based sector adds a useful second pillar that can drive growth for traditional meat companies.** For example, German meat producer Rügenwalder Mühle entered the plant-based sector in 2014 and, by 2020, was already earning more revenue from its plant-based meat alternatives than from its animal-based sausages and cold cuts.²

*Total market, incl. discounters, AU+BE+DK+FR+GER+IT+NL+RO+SP+UK, sales value in € and growth rates, plant-based (vegan and vegetarian) meat, MAT Sep/Oct (between CW39 and CW42 depending on country) 2018 vs 2020; Spain only MAT Sep/Oct 2020.





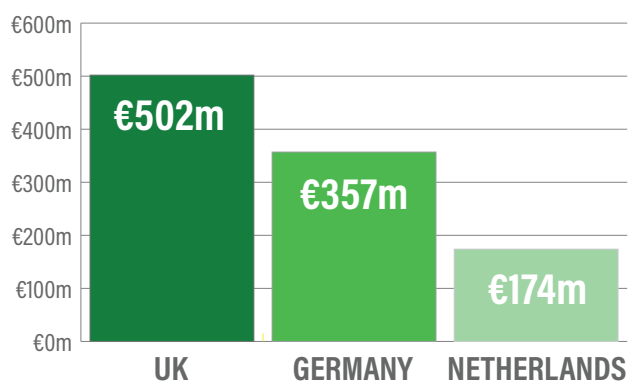
THE UK LEADS THE EUROPEAN MARKET

Among the countries analysed, the UK led the plant-based-meat sector in 2020, with a sales value of €502m, followed by Germany (€357m) and the Netherlands (€174m).* In terms of annual growth rates, Germany (75%) leads the sector, followed by Austria (52%). However, almost all of the countries analysed showed double-digit growth rates in 2020.¹⁾

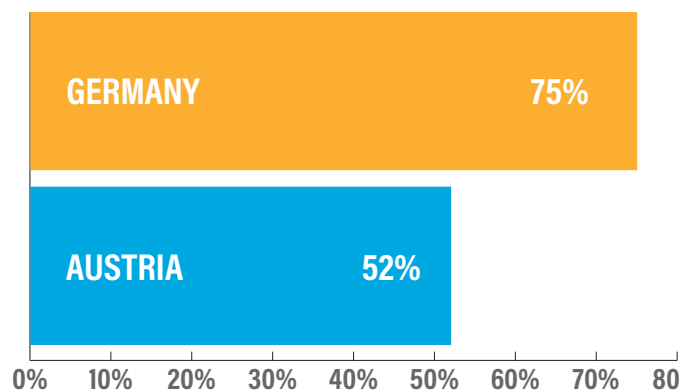


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Sales values per country



Annual growth rates



PLANT-BASED BURGER PATTIES ARE THE LEADING CATEGORY

The leading market segments for plant-based meat is **plant-based refrigerated meat in general**, and, more specifically, plant-based burger patties and plant-based sausages. The highest growth rates are in the plant-based frozen-meat category, followed by plant-based prepared meats (e.g. nuggets, minced meat, stir fries), plant-based burger patties, and plant-based sausages.*¹⁾

For more information, download the free [Smart Protein Plant-based Food Sector Report](#) and watch the corresponding [webinar](#).

*Total market incl. discounters, AU+BE+DK+FR+GER+IT+NL+RO+SP+UK, sales value in € and growth rates, plant-based (vegan and vegetarian) meat, MAT Sep/Oct (between CW39 and CW42 depending on country) 2020



3. CONSUMER DEMAND

TARGET FLEXITARIANS

In contrary to common perceptions, the main target group for plant-based food products is not vegans or vegetarians. In fact, **90% of plant-based food consumers are neither vegan nor vegetarian³ - they are flexitarian.** For example, in Germany, flexitarians make up the largest consumer group (55%) and constitute the majority of the German population.⁴ Approximately half of the population in Europe has consumed plant-based meat before.⁵ This makes flexitarians the most important target group for plant-based meat, and, as such, the marketing of such products should revolve around their needs.

Flexitarians

People who are more flexible in their diet, actively reducing their consumption of animal-based foods and more receptive to alternative options.

EMPHASISE TASTE

A survey of European consumers recently published by the Smart Protein project, reveals **the importance of taste as a key purchase driver for plant-based food products** in European countries.⁵ This aligns with implicit association tests conducted by the Good Food Institute, which identified taste as the most important factor for US consumers when choosing plant-based food products.⁶ It is therefore **important to offer products that are indulgent and tasty, but also to highlight those attributes in marketing.**



PUSH FOR PRICE PARITY



The consumer study by the Smart Protein project also determined **price** to be the **main barrier to purchasing plant-based foods.** In general, many consumers are likely to

buy plant-based meat in the future and even consume plant-based meat instead of animal-based meat. However, **fewer consumers are willing to pay a higher price for plant-based meat than for animal-based meat.**⁵

As such, **all plant-based-meat producers should push for price parity.** Industry pioneer Beyond Meat has already announced the goal of its products undercutting the prices of animal-based competitors by 2024, while the UK supermarket chain Co-op has already lowered the prices of its in-house plant-based-meat line to that of its animal-based counterparts.^{7 8}

WHAT CONSUMERS WANT TO SEE MORE OF

The results of the European Consumer Survey conducted by ProVeg revealed that almost **60% of consumers want to see more meat alternatives in supermarkets**, since there are currently not enough options available on supermarket shelves.⁹ Among the meat alternatives that mimic animal-based meat, **consumers want to see more burgers and sausages.**⁹ This is in line with Nielsen scanner data, which identified plant-based burger patties and sausages as the fastest-growing plant-based meat category.¹



4. INGREDIENTS AND TECHNOLOGY/PROCESSING

Soya and wheat protein have long been the most common protein sources for the production of plant-based meat, which means that they **are widely available and thoroughly researched**. With more research and investment in the sector, **new and efficient protein isolates and concentrates - such as pea-protein isolate - have been developed**. Fats and starches are also needed for the production of plant-based meats, and might even be derived from the same plant, but are added separately in order to ensure consistent quality and appropriate ratios.¹⁰ It has been found that **a combination of different proteins and materials can increase the similarity of plant-based meat to animal-based meat**, which should be a key aim.¹¹



Factors that should be kept in mind when choosing a plant-protein for plant-based meat include protein concentration, bioavailability, cost, allergen risk, and readiness for market.¹²



Download the Good Food Institute's [Protein Primer](#) to find the protein source most suitable for your product.¹²

When developing meat alternatives, the goal should always be to imitate animal-based counterparts as closely as possible in terms of functionality, appearance, texture, and taste.¹⁰ This requires crops with specific properties. Research is currently underway to breed crops that have even more desirable characteristics for alternative-protein production, e.g. the Smart Protein Project.¹³

In order to use isolated or concentrated plant protein to create a textured protein that is fibrous and meat-like, there are currently two common methods: traditional low-moisture extrusion cooking and the newer high-moisture extrusion cooking, which is better suited to providing a meat-like structure.¹⁴ The resulting textured plant protein can then be further processed (e.g. marinated, coated, or cooked).¹⁵

An up-and-coming processing method is shear-cell technology, developed by researchers at the Wageningen University in the Netherlands. This allows for an aligned fibrous structure in products such as plant-based steak or chicken breast and is expected to be more resource efficient.¹⁶ Check out the [Plant Protein Matters](#) project to learn more about shear-cell technology.¹⁷

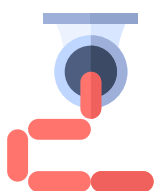
Plant-based food made from raw materials that are not strictly classified as plants, such as fungi, are nonetheless also referred to as 'plant-based'. Fungi can be fermented into mycoprotein, which can then be processed into naturally meat-like food products.¹⁸



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5. PROCESSED PLANT-BASED FOODS CAN BE PART OF A BALANCED, HEALTHY DIET

Although a wholefood plant-based diet consisting of unprocessed foods such as grains, legumes, nuts, and vegetables is considered ideal,¹⁹ **plant-based alternatives to animal-based products can provide a healthy and environmentally friendly addition to a well-balanced diet.** Such products offer a convenient intermediate solution for people transitioning to a more plant-based diet, as **these products usually closely resemble the foods people are familiar with and enjoy.**



Such products often fall into the category of processed foods. While people are increasingly aware of the need to eat natural wholefoods, it's important to distinguish between processed foods, which includes traditional foods

such as bread, pasta, and many plant-based alternatives, and highly processed foods or ultra processed foods, which invariably also contain synthetic additives and may include chemical processing. For example, meat alternatives made from soya, one of the most common foods accused of being highly processed, can be easily produced in a home kitchen and require less processing than most baked goods. **In general, plant-based meat alternatives contain high-quality protein and less fat and saturated fatty acids than their animal-based counterparts, and have little to no cholesterol.**



The length of ingredient lists is also not necessarily problematic. If you cook at home, you might use many different ingredients without it being a problem. **The quality and nature of a product's ingredients is more relevant than the number of ingredients.**

In addition to the degree of processing and the number of ingredients, the nutritional composition and quality of the raw materials of a food item should also be considered. Processing can even have substantial benefits. For example, pasteurisation increases food safety, while fortification can improve the nutritional profile of foods. **Humans have been making and consuming processed foods for millenia - even the most artisanal organic bread is significantly processed, given the grinding, mixing, and baking involved.**

On the other hand, **the food industry is aware of consumers' perception of processed foods and is working on clean-label solutions.** Fermented and cultured-meat products also offer the potential for a nutritionally sound alternative to conventional plant-based meats alternatives for those consumers wary of processed foods.



6. CULTURED MEAT

In order to produce cultured meat (also known as cultivated meat, in-vitro meat, lab-grown meat, or clean meat), stem cells are initially sampled from animals through a painless biopsy. The cells are then fed with nutrients in a cultivator, where they differentiate and multiply, eventually growing into muscle tissue.



Cultured meat will theoretically allow for whole muscle cuts of meat (e.g. steak or chicken breast), products that still present a challenge for plant-based alternatives in terms of texture and mouthfeel. Cultured-meat products will therefore be complementary to plant-based meat and will provide an alternative to animal-based meat for those who find it challenging to exclude animal-based products from their diets but who would still like their diet to have a lighter impact on the environment, as well as providing health benefits and significant improvements in animal welfare. **Hybrid products that are made from plant-based and cultured components are another opportunity for sustainable meat alternatives.** They have the advantage of mimicking the taste of animal-based meat very closely. For example, the start-up Mission Barns has teamed up with the Silva Sausage Co to produce a hybrid sausage alternative made with plant protein and cultured animal fat.²⁰

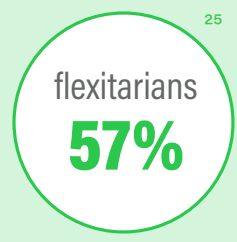
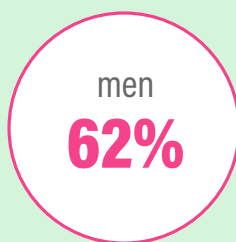
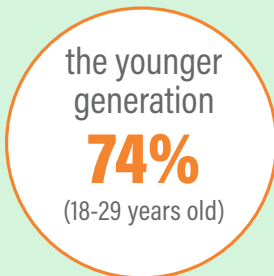
The consultancy AT Kearney predicts that the cultured-meat market share of the total meat sector will be 35% by 2040.²¹ **The global cultured-meat industry received 360 million USD in total venture capital investment in 2020**, six times the amount raised in 2019 and 72% more than between 2016-2020.²²

The first cultured-meat product from Eat Just received commercial approval in Singapore in 2020, with a production site having opened in July 2021.^{23 24} Other leading brands include Memphis Meats, Mosa Meat, Aleph Farms, and BlueNalu, but there are many more companies and startups, as well as universities, that are currently working on developing a variety of cultured-meat products.

Consumer acceptance was long considered a hurdle. However, a recent study conducted in Germany revealed that...



With an even higher share among...



Other studies indicate that consumers' openness to cultured meat is even higher...

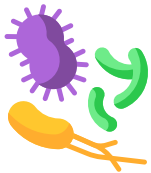


7. FERMENTED MEAT ALTERNATIVES

Fermentation is an ancient food technology used to create common products, from sauerkraut and yoghurt to kimchi and tempeh. More recently, the power of fermentation to create tasty and nutritious foods has been discovered by the alternative-protein sector. **Combining traditional knowledge and innovative technology, intensive new research has developed two main ways of using fermentation.**²⁹



Biomass fermentation leverages the fast growth and high protein content of various microorganisms to efficiently produce large quantities of protein. The resulting biomass serves as either the predominant ingredient of a food product or one of several primary ingredients in a blend.



Precision fermentation uses specially designed microbial hosts to produce specific functional ingredients. These ingredients improve the sensory and functional attributes of plant-based products and cultured meat and dairy.

Biomass fermentation is of special interest in the alternative-meat sector. In contrast to precision fermentation, which is mainly used for functional ingredients like vitamins and fats, biomass fermentation **allows for the development of whole cuts of meat such as steak and fillets** that are **similar in texture to their animal-based counterparts.**



The number of fermentation companies in the alternative-protein sector is increasing rapidly, with the Good Food Institute counting **51 companies in 2020**, 14 more than in the previous year. Investment in the sector is also booming. In 2020, **\$587m was invested in the alternative-fermentation sector**, a huge increase from \$281m in 2019 and just \$50m in 2018.²⁸



8. RECOMMENDATIONS



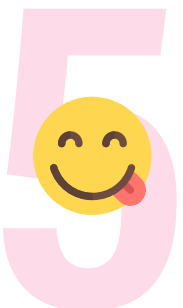
ProVeg strongly recommends **that all meat producers enter the plant-based-meat sector.**

ProVeg recommends **developing frozen plant-based meat alternatives as well as plant-based burger patties and sausages,** since these are the fastest-growing plant-based-meat categories in Europe.



ProVeg recommends **developing cultured or plant-based whole cuts of muscle meat,** as this category is still not generally available.

ProVeg recommends **directing marketing at flexitarians,** as they are the largest and thus the most important consumer group.



ProVeg recommends **emphasising taste,** since taste has been identified as the most important purchase driver.

ProVeg recommends **investing in innovative technologies such as fermentation and cultured meat.**



9. ABOUT PROVEG

OUR VISION

A world where everyone chooses **delicious and healthy food** that is good for **all humans, animals, and our planet.**

OUR MISSION

Reducing the global consumption of animals by 50% by 2040.

In order to achieve this, we work with mission-aligned companies and offer them support in three key areas:

REPUTATION | REVENUE | IMPACT

WHO ARE WE?

ProVeg is an international food awareness organisation working to transform the global food system by replacing conventional animal-based products with plant-based and cultured alternatives.

ProVeg works with international decision-making bodies, governments, food producers, retailers, investors, the media, and the general public to help the world transition to a society and economy that are less reliant on animal agriculture and more sustainable for humans, animals, and our planet.



WHO DO WE WORK WITH?

As a leading NGO in the alternative-protein space, we have no commercial agenda. This allows us to provide objective expert advice and help support you successfully and effectively by harnessing the power and profitability of the shift to plant-based eating, in the most appropriate way for your business.

We work with companies along the entire value chain, which gives us unique insights into the key challenges, hurdles, and opportunities at every stage of the journey as you take your product to market.



OUR NETWORK

Our B2B community

12,058+
subscribers across
our international
newsletters

400+
delegates at
the New Food
Conference 2021

45+
startups
supported by the
ProVeg Incubator

14,258+
LinkedIn followers

Our B2C community

23,000+
consumers in our
Test Community

88,000+
followers across
our international
Instagram
accounts

410,000+
subscribers
across
our international
newsletters

350,000+
people signed
up for the Veggie
Challenge so far

TRUSTED BY INDUSTRY LEADERS



ProVeg has been a great resource to Beyond Meat as we've gone global. We hired them to support the retail launch of the Beyond Burger in Benelux and were thrilled with the groundswell of buzz they helped generate. We are grateful to have ProVeg as a strong ally in the development of the plant-based movement in Europe and beyond."

- WILL SCHAFER

VP of Marketing at Beyond Meat

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