



# RETHINKING PLANT- BASED MEAT ALTERNATIVES

What are the best  
plant-based options  
for 'meat-ing' health,  
environmental and  
affordability objectives?

AUGUST 2024



## ABOUT THE FOOD FOUNDATION



The Food Foundation is an independent charity working to address challenges in the food system in the interests of the UK public. Working at the interface between academia and policy makers (parliamentarians, civil servants, local authorities, business leaders and investors) we use a wide range of approaches to make change happen including events, publications, media stories, social media campaigns and multistakeholder partnerships.

We also work directly with citizens to ensure their lived experience is reflected in our policy proposals. We work with many partners on a range of different thematic areas, working closely with academics to generate evidence and campaigners who can drive change. We are independent of all political parties and business, and we are not limited by a single issue or special interest.

Visit: [foodfoundation.org.uk](http://foodfoundation.org.uk)

## WITH THANKS TO OUR FUNDER

### Impact on **Urban Health**

Our Food Foundation expert advisors, and **Sarah Nájera Espinosa** for her input and review.

## AUTHORS

Indu Gurung, Rebecca Tobi, Katina Leigh-Taylor, Sarah Buszard, Chloe Mackean, Alice English

Report design [whitecreativecompany.co.uk](http://whitecreativecompany.co.uk)

---



# Contents

EXECUTIVE SUMMARY	4	PART THREE	22
INTRODUCTION	6	<ul style="list-style-type: none"> <li>• <b>Comparing the environmental profiles of plant-based meat alternatives</b></li> </ul>	23
THIS BRIEFING AND OUR METHODOLOGY	8	<ul style="list-style-type: none"> <li>• <b>Comparing the water footprints of plant-based meat alternatives</b></li> </ul>	24
PART ONE	11	<ul style="list-style-type: none"> <li>• <b>Price and affordability</b></li> </ul>	26
<ul style="list-style-type: none"> <li>• <b>Defining and understanding meat alternatives</b></li> </ul>	12	PART FOUR	27
<ul style="list-style-type: none"> <li>• <b>The current UK landscape for meat alternatives</b></li> </ul>	13	<ul style="list-style-type: none"> <li>• <b>Substituting meats for processed plant-based equivalents</b></li> </ul>	28
<ul style="list-style-type: none"> <li>• <b>A taxonomy of UK plant-based alternatives to meat and their health, environmental and price profiles</b></li> </ul>	14	SUMMARY	32
PART TWO	16	RECOMMENDATIONS: for investors, businesses and policymakers	33
<ul style="list-style-type: none"> <li>• <b>The health and nutrition profile of plant-based meat alternatives</b></li> </ul>	17	REFERENCES	37
<ul style="list-style-type: none"> <li>• <b>Vitamin and minerals: a hidden risk?</b></li> </ul>	19	ANNEX 1 - Products in our analysis	40
<ul style="list-style-type: none"> <li>• <b>The great ultraprocessed meat alternative debate</b></li> </ul>	19		

# Executive summary and key messages

- › While the environmental case for eating less meat in higher income countries is clear, the health implications of shifting diets towards more plant rich diets is more nuanced, depending on what is being substituted and by whom.
- › Plant-based alternatives to meat offer a route for reducing meat consumption with the market for plant-based meat alternatives having grown exponentially in recent years. However, **focussing on those alternatives that offer the best outcomes for both health and environmental outcomes in order to minimise any potential trade-offs ought to be central to the transition to more healthy and sustainable diets.**
- › In this briefing we devise a taxonomy for a range of plant-based alternatives to meat, looking at both nutrition and environmental indicators as well as price to assess how different categories and individual products compare to meat. Based on the OECD's taxonomy we split plant-based meat alternatives into three different subcategories: processed (new generation), processed (traditional), and less

processed (beans and grains). In total we analysed 104 products sold in UK supermarkets.

- › This taxonomy finds that the vast majority of plant-based meat alternatives come with significantly reduced greenhouse gas emissions (GHGEs) and water footprints compared to meat, but the nutritional profile of plant-based alternatives varies depending on the product and level of processing.
- › **Much greater nuance is needed when discussing the healthiness of plant-based meat alternatives.** Grouping all plant-based alternatives into a single category is an unhelpful strategy for encouraging a shift away from meat and towards more plant-rich diets as it hides a wide variety of options with differing nutrition and health profiles within the plant-based alternative category.
- › The proportion of ultra processed foods (UPFs) within each plant-based meat alternative category analysed varies considerably, despite media and popular discourse often depicting all plant-based meat alternatives as being UPFs.
- › Although research on health outcomes associated with plant-based meat alternatives remains limited,



this analysis does not find evidence that the nutritional profile of plant-based meat alternatives is on average notably worse than for meat products.

- › More processed plant-based meat alternatives can therefore be a useful stepping stone for encouraging citizens to shift their diets, although **less processed alternatives (beans and grains) offer the greatest number of co-benefits.**



- › All three plant-based meat alternative categories analysed in this taxonomy contained fewer calories, lower levels of saturated fat, and higher levels of fibre on average compared to the meat products analysed.
- › Plant-based meat alternatives are on average lower in protein relative to meat, but the UK does not have any protein deficiency issues at a population level.
- › **Only a third of the more processed plant-based meat alternatives are fortified with iron and vitamin B12**, and the processed (new generation) category has the highest level of salt of all three categories, with scope to improve fortification and reformulate to reduce salt content.
- › Less processed alternatives to meat (beans and grains) perform strongly on a number of different nutrition indicators, containing notably lower amounts of saturated fat, calories and salt and the highest amount of fibre per 100g of all categories compared to both meat and other plant-based meat alternatives. They are also the most affordable category per 100g.
- › **There is therefore a real opportunity in the UK to champion and better promote beans as an affordable, healthy and sustainable alternative to meat, and to understand how best to increase uptake.** They offer a win-win-win for environmental, health and equity outcomes.

**"There is a real opportunity in the UK to champion and better promote beans as an affordable, healthy and sustainable alternative to meat"**



# An introduction

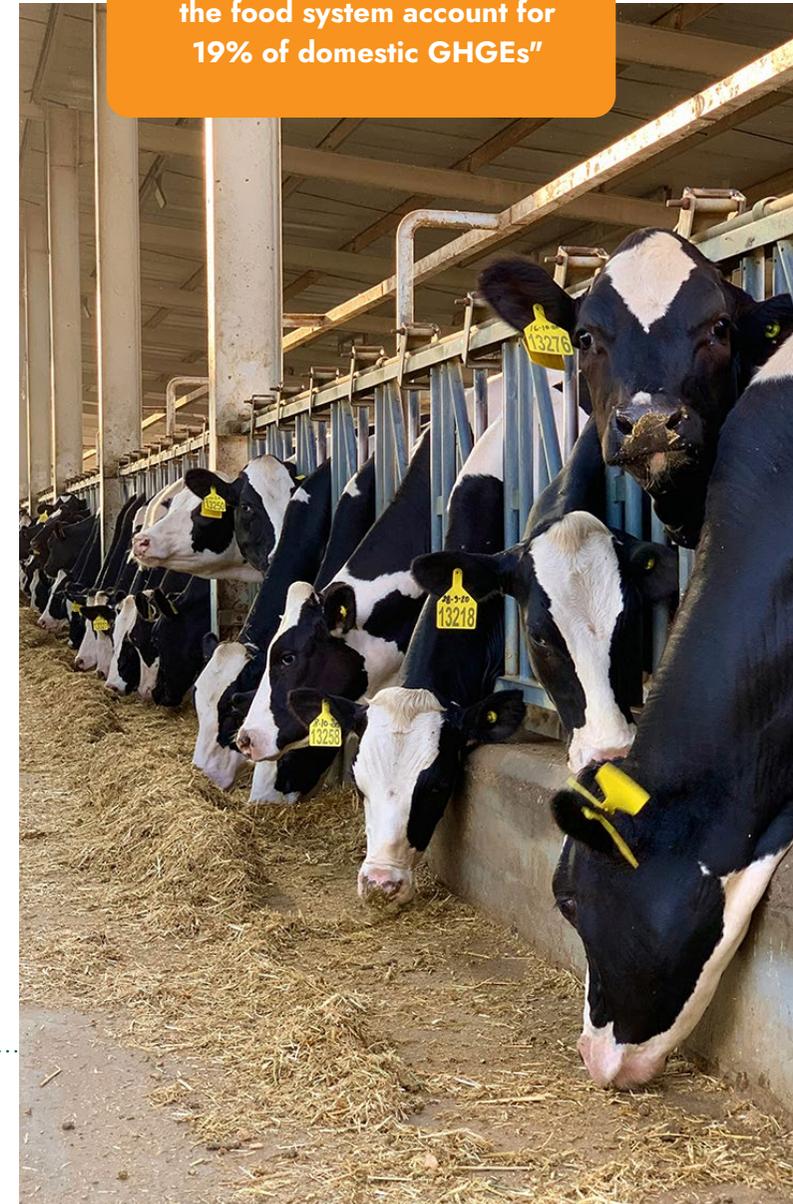
**The world is currently grappling with two major crises; the environmental crisis and a health crisis.**

Governments are already paying to mitigate the impact of both, with the associated human and financial costs only predicted to increase over the coming years unless urgent action is taken (Wellcome Trust, 2023; World Economic Forum, 2023). In 2023 the average global temperature exceeded 1.5 degrees for the first time on record, while the growing incidence of diet related disease means that globally over 1 billion people are living with obesity and 462 million live with type two diabetes (Phelps *et al*, 2024; Khan *et al*; 2020). In high income countries like the UK, reducing our consumption of animal-based foods and shifting towards more plant-rich diets can deliver both health and environmental benefits, as well as mitigating the risks a business-as-usual approach brings.

Complacency is no longer an option. In the UK, greenhouse gas emissions (GHGEs) from the food system account for 19% of our domestic GHGEs (closer to 30% when emissions from imported food and feed are included) (National Food Strategy, 2021), with 5% of total UK emissions attributed to livestock, while almost half (48%) of all UK methane emissions come from livestock farming (BEIS, 2021). While domestic GHGEs associated with livestock are lower than the global average, the UK spends £5.8 billion on meat imports annually, with beef accounting for almost half of total meat imports (Defra, 2021). This means there are also environmental impacts of the meat we eat in the UK that are externalised. Globally, 15% of total GHGEs are driven by livestock production (World Economic Forum, 2019). As a result, we know that in high income countries like the UK, reducing the amount of animal-based products we eat, particularly meat, can help to reduce both UK and global GHGEs as well as lessen other negative impacts on the environment such as nature loss and water pollution.

The over consumption of meat can also have negative effects on health. Research shows that excessive meat consumption - which predominantly occurs in high-income countries - is associated with obesity and other diet-related diseases such as cardiovascular disease, type 2 diabetes and certain cancers (Salter, 2018). The risk of these chronic diseases is greater in those who consume red and processed meats. >

**"Complacency is no longer an option. In the UK, greenhouse gas emissions (GHGEs) from the food system account for 19% of domestic GHGEs"**





**"In the UK, we eat a third more meat than the global average, with 34% of adults eating more red and processed meat than the amount recommended in government dietary guidelines"**

In the UK, we eat a third more meat than the global average, with 34% of adults eating more red and processed meat than the amount recommended in government dietary guidelines (Stewart *et al*, 2021). In contrast, only 1/3 of adults are getting their 5-a-day and just 9% of adults hit the recommendation for fibre intake (Public Health England, 2020). Substituting some of the meat we eat for plant foods could therefore bring additional health benefits, given that diets rich in plant foods such as fruit, vegetables and wholegrains are associated with a number of positive health outcomes (Benisi-Kohansal *et al*, 2016; Dybvik *et al*, 2023; Thompson *et al*, 2024 ).

**As a result, the independent National Food Strategy for England recommended a 30% reduction in UK meat consumption by 2032 in order to meet both climate and health goals, and the Climate Change Committee has recommended the UK reduce meat consumption by at least 20% by 2030 and 35% by 2050 to remain on track to meet climate targets** (National Food Strategy, 2021).

Although UK meat consumption fell by 17% between 2008/9 and 2018/19 (Stewart *et al*, 2021), this is some way off the pace of change required to hit these targets. From an environmental perspective the case is clear. The UK will not be able to hit Net Zero unless emissions from the food system (and therefore livestock production and consumption) are reduced (Clark *et al*, 2020). Yet the question of how best to approach a reduction in meat consumption has led to fierce debate, with the discussion frequently politicised and polarised.

Protein alternatives that aim to directly mimic the taste and texture of meat have been suggested by many as offering a potentially transformative solution for reducing consumption of animal-based foods, although this transition has mostly been viewed through an environmental lens, rather than a health one. Counter arguments against such alternatives frequently focus on the negative nutrition profiles of some

meat alternatives and the level of processing required to produce them. In addition, lobbying by the meat and dairy industry have impacted on wider political and public opinions on meat reduction.

# This briefing and our methodology

Protein-rich alternatives to meat can come in the form of whole foods (like beans, fish or insects) or processed foods which use technology to produce substitutes for animal protein which are made from plants (like beans or nuts), algae, insects or animal cells. This briefing focuses on plant-based meat alternatives (whole plant foods and plant-based alternatives) and aims to provide an overview of products available to buy within the UK, looking at both the health and environmental profiles of plant-based alternatives that can be substituted for meat, in addition to price. **We use a taxonomy for these products that aims to disaggregate the different plant-based meat alternatives available, therefore allowing for comparison of both nutrition and environmental profiles, between and within categories.** We then explore the actions different groups of stakeholders (policy makers, investors and businesses) can adopt to encourage increased uptake of healthier and more environmentally friendly alternatives to meat. Lastly, we include a list of engagement questions for investors looking to allocate capital towards plant-based alternatives and invest in a transition towards more plant rich diets.



## THE SCOPE OF THIS BRIEFING

Although there are environmental benefits to reducing intake of both meat and dairy products, we have focused only on alternatives to meat in this briefing. Detailed comparison of the nutrition and environmental footprints of dairy alternatives have been undertaken elsewhere (The Food Foundation, 2022), and we are most interested in main meal substitutions for the purpose of this briefing, whereas dairy is often added to dishes as an ingredient rather than being a main meal component.

Insects and cultivated meat products have the potential to disrupt the meat and feed industries but have been excluded from our analysis given that neither is currently available for consumers to buy in the UK.

We excluded nuts and seeds from the less processed (beans and grains) category as they are rarely consumed as a main meal component or eaten in 100g portions despite being a good source of protein. Mushrooms, which can also be substituted for meat, have also been excluded given their lower protein content compared to beans and grains and due to time constraints, but we plan to revisit them in the future.

Fish have also been excluded given time constraints and due to the scarcity of plant-based fish alternatives.

Although mycoprotein (the ingredient Quorn is made of) is technically not a plant but a fungi, and categorised by the OECD as a microorganism-based substitute along with yeast and algae, for the sake of simplicity, we have here included mycoprotein within the plant-based category. All references to plant-based alternatives that follow therefore include mycoprotein.

We have also focused here only on the environmental impact of plant-based meat alternatives, although it is worth noting that animal welfare concerns can be a key driver of interest and investment in meat alternatives. For the sake of brevity our analysis of environmental impact focuses on carbon and water footprints rather than other environmental impacts such as nature loss, land use and water pollution.

## OUR METHODOLOGY

We wanted to compare frequently eaten and purchased meat products with plant-based alternatives available to buy in the UK. The five most commonly consumed types of meat in the UK are chicken, chicken breast, sausages, bacon and beef steak (Food Foundation, 2024) but given the lack of plant-based alternatives that directly replicate whole cuts of meat (e.g. roast chicken, beef steak) we decided to focus our analysis on commonly eaten types of meat with close plant-based equivalents (see Annex 1 for a full list of products included).

We then used the taxonomy structure from the OECD's report on meat protein alternatives (Frezal et al, 2022) to group different plant-based meat alternative products into three categories. This taxonomy divides meat alternatives into three overarching categories based on their level of processing and how long they have been available to buy, devising a processed (new generation) category for those products that are new to the market and more closely mimic meat. We followed this approach, but excluded some OECD sub-categories such as insects and cultivated meat from our taxonomy as we focussed only on products currently available to buy in the UK.

In total we first looked at 104 products currently available for UK citizens to buy at Tesco - which has the largest retail grocery share in the UK. Our three plant-based categories are as follows:

- 1. Processed (new generation).** This includes more recent plant-based meat alternatives such as Beyond Meat, THIS branded products, Quorn, Linda McCartney, Vivera and retailer own-brand plant-based burgers. These are foods which aim to directly mimic equivalent meat products and are marketed as such.
- 2. Processed (traditional).** This includes products such as tofu, tempeh and seitan which have a long culinary history in other parts of the world such as Southeast Asia.
- 3. Less processed alternatives.** This includes beans, legumes and pulses (hereafter referred to as beans), as well as grains, both of which are sources of protein. We included ready-to-eat and tinned products within this category given the role played by convenience in driving food choice.

A fourth category looking at meat (poultry, pork, lamb and beef) was also included to provide a point of comparison.

We found such a wide range of plant-based products available within the processed (new generation) category that we were able to capture a number of different product types e.g. plant-based >



> chicken nuggets and fillets. Product sampling for the processed (new generation) category was therefore selective; we aimed to select a wide range of different types of products (tinned, frozen and dried) and product formats (sausages, fillets, meat balls, etc) within this category for a range of different brands to represent the full range of products available. While there are a large number of processed (new generation) products available that aim to mimic meat products we found a much lower availability of tempeh and seitan products and brands in UK supermarkets and so for this category we were less selective with our sampling in order to include as many products as we could find. A range of different grain and bean products and formats were purposively selected for the less processed alternative category (beans and grains) to provide a range of widely available options.

Organic products were excluded from our sample given that they often come with a price premium and therefore an accessibility barrier.

For each of the two more processed plant-based categories we captured product information from the full range of brands available from Tesco. Product, product price and and nutrition information for all three plant-based categories were taken from Tesco's online web shop with additional product information from Sainsbury's and Ocado used where Tesco products were out of stock.

Micronutrient data was captured in May 2024. Carbon and water data were extracted using Our World Data and brand ESG reports and journals, and predominantly reflect emissions at a food category not product level (e.g. beef not Tesco beef mince) because greenhouse gas emissions (GHGE) and water footprint data at a product level are limited. This means that emissions represent the food category average, and true emission and water footprints at a product or brand level may actually be slightly higher or lower.



For our overall taxonomy visual and infographic, high, medium and low scoring was applied to each of our main criteria (key nutrients, price, carbon footprints and water footprints) for each brand or food type. The low, medium, high thresholds used in the government's multiple traffic light system for front of pack labelling was applied to sugar, salt and saturated fat content. As there is no clear or formal guidance around low and high thresholds and labelling for calories, fibre, protein, price, carbon footprint and water usage, for these indicators we have scored them based on which quartile they sit in for the range of products analysed for this briefing:

- Products falling in the highest 25% of products are labelled as red or depicted with a full circle
- Products falling within 25%-75% are labelled as amber or depicted as a half circle
- Products falling below 25% are labelled as green or depicted as empty circle

We have opted to use circle icons for calories, fibre, protein and price to visually represent the level of nutrients or cost per 100g, as using traffic light colour coding could be misleading. For example, a category with low levels of fibre would be labelled green despite the numerous positive health outcomes associated with high fibre foods and diets.



# PART ONE

DEFINING AND UNDERSTANDING PROTEIN ALTERNATIVES

A key advantage of protein alternatives is that they avoid the feed-to-food conversion loss typically associated with animal protein. It is estimated that 1.3 kg of arable crops are needed to produce 1 kg of plant-based meat compared with 7-10 kg of feed per kg for beef (Frezal, Nenert & Gay, 2022). Given that the majority of GHGEs and nature loss associated with livestock production are related to land use and conversion, switching to alternative proteins would have significant environmental benefits (Green Alliance, 2024). Alternative proteins can also act as a helpful bridge for citizens whose usual diets are centred around meat, encouraging them to reduce the amount of meat they are eating without having to radically shift their habitual cooking and eating patterns. However, although the vast majority of meat alternatives come with significantly reduced GHGEs and water footprints compared to meat, their nutritional profile is highly variable and evidence on their health impact is more limited. As a result, there are concerns that a shift towards meat alternatives will lead to unintended consequences for public health.

**There are a large number of different types of foods that can be defined as alternatives to meat, although these are often grouped together into a single 'plant-based alternative' category.** This approach can be overly simplistic given the large variety of plant foods that can be substituted for meat. Whole plant foods such as beans, grains and vegetables can also be substituted for meat, in addition to more processed alternatives that aim to directly mimic the taste and texture of animal-based equivalents.

**There are a large number of different types of foods that can be defined as alternatives to meat, although these are often grouped together into a single 'plant-based alternative' category. This approach can be overly simplistic.**

Among this latter group of products there is also a great deal of diversity in nutrition profile. More processed plant alternatives to meat are typically made from ingredients such as soy, pea, nuts, wheat and mycoprotein. The manufacturing process for these is also varied, with three main ways of producing alternative proteins (Figure 1).

Our taxonomy focuses on the first two of these production methods given that no cultivated meat products are currently available for consumers to buy in the UK and they are not plant-based. Additionally, few fermentation-made products using biomass (with the notable exception of Quorn) and precision fermentation methods are on the market. Fermentation-made products using precision fermentation however, have the potential to be particularly important for the manufacturing and out of home sectors, which sell many composite products or dishes using meat and dairy as ingredients that could be substituted with plant-based equivalents once these are more widely available.

**FIGURE 1: HOW ARE ALTERNATIVE PROTEINS MADE?**



### **PLANT-BASED**

Plant-based alternatives are made from plants that are designed to taste like meat;



### **FERMENTATION-MADE MEAT ALTERNATIVES**

This production method is used to produce three different types of products; traditional products based on fermentation, like tempeh and tofu; biomass fermentation, the process pioneered by Quorn that ferments fungi to create mycoprotein; and precision fermentation, which engineers microbes to produce and manufacture – rather than simply transform – real egg or dairy proteins like whey and casein as well as fats;



### **CULTIVATED**

Cultivated or cell-based meat, grown directly from animal cells and so avoiding the need to farm animals.

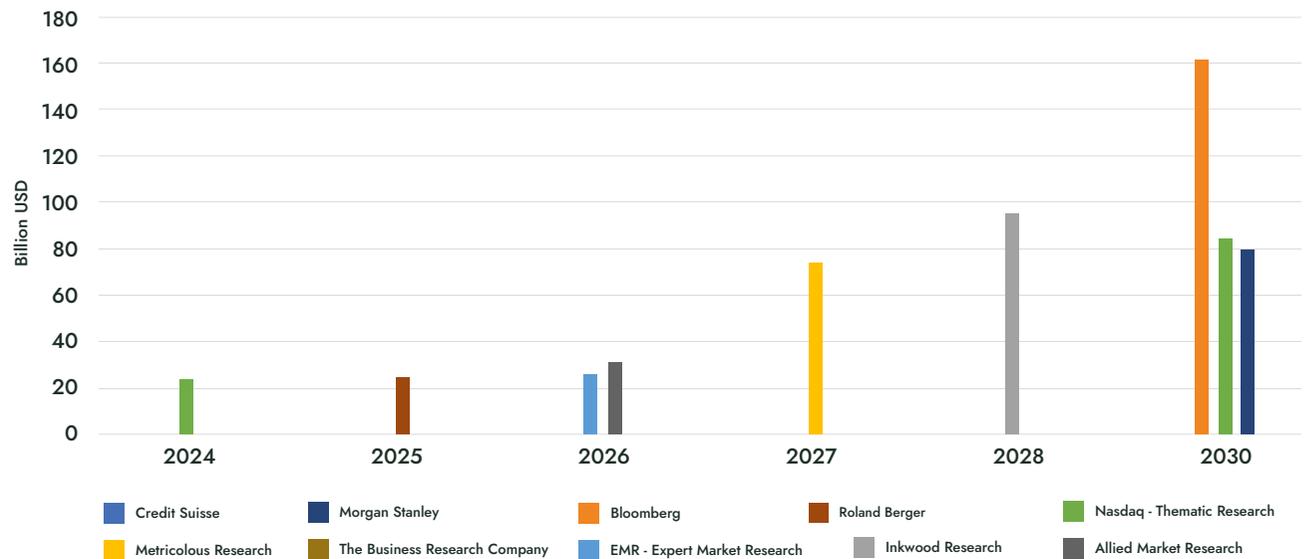
# The current UK landscape for alternative proteins

According to the Good Food Institute (GFI), as of 2023 there were a total of 138 sustainable protein companies operating in the UK; 100 in the plant-based sector, 23 developing cultivated meat, and 15 in the fermentation space (GFI, 2023). **Between 2012 and 2023, UK Research and Innovation (UKRI) invested at least £43 million in research and development for these three categories of protein alternatives**, with cultivated meat receiving the largest proportion of funding (GFI, 2023).

In the UK, Quorn Foods are the most notable manufacturers of fermentation-made products. Quorn is a mycoprotein-based meat alternative, harvested from the biomass of large fermentation tanks. They operate the world's largest sustainable protein production facility based in North Yorkshire (GFI, 2023). However, precision fermentation is comparatively underdeveloped in the UK, particularly when compared to other high-income countries such as Israel and the United States (GFI, 2023).

Currently, cultivated meat has been approved for sale in only three countries globally (Singapore, the USA and Israel) (Just Food, 2024), and it is likely to be some time before cultivated meat products are available on UK supermarket shelves. While no submissions have yet been made to regulators in the European Union, in 2023 the first regulatory applications were made to sell cultivated meat in Switzerland and the UK (GFI, 2023).

**FIGURE 2: INVESTOR PREDICTIONS FOR THE GROWTH OF THE PLANT-BASED MARKET GLOBALLY**



Source: Danish Vegetarian Association, 2021

**Although recent years have seen high-profile collapses of a number of plant-based brands, with the cost of living crisis blamed for a fall in both volume and value growth in 2023 for the category (The Grocer, 2023a), the longer-term outlook for plant-based alternatives remains broadly positive (Figure 2).** It has been suggested that the recent volatility may simply be due to consolidation of the sector as the market matures

(The Grocer, 2023b). Analysis undertaken by the Green Alliance in 2023 predicted that, with the right combination of targeted investments and regulation, the UK industry could be worth up to £6.8 billion annually and create 25,000 jobs by 2035 (Green Alliance, 2023). Economies of scale are widely expected to lead to an eventual fall in the cost of production with a number of investors projecting continued growth for the sector.

## A TAXONOMY OF UK PLANT-BASED ALTERNATIVES TO MEAT AND THEIR HEALTH, ENVIRONMENTAL AND PRICE PROFILES

Averages have been calculated for the products analysed within each of our food type/brand categories to provide an overall score e.g. the chicken category includes two fillet types and four types of nuggets. The La Vie brand and Cauldron Foods were excluded from our overarching taxonomy infographic as only one product from each brand (a smoked bacon and sausage alternative) was analysed. Some water footprint values were not available for some of the products we analysed. Where this is the case the icon has been omitted. For more information on the methodology and scoring system used below see p.10 of this report.

		NUTRITION PER 100g						NOVA			CO <sub>2</sub> FOOTPRINT	WATER FOOTPRINT	PRICE	
		Kcal	Sat fat	Salt	Sugar	Fiber	Protein			CO <sub>2</sub> eq (kg)	CO <sub>2</sub> eq (kg)	100g	100kcal	
<b>Meat</b> n=36	Beef (red meat)	●	●	●	●	○	●	1	3	4	●	●	○	○
	Lamb (red meat)	○	●	●	●	○	●	1			●	●	○	○
	Pork (red meat)	●	●	●	●	○	○	1	3	4	●	●	○	○
	Chicken (white meat)	○	●	●	●	○	○	1	3	4	●	○	○	○
<b>Processed new generation</b> n=42	Beyond meat (Pea protein)	●	●	●	●	○	○			4	●	●	●	○
	Vivera (Soya)	○	●	●	●	●	○			4	●		●	●
	Linda McCartney (Soya)	○	●	●	●	●	○			4			○	○
	Future Farm (Soya & pea protein)	○	●	●	●	○	○			4	●		●	●
	This (Pea protein)	○	●	●	●	○	○			4			●	●
	Quorn (Mycoproteins)	○	●	●	●	○	○			4	●	●	○	○
	Richmond (Soya, wheat, pea and chickpea protein)	○	●	●	●	○	○			4			○	○
	Tesco own-brand (Soya)	○	●	●	●	●	●			4			○	○
<b>Processed traditional</b> n=9	Tofu (Soya)	○	●	●	●	○	○		3	4	●	●	○	○
	Tempeh (Soya)	●	●	●	●	●	●		3		●		○	○
	Seitan (Gluten/wheat)	○	●	●	●	○	○			4	●		○	●
<b>Beans and grains</b> n=20	Beans (e.g. Lentils, chick peas, kidney beans)	○	●	●	●	●	○	1	3	4	●	●	○	○
	Grains (e.g. Rice, oats, barley)	○	●	●	●	○	○	1	3	4	●	●	○	○

## SPOTLIGHT ON OTHER PROTEIN ALTERNATIVES

### INSECTS

Asian, African and Latin American native cultures have been consuming edible insects for hundreds of years. In recent years interest in edible insects as a viable and sustainable alternative to traditional meat sources has been increasing. This is due to their low greenhouse gas emissions and nutritional profile; rich in protein, fatty acids, vitamins and minerals (Kim *et al*, 2019).

Edible insects can be farmed at a lower environmental cost compared to livestock, producing 1-2.7kg less Co2e and using 50-90% less land per kg of protein produced by conventional livestock farming (Payne *et al*, 2015). However, production in colder climates requires higher energy inputs in order to control temperatures for a favourable insect environment, leading to higher GHGEs. Farming insects in colder climates also requires more water resources compared to warmer climates as insects are cold blooded animals, and most tropical insect species are larger than those that live in cold and temperate climates (Oonincx, 2021). Tropical regions have higher insect species diversity and most edible insects can be found year-round. However, this is not the case in cold climates such as the UK, where insect populations cease developing under cold conditions or hibernate (Food and Agriculture Organization, 2014) and so would need to be reared indoors.

Additionally, there are attitudinal barriers to using insects as food in the UK. Studies on western consumers indicate low levels of acceptance in using edible insects for human food, with the main barriers being neophobia, disgust, food safety concerns and lack of familiarity (Ros-Baró *et al*, 2022; Van Huis & Rumpold, 2023; Food Standards Agency, 2022).



### CULTIVATED MEAT

Cultivated meat, also known as lab-grown meat or cultured meat, is produced by culturing animal cells in a controlled environment like a lab or – if at scale – in conditions resembling a brewery. It is often considered to be more environmentally friendly than rearing livestock, when it comes to GHGEs, land use and water usage.

While studies indicate that producing cultivated meat requires less land and water than livestock, some studies suggest that these benefits could come at the expense of more intensive energy usage. This is due to the high energy demands of the cultivated meat production process, notably producing growth medium ingredients and running bioreactors, especially when non-renewable energy sources are used.

However, GHGE estimates vary, with many estimates often reflecting current small-scale production (some using pharmaceutical models) rather than commercial-scale food production (Escobar *et al*, 2021; Treich, 2021). While growth mediums and running bioreactors can be cost intensive as well as energy intensive, ongoing advancements in technology and increased investment in the sector means costs are expected to reduce over time which could make cultivated meat a more economically viable option (Stephens *et al.*, 2018).

Although the possible benefits of cultivated meats are significant, considerable uncertainties still exist due to limited data.





# PART TWO

**THE HEALTH AND NUTRITION PROFILE OF PLANT-BASED  
MEAT ALTERNATIVES**

**All three plant-based meat alternative categories contain fewer calories, lower levels of saturated fat, and higher levels of fibre on average than the meat products analysed but were lower in protein and marginally higher in sugar.**

Less processed alternatives to meat (beans and grains) perform strongly on a number of different nutrition indicators, containing notably lower amounts of saturated fat, calories and salt, and the highest amount of fibre per 100g of all categories compared to both meat and other plant-based meat alternatives.

While the two more processed meat alternative categories were on average both lower in calories, saturated fat, and higher in fibre relative to meat, there were some notable differences between the two. **The processed (new generation) category contained the highest level of salt of all four categories, and three times as much salt as the processed (traditional) category.** Conversely, products in this category (processed: new generation) contained on average higher levels of fibre compared to the processed (traditional) category; 4.7g of fibre compared to 3.1g per 100g. This may be due to the use of pea as an ingredient in this category. While all four categories contained only very small amounts of sugar (>1g per 100g) the processed (new generation) category also contained the highest levels of total sugar.

The meat category was on average higher in protein compared to the other three categories, with over twice as much protein compared to beans and grains (18.1g of protein per 100g compared to 7g). However,

perhaps surprisingly, both the more processed meat alternative categories have only marginally lower levels of protein to the meat category. This may be because processed (new generation) plant-based meat alternatives often use a protein isolate or concentrate, which helps get closer to the protein levels of meat (Andreani *et al*, 2023) and due to the high protein content of soy beans used in processed (traditional) meat alternative products.

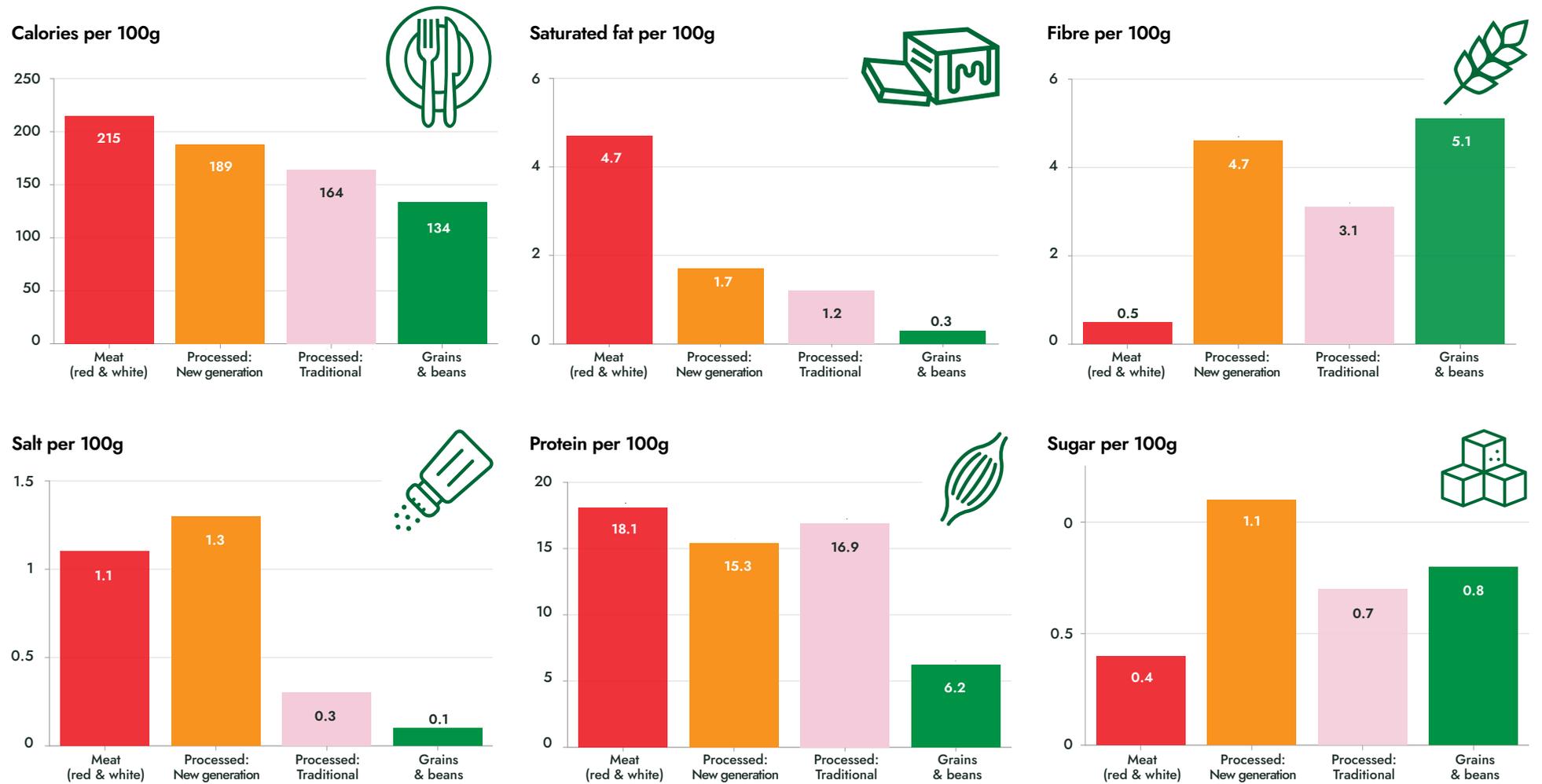
It is important to note that although plant-based alternatives have a lower protein content compared to animal based foods, high income countries such as the UK do not have issues with protein deficiency at a population level. On average UK adults eat 35% more protein than is recommended (British Nutrition Foundation, 2023), so shifting to more plant-rich diets would be unlikely to negatively impact the overall protein adequacy of diets. Although animal-based foods are the most bioavailable source of protein (containing all nine of the essential amino acids) it is possible to obtain the recommended amount of protein from a plant-based diet when a variety of different protein sources are eaten over the course of a day.

These findings align with a recent major systematic review which found that although the nutritional profile of plant-based alternatives varied greatly by manufacturing process (including the main base ingredient used, the processing techniques, time,

and temperature applied), overall most plant-based meat-alternative groups had lower energy density, lower saturated fat content, more fibre and similar levels of sodium on average to meat (Nájera Espinosa *et al*, 2024).



FIGURE 3: NUTRIENTS PER 100G ACROSS MEAT AND PLANT-BASED MEAT ALTERNATIVES





### VITAMIN AND MINERALS: A HIDDEN RISK?

In contrast to macronutrients (such as protein and fat) vitamins and minerals contain no calories and are needed by the body in only very small amounts. They are nevertheless essential for a variety of critical processes that support good health and development, and must be provided by food, as most cannot be produced naturally in the body. In the UK, meat and meat products are a notable source of several key micronutrients, contributing a fifth of average daily iron intakes (Fairweather-Tait, 2023). Animal foods (and fortified cereals) are also the only food-based sources of vitamin B12 available in the diet.

While wholegrains and beans contain no vitamin B12, they do naturally contain iron as well as a number of other micronutrients (such as magnesium and other B vitamins). From the 33 products analysed within the processed (new generation) category, only a third were labelled as including iron and B12. Within the processed (traditional) category 40% of products listed iron as an ingredient and none listed vitamin B12. We found a discrepancy between the micronutrient information available on retailer websites and claims made on brand websites. Future Farm and La Vie brand websites state that their ingredients are rich in iron or contain iron, but iron is not included in their product ingredient lists, likely due to the fact that their products are not fortified but their base ingredients (pea and soy) naturally contain iron. There are therefore opportunities to ensure that meat alternatives include base ingredients that are naturally high in iron and/or are better fortified with micronutrients of concern.

### THE GREAT ULTRA PROCESSED MEAT ALTERNATIVE DEBATE

Ultra-processed foods (UPFs) are foods that have undergone industrial processing and formulation using manufacturing processes that aren't replicable with homemade food, and often involve the addition of additives, preservatives and other artificial ingredients. A large and growing evidence base consistently demonstrates that high levels of UPF consumption are associated with a range of negative health

outcomes, including obesity, type 2 diabetes, hypertension, cardiovascular disease, depression, cancer and stroke (Lane *et al*, 2024; The Food Foundation, 2023). However, the precise mechanisms that are responsible for these outcomes are not yet clear, making it difficult to recommend effective policy and industry solutions to mitigate the negative impacts of UPFs on health. For example, if the addition of emulsifiers and additives are found to play a key role in driving the negative health outcomes associated with UPFs, then reformulation would help reduce any risk. However, if processing in and of itself is driving the negative outcomes associated with UPFs, then a more fundamental shift towards whole foods is required.

**This matters for plant-based meat (and dairy) alternatives since many of these cannot be homemade and are therefore defined as UPFs using the NOVA classification system.** Even plant-based alternatives with good nutrient profiles based on traditional nutrient profiling models, such as mycoprotein (Quorn), can be classed as UPFs. There is currently only limited evidence looking at the health outcomes of plant-based alternatives, although a recent study in *The Lancet* that was one of the first to look at the health risks associated with different types of UPF food categories, found a trend towards a positive health impact for intake of ultra-processed plant-based alternatives (Cordova *et al*, 2023). This was in contrast to overall intake of UPF foods and animal-based UPF foods which both significantly increased the risk of negative health outcomes.

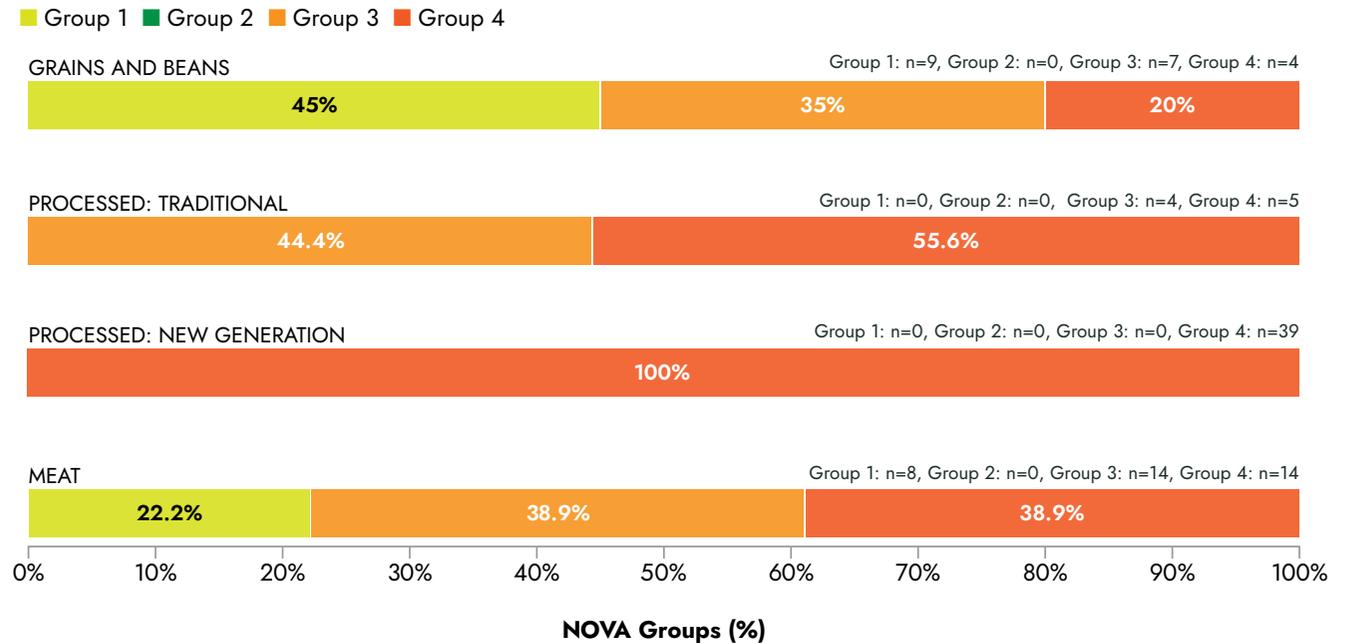
However, surveys point towards high levels of concern and mistrust around ultra processing among the public, with a recent survey of 10,000 people from 17 European countries finding that 65% believe UPFs are unhealthy and will cause health issues later in life (EIT Food, 2024). This may be hindering wider adoption and investment into plant-based alternatives. There is also evidence to suggest a great deal of misinformation around plant-based meat and dairy alternatives is propagated online. Recent research conducted by The Changing Markets Foundation found that a quarter (24%) of all social media posts analysed disparaged plant-based meat and dairy alternatives by alleging these lack nutrition, suggesting that they are "ultra-processed" "Frankenfoods" that can cause serious disease and "turbo cancers" (Changing Markets Foundation, 2023). This narrative was found to be driven for the most part by a small group of social media accounts associated with self-described wellness experts or far right and right-wing media and political figures (Changing Markets Foundation, 2023).



## OUR ANALYSIS

In our product analysis we found that all four categories included ultraprocessed products (UPFs; Nova group 4). The proportion of UPFs varied considerably between the three plant-based meat alternative categories, despite popular discourse around plant-based alternatives often depicting ultra processing as a common trait shared by all meat alternatives. **The processed (new generation) category has the highest proportion of UPFs overall (100%) and almost twice as many UPFs as the processed (traditional) category (55.6%).** 20% of the grain and bean products we analysed fell into NOVA category 4 due to the addition of emulsifiers and bulking agents in some of the ready to eat and tinned bean and grain products included

FIGURE 4: THE PROPORTION OF ULTRA-PROCESSED PRODUCTS WITHIN EACH OF OUR FOUR CATEGORIES ANALYSED



in our analysis. Over a third of meat products we analysed can be categorised as UPFs with many cured or processed meat products such as bacon and ham falling into NOVA category 4. It is important to note that processing is not the same as ultra processing. Just under half (44.4%) of products in the processed (traditional) category are NOVA category 3. This means that they are minimally processed, but less industrially formulated and processed than UPFs. Examples of such foods include tempeh and some tofu products.

**The proportion of UPFs varied considerably despite popular discourse around plant-based alternatives often depicting ultra processing as a common trait shared by all meat alternatives.**



## THE POLITICS OF PROTEIN

Globally, the shift towards more plant rich diets is becoming increasingly politicised. In the UK, former Prime Minister Rishi Sunak's pledge not to introduce a meat tax and insinuations that such a tax was a Labour policy, risks meat reduction becoming a party-political issue. Online, dietary preference is a common part of identity-driven conversations that aim to divide. For example, attacks on so-called 'soy boys', which aim to bring into question the masculinity of men who choose plant-based diets (Changing Markets Foundation, 2023).

These culture wars are playing out against a backdrop of industry influencing and lobbying. In the US, well-funded lobby groups including The North American Meat Institute and US Cattlemen's Association, have been accused

**Globally, the number of lobbyists representing agrifood associations reached a record high at COP28 in 2023**

of targeting public policy and labelling laws to obstruct sales of plant-based products (Scott-Reid, 2023). Globally, the number of lobbyists representing agrifood associations reached a record high at COP28 in 2023, doubling in number between the 2022 and 2023 COPs to 340 delegates - of which 120 represented the meat and dairy industry specifically (Guardian, 2023a).

The United Nations Food and Agriculture Organisation's (FAO) '1.5 degree roadmap for food system change', published at COP28, has been criticised as a missed opportunity for reducing food system emissions with no mention of the need to reduce consumption of animal-based foods in the roadmap (Verkuijl *et al*, 2024). Recent accusations from ex-FAO employees - that lobbyists and farming-focused states have a history of pressuring the FAO to downplay the link between livestock farming and climate change - raises questions about the role of the industrial meat industry in shaping climate policy (Guardian, 2023b).



# PART THREE

**COMPARING THE ENVIRONMENTAL PROFILES OF  
PLANT-BASED MEAT ALTERNATIVES TO MEAT**

### CARBON FOOTPRINT

All three categories of plant-based meat alternatives we analysed have much smaller GHGEs compared to meat by some level of magnitude. Of the three plant-based meat alternative categories analysed average emissions ranged from 0.5 to 4.5 kg of carbon emitted per kg. Average emissions for the meat category were notably higher at 38.9 kg of carbon emitted per kg. On average, processed (traditional) plant-based products have the lowest emissions, with 0.5kg of carbon emitted per kg. However, there is limited evidence available regarding the emissions associated with a number of products in the processed (traditional) category, notably for tempeh and seitan, and so average emissions for this category may be higher than reported.

There is variation within each category in terms of the GHGEs associated with individual foods (figure 5). For example, globally GHGEs are highest for rice within the grains and beans category due to the large amounts of methane produced from the process of flooding rice paddy fields. The greatest variation exists in the meat category, with emissions ranging from an average of 9.9 CO<sub>2</sub>eq kg per kilo for poultry compared to 99 CO<sub>2</sub>eq kg per kilo for beef.

FIGURE 5: AVERAGE GHGES PER KG FOR OUR FOUR MAIN CATEGORIES OF INTEREST

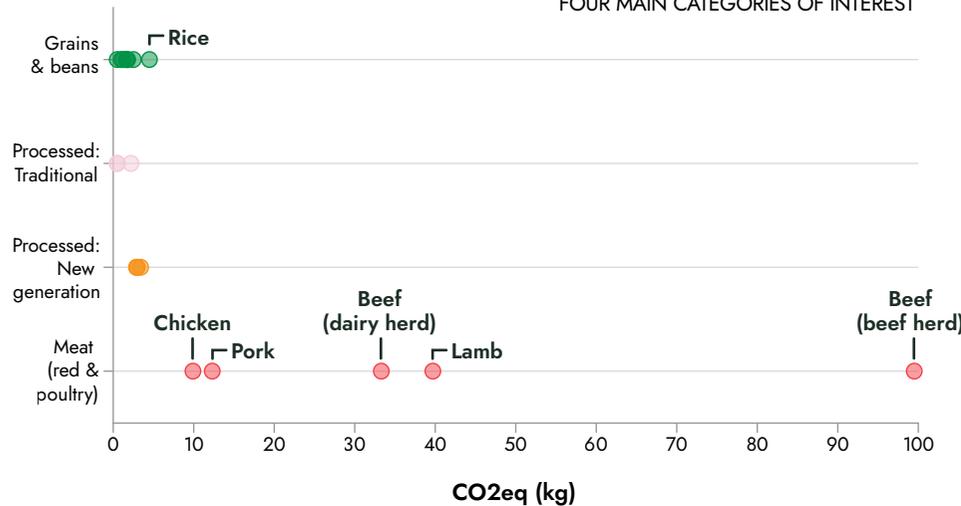
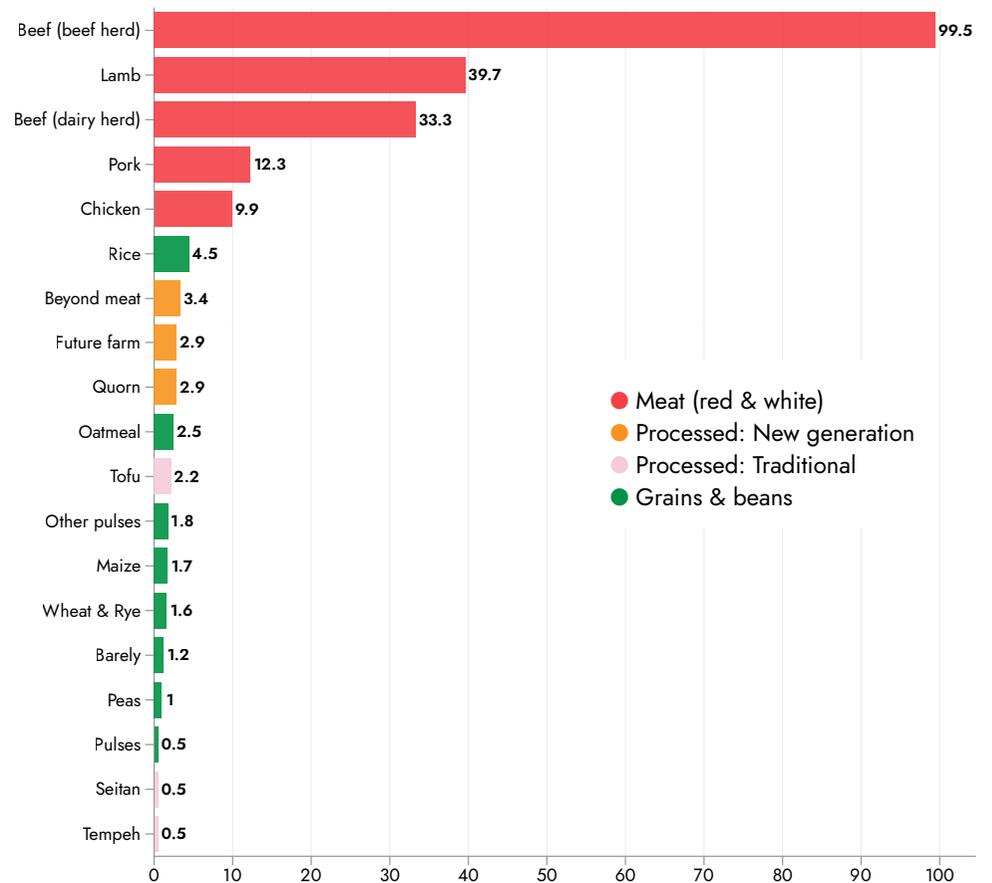


FIGURE 6: AVERAGE GREENHOUSE GAS EMISSIONS PER KILOGRAM BY FOOD PRODUCT



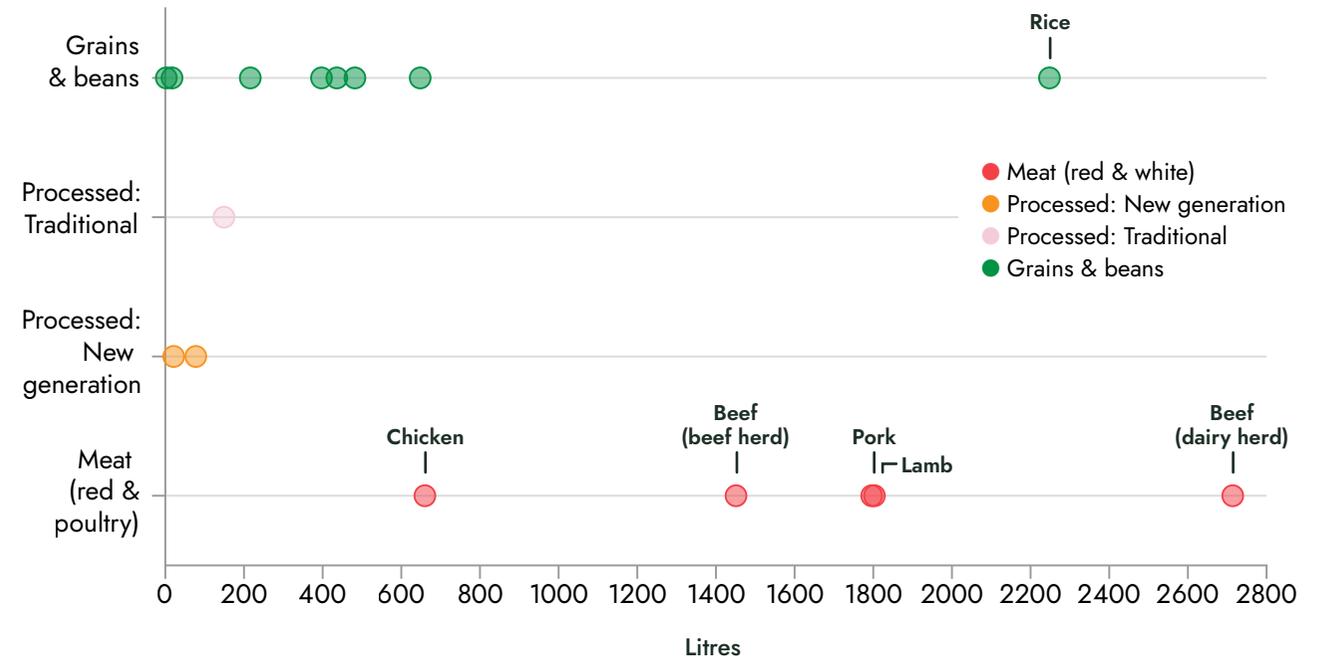
Sources: Meat (red & poultry): Our World Data. Processed: New generation- Quorn Carbon Footprint 2023, Beyond Meat ESG 2022, Impossible Foods, Future farm. Processed: Traditional: Our World Data, Putri 2018, Carbon Cloud. Grains & beans: Our World Data.

### WATER FOOTPRINT

Freshwater<sup>1</sup> is an increasingly scarce resource despite being essential for life and many food production processes. The safe planetary boundary for freshwater usage was exceeded in the mid-twentieth century, meaning that human activity has already pushed the earth’s freshwater system well beyond what is sustainable (Porkka *et al*, 2024). We found similarities between the water footprints of our four categories and their GHGEs, with all three plant-based meat alternative categories having lower water footprints on average compared to meat. The processed (new generation) category has the lowest water footprint of all four categories (76.4 l/kg) - twenty-fold lower than the average water footprint associated with meat.

A more nuanced picture emerges when looking at water usage within the four categories. There is variation within each category depending on average water use for the different individual food products (figure 7). For example, the water footprint of rice is much higher than for the rest of the grains and beans included within this category. There is also notable variation within the meat category, with water use ranging from an average of 660 l/kg for poultry compared to 2,714 l/kg for beef in dairy herds.<sup>2</sup>

FIGURE 7: AVERAGE WATER USAGE PER KG FOR OUR FOUR FOOD CATEGORIES

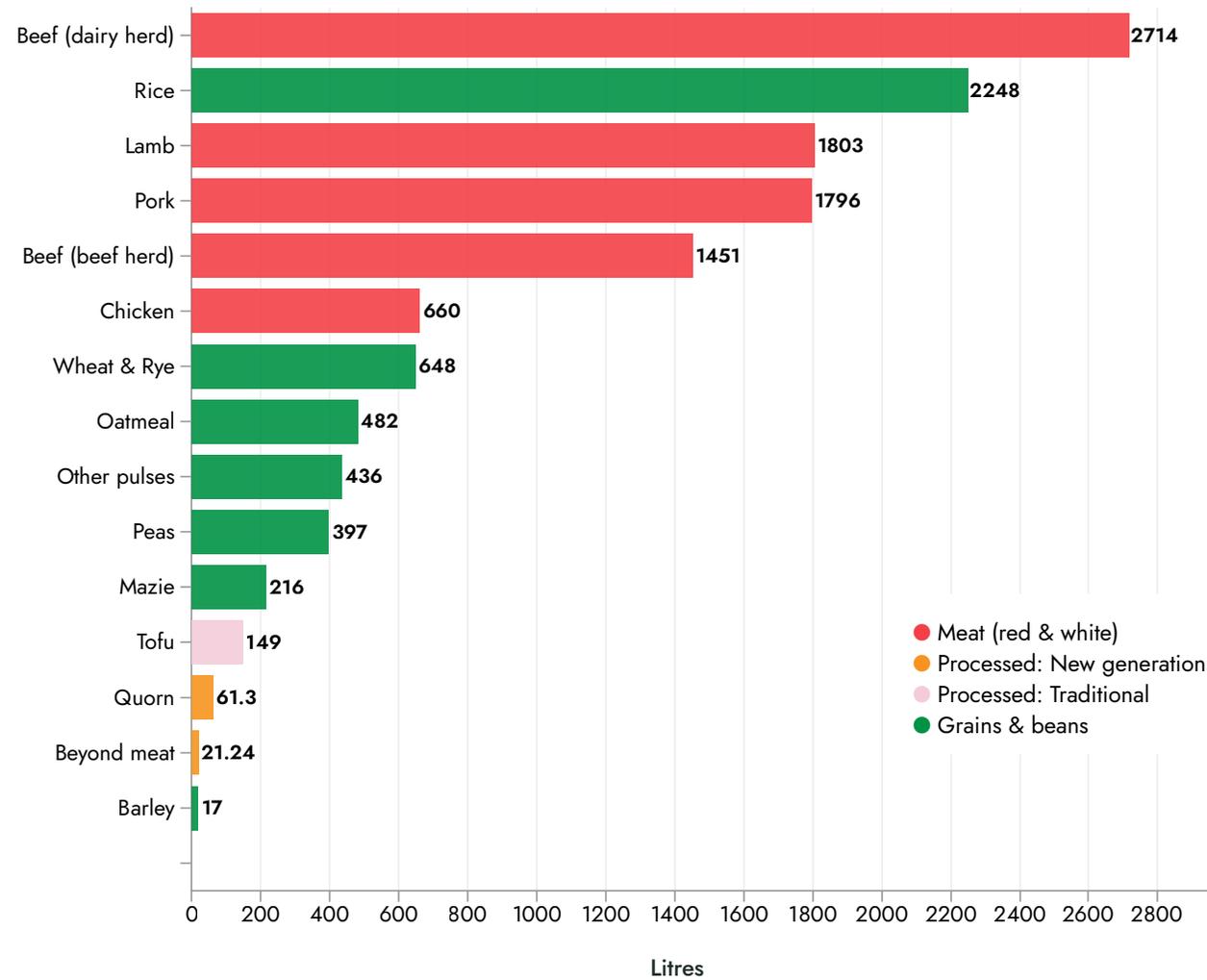


Sources: Meat (red & poultry): Our World Data. Processed: New generation- Quorn Carbon Footprint 2023, Beyond Meat ESG 2022, Impossible Foods, Future farm. Processed: Traditional: Our World Data, Putri 2018, Carbon Cloud. Grains & beans: Our World Data

<sup>1</sup> Freshwater is defined as water that is not salty and is suitable for human consumption. Water footprinting is based on the amount of fresh water used to produce goods and services.

<sup>2</sup> A note on poultry. Although poultry meat performs relatively well on a number of sustainability indicators such as GHGEs and water usage compared to red meat, chicken-rearing indirectly contributes to deforestation, as a result of chicken typically being fed soy. This effectively shifts greenhouse gas emissions offshore to countries such as Brazil, where significant amounts of land are cleared of forest in order to grow soy that is then exported as feed. Industrial chicken production is also associated with water pollution.

FIGURE 8: AVERAGE WATER USAGE (LITRES PER KG) FOR EACH OF THE FOOD TYPES ANALYSED WITHIN OUR FOUR FOOD CATEGORIES



Sources: Meat (red & poultry): Our World Data, Freshwater withdrawals. Processed: New generation: Quorn Carbon Trust 2023, Beyond Meat ESG 2022, Impossible Foods. Processed: Traditional: Our World Data. Grains & beans: Our World Data.

PRICE AND AFFORDABILITY

Price is a key driver of food choice, yet our analysis shows that there is a notable price premium for the two processed meat alternative categories compared to meat products. This is concerning given that these two categories offer products that aim to directly, or closely, mimic meat and can therefore more easily encourage the substitution of meat for plant-based products than unprocessed alternatives can. **The processed (new generation) alternative category is 73% more expensive per 100g than the meat category while the processed (traditional) category is 38% more expensive.** We also looked at price per

100 calories as an alternative measure of price, given that calories can be used as a proxy for satiety, finding a similar pattern. For every 100 calories it would cost 79% more to purchase processed (new generation) meat alternatives and 60% more for processed (traditional) alternatives than for the same number of calories from meat products.

Prices for meat alternatives are expected to decline as the plant-based market grows and the cost of production falls. However, **this price premium may put many plant-based options out of reach for those**

**on lower incomes**, with research already suggesting that in the UK high income households are more likely to purchase plant-based alternatives than those on a lower income (Alae-Carew, 2022).

Less processed meat alternatives (beans and grains) are the most affordable option by quite some way, costing 2.5 times less per 100g than the processed (new generation) category. There is therefore a real opportunity in the UK to champion and better promote beans and wholegrains as an affordable, healthy and sustainable alternative to meat in a cost of living crisis.



FIGURE 9: AVERAGE PRICE PER 100G AND PER 100 CALORIES FOR OUR FOUR FOOD CATEGORIES





# PART FOUR

## SUBSTITUTING MEAT FOR PROCESSED PLANT-BASED EQUIVALENTS



**Although beans and grains offer the largest number of co-benefits and should be an important part of strategies to support the shift to healthy and sustainable diets, in the shorter term like for like meat substitutions are likely to offer a realistic and feasible transition pathway.**

Although beans and grains offer the largest number of co-benefits and should be an important part of strategies to support the shift to healthy and sustainable diets, in the shorter term like for like meat substitutions are likely to offer a realistic and feasible transition pathway (Epstein et al, 2015; Ibsen et al, 2021). Substitution matters in nutrition. People tend to replace one food for another rather than simply removing certain foods from their diet altogether. To explore what the impact of this

might be, in this section we analyse a sub-set of the overall sample of products, focusing only on those that are obvious substitutions to the meat equivalent. For example, bacon with plant-based bacon. This is a more realistic scenario for behaviour change than assuming that individuals will be shifting from fresh, unprocessed meats such as chicken breast to more processed plant-based burgers, or alternatively shifting from burgers directly into meals based around beans and grains.

Our analysis shows that processed (new generation) plant-based alternatives are on average lower in calories, saturated fat and higher in fibre than their meat equivalents. The protein content of plant-based alternatives tends to be lower than for meat equivalents,

but for some types of products (bacon, mince and sausage) the differences are minimal. Beef mince for example contains 19.5g of protein per 100g, just 0.5g more than plant-based mince (19g). The salt content of plant-based alternatives was lower than the meat equivalent for meatballs and comparable for sausage, burgers and chicken nuggets. It was higher for plant-based beef mince, chicken fillets and bacon. It is worth noting that some of the meat products included in our analysis are unprocessed cuts so it is likely that salt would be added during the cooking process. Plant-based alternatives contained higher levels of sugar compared to their meat equivalents although levels were low overall (2.4g or less per 100g) and within the UK government's low sugar threshold (<5g per 100g).

Plant-based chicken alternatives as a category compare least favourably to the meat equivalent on both price and several nutrition indicators. They have higher amounts >

> of salt and sugar, lower amounts of protein, and comparable or higher amounts of saturated fat as well as coming with a price premium.

Looking at price per 100g and per 100 calories shows that there is a notable variation in terms of the price premium for plant-based meat alternatives depending on the product type. The largest price premiums are seen for plant-based bacon, chicken fillets, and chicken nuggets. Plant-based burgers, mince and meatballs have the smallest price differential compared to the meat equivalents of these products.

Overall, when comparing meat to their closest equivalents from the processed (new generation) category we see much smaller differences across a range of nutrition indicators that we do when comparing meat products to processed (traditional) products and beans and grains.

FIGURE 10: MEAT VS PLANT-BASED ALTERNATIVES: PRICE PER 100G

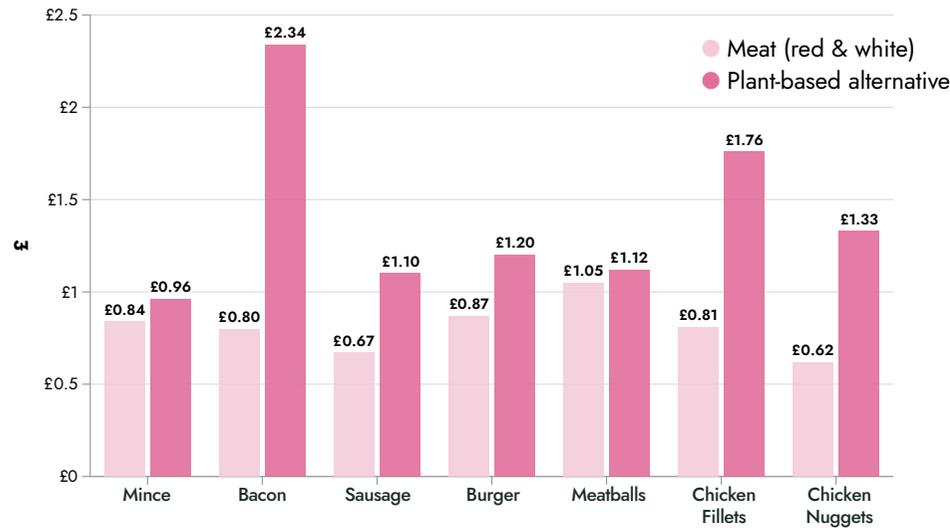


FIGURE 11: MEAT vs PLANT-BASED ALTERNATIVES: CALORIES PER 100g

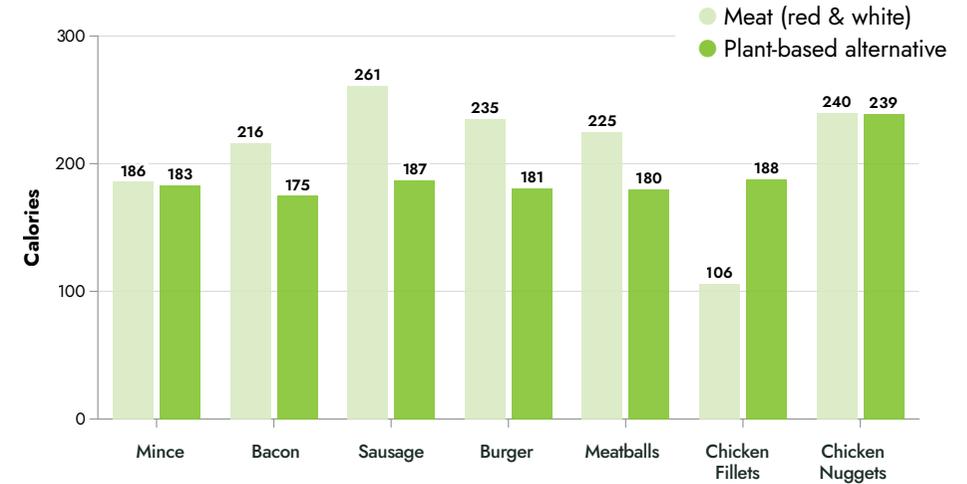
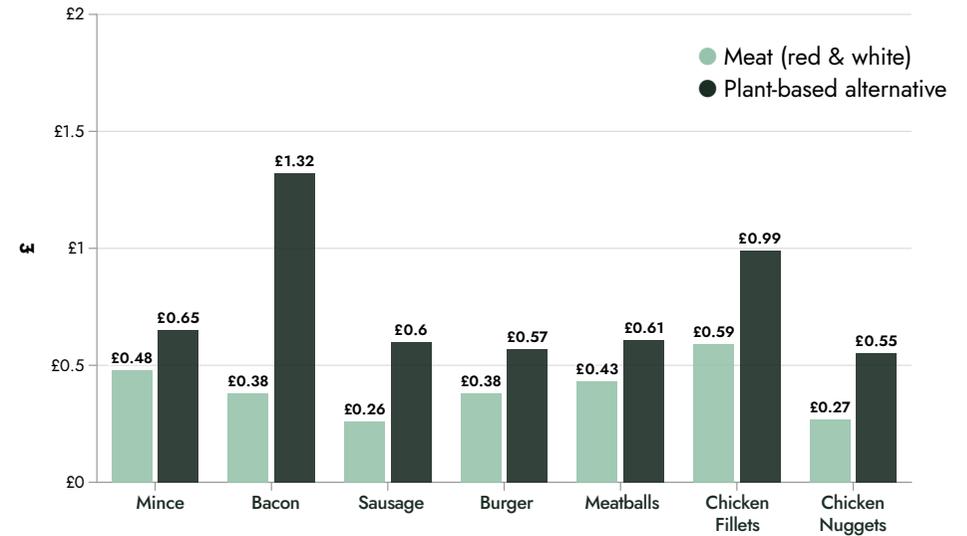
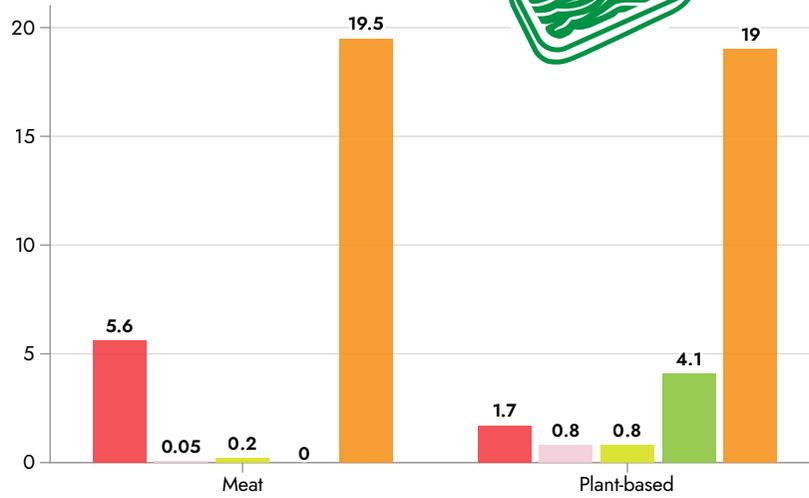


FIGURE 12: MEAT vs PLANT-BASED ALTERNATIVES: PRICE PER 100 CALORIES

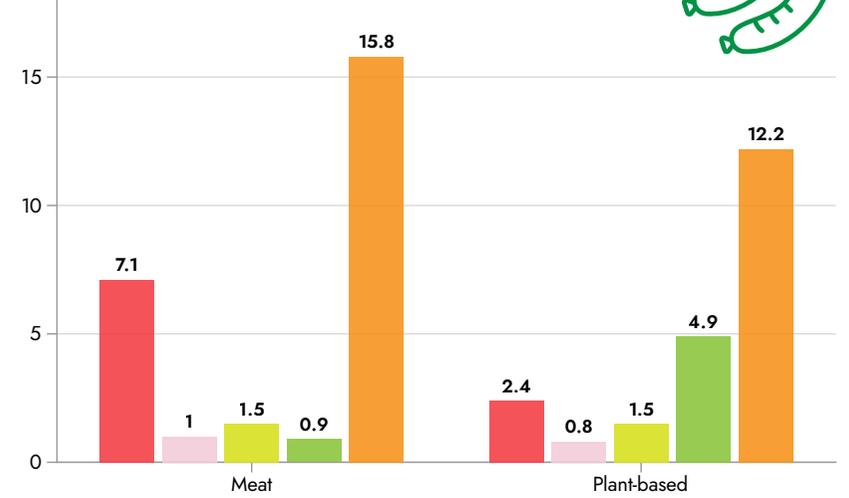


- Saturated Fat
- Sugar
- Salt
- Fibre
- Protein

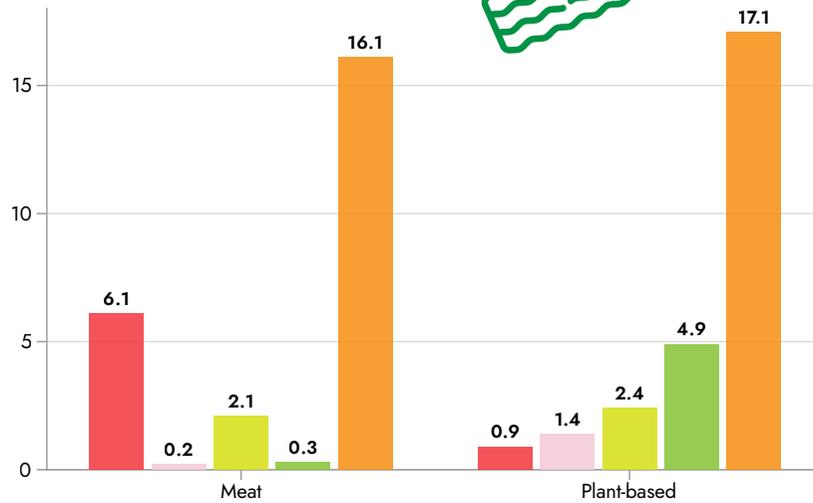
**MINCE:** MEAT vs PLANT-BASED ALTERNATIVES



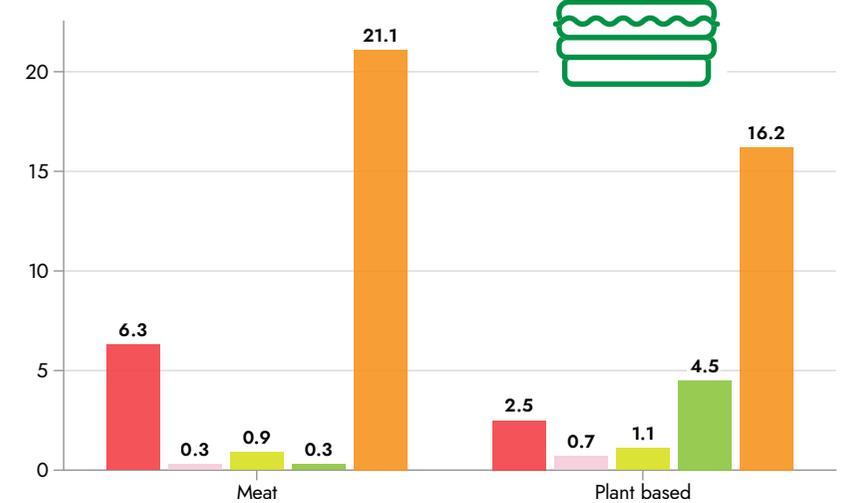
**SAUSAGE:** MEAT vs PLANT-BASED ALTERNATIVES



**BACON:** MEAT vs PLANT-BASED ALTERNATIVES

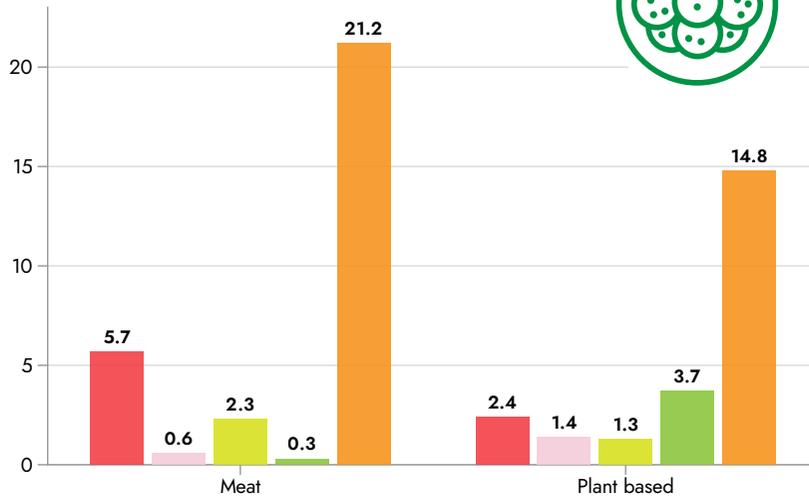


**BURGER:** MEAT vs PLANT-BASED ALTERNATIVES

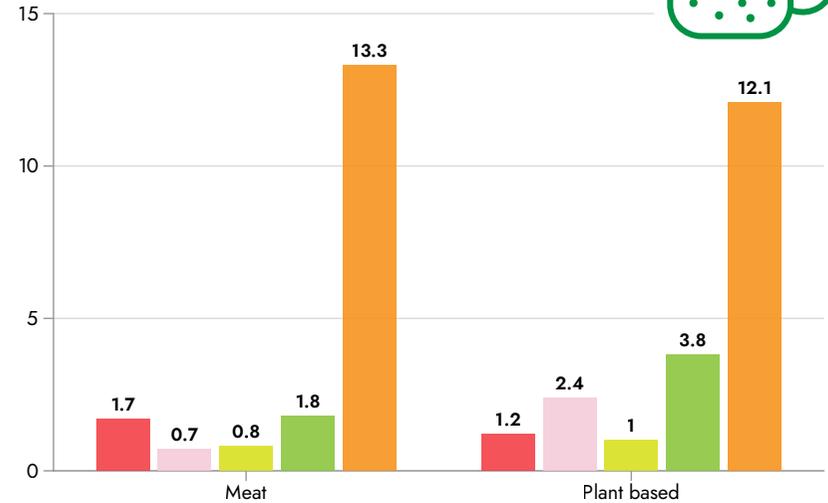
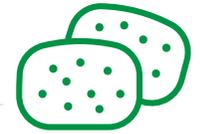


- Saturated Fat
- Sugar
- Salt
- Fibre
- Protein

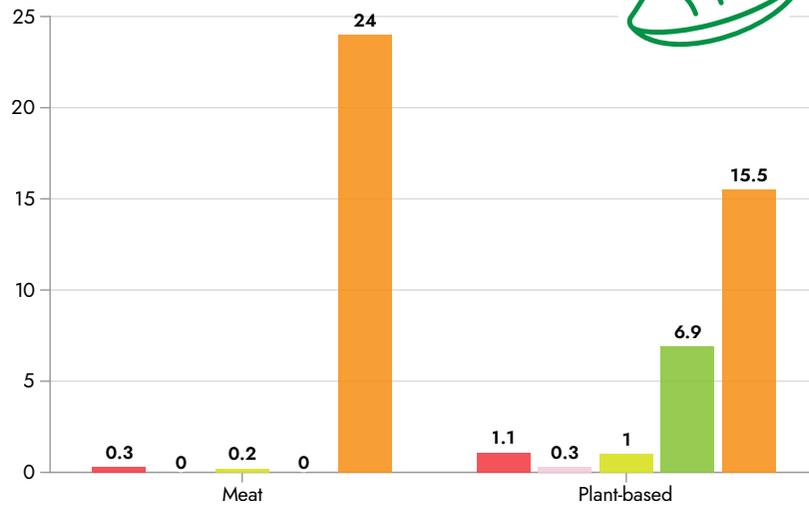
**MEATBALLS: MEAT vs PLANT-BASED ALTERNATIVES**



**CHICKEN NUGGETS: MEAT vs PLANT-BASED ALTERNATIVES**



**CHICKEN FILLETS: MEAT vs PLANT-BASED ALTERNATIVES**



# Summary

Plant-based alternatives to meat offer clear environmental benefits in terms of having lower GHGEs and smaller water footprints. Although research on health outcomes associated with plant-based meat alternatives remains limited, this analysis does not find evidence that the nutritional profile of plant-based meat alternatives is on average notably inferior to meat products. It also finds that, depending on the product, there is a wide spectrum in the level of processing that plant-based meat alternatives go through as well as differences in nutrient profile. There is an opportunity for the more processed plant-based alternatives to meat to be better fortified with micronutrients of concerns; chiefly iron and vitamin B12. All three of our plant-based categories were higher in fibre relative to meat, although overall, traditional processed alternatives to meat such as tofu and tempeh as well as whole plant foods like beans and grains offer the most nutritious alternatives to meat.

Less processed alternatives to meat (beans and grains) perform strongly on a number of different health indicators compared to both meat and other plant-based meat alternatives. They are also the most affordable alternative to meat. There is, therefore, a real opportunity in the UK to champion and better invest in, support and promote beans and wholegrains as an affordable, healthy and sustainable alternative to meat. These are a win-win-win for environmental, health and equity outcomes.





# Recommendations

## FOR INVESTORS

- › According to Boston Consulting Group, alternative proteins are the most effective investment to achieve climate impact, offering the highest carbon dioxide equivalent savings per dollar of invested capital of any industry—three times higher than the comparable return in the cement, transport, or aviation industries (Von Koeller *et al*, 2023). Investors can take this into consideration when assessing their investment portfolios.
- › **Investors should ensure that health/nutrition is a part of the conversation** when investing in plant-based alternatives, in addition to environmental considerations.
- › **Investors use data to understand risks and opportunities** facing companies and support their investment and engagement decision making. Investors can engage with government, businesses and initiatives like the Investor Coalition on Food Policy to advocate for well designed, streamlined and interoperable reporting regulation that will facilitate their investment and engagement decision making.
- › In their advocacy on well-designed reporting regulation, **investors can advocate for corporate reporting across as range of health and sustainability metrics (including sales of protein by source)** to be made mandatory. This will help to help track progress on increasing sales of healthier, more sustainable foods, will help companies to future-proof their business models, and will level the playing field to enable the food systems transformation required.

## FOR FOOD BUSINESSES IN THE RETAIL, MANUFACTURING AND THE OUT OF HOME (OOH) SECTORS

- › **Price parity.** Ensure that plant-based meat alternatives are priced at the same level, if not cheaper, than meat products. Where some European wide retailers have already committed to do this in other countries, their UK counterparts should follow suit and ensure high margins are not placed on plant-based brands.
- › **Make beans and plant foods more appealing.** Promotional spend ought to be redirected towards plant-based alternatives in order to make them more appealing. Advertising strategies should be focused specifically on grains and beans as the most affordable, sustainable and healthiest plant-based alternatives, where intake is not patterned by level of income.
- › **Disclose data and set sales-based targets to shift the ratio of plant and animal protein sales.** Transparent data disclosure and target setting allows companies to better understand areas for development and ensures there is a clear direction of travel for shifting sales. UK retailers are currently lagging behind European retailers in this respect.
- › **Reformulation.** Where the nutrient profile of meat alternatives does not compare favourably to meat e.g. higher levels of sugar or salt, food businesses should reformulate so that plant-based alternatives have equivalent, or better levels of nutrition to meat.
- › **Fortification.** HFSS-based regulatory frameworks means businesses do not always think about micronutrients, but we need to ensure that a shift towards >

plant-based does not risk worsening levels of micronutrient deficiencies for those minerals where meat is a major contributor to intake. Chiefly, these nutrients of concern are vitamin B12 and iron (iodine and calcium for dairy alternatives, but not within scope of this report). Calcium-set tofu can also be a good source of calcium.

- **Availability.** Increase availability of plant-based alternatives on supermarket shelves and on menus (especially those plant-based options based around beans and wholegrains) and increase the ratio of plant-rich foods to meat-based dish alternatives.
- **Blended products.** Blend whole plant-based ingredients e.g. beans or veg into ground or minced meat-based dishes to reduce the meat content without radically changing the taste of family favourites.
- **Meal deals.** OOH businesses should run cross-product promotions (e.g. meal deals, set menus) on plant-rich dishes and selected drinks, side dishes, or desserts. Food businesses should work together across sectors to ensure that meal deals include healthy and sustainable options. Retailers and manufacturers should coordinate to ensure that sustainable and healthy options are included in their meal deals and ideally look to offer these healthier 'green' versions of their meal deals at price parity or below the less healthy and meat centric options.
- **Follow the Playbook.** OOH businesses should look to the WRI's Playbook 2.0 and implement the eighteen priority behaviour change techniques for implementation without delay (<https://www.wri.org/research/food-service-playbook-promoting-sustainable-food-choices>)

## FOR POLICYMAKERS

Policymakers should act to make healthy, plant-based alternatives to meat more affordable, available and appealing for everyone. This ought to include swift implementation of the three existing policy recommendations within the Food Foundation's manifesto:

1. **Strengthen government procurement rules** for schools, hospitals, prisons, and other public spaces where food is served through a review of the Government Buying Standards for Food. The current requirement for schools to serve meat twice a week should be removed and replaced with a requirement for school meals to include two portions of veg or beans/legumes.
2. **Support the production and increased consumption of fruit, vegetables and legumes.** Specifically, there should be a strategy in each of the devolved nations for an expanded, vibrant, and thriving edible horticulture sector.
3. **Introduce mandatory reporting for large food businesses** to de-risk business investment in more healthy and sustainable food offerings. This ought to include a consistent set of metrics for measuring and reporting on the proportion of animal versus plant-based protein sales, the proportion of sales from healthier foods, and the proportion of fruit and vegetable sales. It should also provide guidance on how to measure GHGEs in a standardised way.

Policymakers should also explore action in other areas and settings to help make healthy, plant-based alternatives more available, affordable and appealing. For example exploring the levers of action suggested as follows: >



**Make healthier alternatives to meat more accessible and affordable**

- › **Introduce fiscal incentives to ensure a level playing field for plant-based foods and alternative proteins.** For example, extending the removal of VAT from plant-based milk alternatives to other alternative proteins (as meat and dairy are currently VAT exempt), and looking at tiered VAT rates with lower rates in the out of home sector for those selling a higher proportion of plant-based options.
- › **Increase and build on current investment into alternative protein.** The GFI recommends that between 2025 and 2030 government agencies should target an average annual investment of £49 million on public R&D to support the alternative protein sector. This should be targeted at research, development and infrastructure that reduces the costs of plant-based alternatives and improves their sensory appeal. This should include investment in new technologies that might improve existing plant-based meat products, like the use of precision-fermentation derived ingredients.
- › **Connect alternative protein development with public health goals and improve the regulatory system for alternative proteins;** for example, supporting the Food Standards Agency to keep UK standards high and help start-ups to navigate a complex regulatory system to bring new healthy plant-based new products to the domestic market quickly.



**Act to ensure a shift towards more plant rich diets is a central part of climate change strategy and food policy**

- › **Formally recognise the need to transition UK diets towards less meat.** Currently the government's Net Zero strategy includes support for decarbonising the agriculture sector, but there is no acknowledgement of the need to shift diets, in contrast to the independent Climate Change Committee's recommendations.

**Increasing the appeal of plant-based alternatives to meat**

- › **Improve the appeal of plant-based alternative foods.** For example, by restricting marketing for meat-based HFSS foods and removing the loophole in the HFSS regulations which currently excludes red and processed meat from falling within scope of location-based promotions for HFSS foods.
- › **Invest in advertising for healthy and sustainable foods** (particularly healthy options like fruit, vegetables and pulses) to drive aspiration and to normalise consumption, building on the work of initiatives like Veg Power.
- › **Reject proposals to interpret inherited EU law on the use of dairy names for plant-based products** by restricting the use of deliberate misspellings to describe alternatives using words like 'sheese' and 'mylk' even where prefaced by 'vegan' or 'plant-based' descriptors. There is little evidence to show that consumers find current brand names and descriptions confusing.
- › Following the UK's departure from the EU the UK ought to **review the list of approved claims that can be used to describe the health benefits of fibre** to consumers. Currently these claims are not always very appealing to citizens, particularly when it comes to fibre. Public health messaging should emphasise the benefits of higher fibre whole foods such as veg, wholegrains and beans.

# Engagement questions for investors

There are both opportunities and risks for investors looking to allocate capital towards plant-based meat alternatives. The following engagement questions for investors are intended to provide some suggestions as to the types of questions investors could ask as part of their stewardship of existing, or potential new, investments in companies in the food/plant-based food sector.

## HEALTH DIMENSIONS

- › Have you publicly committed to reducing levels of salt, sugar and saturated fats across your plant-based meat alternatives portfolio?
- › Are the plant-based meat alternatives across your portfolio aligned with a government-endorsed NPM?
- › Are health and nutritional indicators included as part of new product development (NPD) policies?
- › Have reformulation targets been set and publicised?
- › Are meat and dairy alternatives fortified with key micronutrients of concern, particularly where the equivalent animal product is a major contributor to population intakes e.g. vitamin B12 and iron in meat, calcium and iodine in dairy products?
- › Do you have a target for increasing sales of plant-based protein and sales of veg?

Do you have a strategy to improve the affordability and accessibility of healthy and sustainable products, including plant-based alternatives? (Access to Nutrition Initiative, 2020)

- › How are you communicating and providing evidence for any health claims made on plant-based meat alternatives?
- › What percentage of your marketing spend goes on the promotion of healthier ranges?

## SUSTAINABILITY DIMENSIONS

- › Do you have an environmental life cycle assessment for your key ingredients and products?
- › Are palm oil and soya sourced sustainably using certified schemes where used?
- › Do your ingredients contain GMOs, and are these labelled?

- › Are there opportunities to replace a proportion of meats within ready meals with plant-based meat alternatives and/or whole plant foods?

## SOCIETAL DIMENSIONS

- › Can you produce plant-based meat alternatives that are priced at parity or cheaper than their meat equivalents?
- › How will you market these products so that they are accessible to everyone?
- › Does your policy engagement/lobbying practices around healthy plant-based alternatives align with the [Responsible Lobbying Framework](#)?



## REFERENCES

- Access to Nutrition Initiative (ATNI) (2020). Investor Expectations on Nutrition, Diets & Health. Available at: <https://accessnutrition.org/app/uploads/2020/06/Investor-Expectations-on-Nutrition-Diets-and-Health-FINAL.pdf>
- Alae-Carew, C., Green, R., Stewart, C., Cook, B., Dangour, A. D., & Scheelbeek, P. F. D. (2022). The role of plant-based alternative foods in sustainable and healthy food systems: Consumption trends in the UK. *Science of the Total Environment*. <https://doi.org/10.1016/j.scitotenv.2021.151041>
- Andreani G, Sogari G, Marti A, Frolidi F, Dagevos H, Martini D. (2023). Plant-Based Meat Alternatives: Technological, Nutritional, Environmental, Market, and Social Challenges and Opportunities. *Nutrients*. Jan 15;15(2):452. doi: 10.3390/nu15020452.
- BEIS (2021). UK territorial greenhouse gas emissions national statistics - GOV.UK. <https://www.gov.uk/government/collections/uk-territorial-greenhouse-gas-emissionsnational-statistics>.
- Benisi-Kohansal, S., Saneei, P., Salehi-Marzizjariani, M., Larijani, B., & Esmailzadeh, A. (2016). Whole-grain intake and mortality from all causes, cardiovascular disease, and cancer: A systematic review and dose-response meta-analysis of prospective cohort studies. In *Advances in Nutrition*. <https://doi.org/10.3945/an.115.011635>
- British Nutrition Foundation (2023). Nutritional Information: Protein. Available at: <https://www.nutrition.org.uk/nutritional-information/protein/>
- Changing Markets Foundation (2023). Truth, Lies and Culture Wars: Social listening analysis of meat and dairy persuasion narratives. Available at: <https://changingmarkets.org/report/truth-lies-and-culture-wars-social-listening-analysis-of-meat-and-dairy-persuasion-narratives/>
- Clark, M. A., Domingo, N. G. G., Colgan, K., Thakrar, S. K., Tilman, D., Lynch, J., Azevedo, I. L., & Hill, J. D. (2020). Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets. *Science*. <https://doi.org/10.1126/science.aba7357>.
- Cordova, R., Viallon, V., Fontvieille, E., Peruchet-Noray, L., Jansana, A., Wagner, K. H., Kyrø, C., Tjønneland, A., Katzke, V., Bajracharya, R., Schulze, M. B., Masala, G., Sieri, S., Panico, S., Ricceri, F., Tumino, R., Boer, J. M. A., Verschuren, W. M. M., van der Schouw, Y. T., Freisling, H. (2023). Consumption of ultra-processed foods and risk of multimorbidity of cancer and cardiometabolic diseases: a multinational cohort study. *The Lancet Regional Health - Europe*. <https://doi.org/10.1016/j.lanepe.2023.100771>.
- Defra (2021). United Kingdom Food Security Report 2021: Theme 2: UK Food Supply Sources - GOV.UK. <https://www.gov.uk/government/statistics/united-kingdom-food-security-report-2021/united-kingdom-food-security-report-2021-theme-2-uk-foodsupply-sources>.
- Dybvik, J. S., Svendsen, M., & Aune, D. (2023). Vegetarian and vegan diets and the risk of cardiovascular disease, ischemic heart disease and stroke: a systematic review and meta-analysis of prospective cohort studies. In *European Journal of Nutrition*. <https://doi.org/10.1007/s00394-022-02942-8>.
- EIT Food (2024). Consumer perceptions unwrapped: ultra-processed foods. Available at: <https://www.eitfood.eu/reports/ultra-processed-foods>
- Epstein LH., Finkelstein E., Raynor H., Nederkoorn C., Fletcher KD., Jankowiak N., Paluch RA. (2015). Experimental analysis of the effect of taxes and subsidies on calories purchased in an on-line supermarket. *Appetite* 95:245–251. Doi: 10.1016/j.appet.2015.06.020.
- Escobar, M. I. R. et al. (2021) 'Analysis of the Cultured Meat Production System in Function of Its Environmental Footprint: Current Status, Gaps and Recommendations', *Foods*. Multidisciplinary Digital Publishing Institute (MDPI), 10(12). doi: 10.3390/FOODS10122941.
- Fairweather-Tait, S. (2023). The role of meat in iron nutrition of vulnerable groups of the UK population. *Frontiers in Animal Science*, 4(April), 1–10. <https://doi.org/10.3389/fanim.2023.1142252>
- Food and Agricultural Organisation (FAO) (2020). Insects for food and feed. Available at: <https://www.fao.org/edible-insects/en/>
- Food Standards Agency (FSA) (2022). Alternative Proteins: Consumer Survey. <https://doi.org/10.46756/sci.fsa.ncn554>
- Frezal, C., C. Nenert and H. Gay (2022), "Meat protein alternatives: Opportunities and challenges for food systems' transformation", *OECD Food, Agriculture and Fisheries Papers*, No. 182, OECD Publishing, Paris, <https://doi.org/10.1787/387d30cf-en>.

Good Food Institute (2023). Sustainable proteins in the United Kingdom, an ecosystem view. Available at: [https://gfi-europe.org/wp-content/uploads/2023/08/UK-ecosystem-report\\_Full\\_25aug23\\_final.pdf](https://gfi-europe.org/wp-content/uploads/2023/08/UK-ecosystem-report_Full_25aug23_final.pdf)

Green Alliance (2023). Appetite for change: Why the UK should lead the emerging alternative proteins market. Available at: [https://green-alliance.org.uk/wp-content/uploads/2023/08/Appetite\\_for\\_change.pdf](https://green-alliance.org.uk/wp-content/uploads/2023/08/Appetite_for_change.pdf)

Green Alliance (2024). A new land dividend: The opportunity of alternative proteins in Europe. Available at: <https://green-alliance.org.uk/publication/a-new-land-dividend-the-opportunity-of-alternative-proteins-in-europe/>

Guardian (2023a). Big meat and dairy lobbyists turn out in record numbers at Cop28. Available at: <https://www.theguardian.com/environment/2023/dec/09/big-meat-dairy-lobbyists-turn-out-record-numbers-cop28>.

Guardian (2023b). Ex-officials at UN farming body say work on methane emissions was censored. Available at: <https://www.theguardian.com/environment/2023/oct/20/ex-officials-at-un-farming-fao-say-work-on-methane-emissions-was-censored>.

Ibsen, D. B., Laursen, A. S. D., Wuürtz, A. M. L., Dahm, C. C., Rimm, E. B., Parner, E. T., Overvad, K., & Jakobsen, M. U. (2021). Food substitution models for nutritional epidemiology. *American Journal of Clinical Nutrition*, 113(2), 294–303. <https://doi.org/10.1093/ajcn/nqaa315>

Just Food (2024). Austria, France and Italy to raise lab-grown meat concerns with EU. Available at: <https://www.just-food.com/news/austria-france-and-italy-to-raise-cultivated-meat-concerns-with-eu/?cf-view>

Khan, M. A. B., Hashim, M. J., King, J. K., Govender, R. D., Mustafa, H., & Kaabi, J. Al. (2020). Epidemiology of Type 2 diabetes - Global burden of disease and forecasted trends. *Journal of Epidemiology and Global Health*, 10(1). <https://doi.org/10.2991/JEGH.K.191028.001>

Kim T.K., Yong H.I., Kim Y.B., Kim H.W., Choi Y.S. (2019). Edible Insects as a Protein Source: A Review of Public Perception, Processing Technology, and Research Trends. *Food Sci Anim Resour*. Aug;39(4):521-540. doi: 10.5851/kosfa.2019.e53.

Lane, M. M., Gamage, E., Du, S., Ashtree, D. N., McGuinness, A. J., Gauci, S., Baker, P., Lawrence, M., Rebholz, C. M., Srour, B., Touvier, M., Jacka, F. N., O’Neil, A., Segasby, T., & Marx, W. (2024). Ultra-processed food exposure and adverse health outcomes: umbrella review of epidemiological meta-analyses. *BMJ*, 384. <https://doi.org/10.1136/BMJ-2023-077310>

Nájera Espinosa, S., Hadida, G., Jelmar Sietsma, A., Alae-Carew, C., Turner, G., Green, R., Scheelbeek, P. (2024). Mapping the evidence of novel plant-based foods: a systematic review of nutritional, health, and environmental impacts in high-income countries. *Nutrition Reviews*, 00(0), 1–21. <https://doi.org/10.1093/nutrit/nuae031>

National Food Strategy (2021). National Food Strategy: The Evidence. Available at: [https://www.nationalfoodstrategy.org/wp-content/uploads/2021/07/NFS\\_Evidence.pdf](https://www.nationalfoodstrategy.org/wp-content/uploads/2021/07/NFS_Evidence.pdf)

Oonincx D. (2021). Environmental Impact of Insect Rearing. Wageningen University and Research Centre. Available at: <https://www.cabidigitallibrary.org/doi/10.1079/9781789245929.0007>

Payne, C., Scarborough, P., Nonaka, K., Rayner, M. (2015). Are edible insects more or less ‘healthy’ than commonly consumed meats? A comparison using two nutrient profiling models developed to combat over- and undernutrition. *European Journal of Clinical Nutrition*. 70. 10.1038/ejcn.2015.149.

Phelps, N. H., Singleton, R. K., Zhou, B., Heap, R. A., Mishra, A., Bennett, J. E., Ezzati, M. (2024). Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults. *The Lancet*. [https://doi.org/10.1016/S0140-6736\(23\)02750-2](https://doi.org/10.1016/S0140-6736(23)02750-2)

Porkka, M., Virkki, V., Wang-Erlandsson, L., Gerten, D., Gleeson, T., Mohan, C., Fetzer, I., Jaramillo, F., Staal, A., te Wierik, S., Tobian, A., van der Ent, R., Döll, P., Flörke, M., Gosling, S. N., Hanasaki, N., Satoh, Y., Müller Schmied, H., Wanders, N., Kummu, M. (2024). Notable shifts beyond pre-industrial streamflow and soil moisture conditions transgress the planetary boundary for freshwater change. *Nature Water*. <https://doi.org/10.1038/s44221-024-00208-7>

Public Health England (2020). NDNS: results from years 9 to 11 (2016 to 2017 and 2018 to 2019). Available at: <https://www.gov.uk/government/statistics/ndns-results-from-years-9-to-11-2016-to-2017-and-2018-to-2019>.

re M., Sánchez-Socarrás V., Santos-Pagès M., Bach-Faig A., Aguilar-Martínez A (2022). Consumers’ Acceptability and Perception of Edible Insects as an Emerging Protein Source. *Int J Environ Res Public Health*. Nov 26;19(23):15756. doi: 10.3390/ijerph192315756

Scott-Reid, J. (2023). The Backlash to Plant-Based Meat Has a Sneaky, if Not Surprising, Explanation. Sentient Health. Available at: <https://sentientmedia.org/plant-based-backlash-explained/>.

Stephens, N., Di Silvio, L., Dunsford, I., Ellis, M., Glencross, A., & Sexton, A. (2018). Bringing cultured meat to market: Technical, socio-political, and regulatory challenges in cellular agriculture. *Trends in Food Science & Technology*, 78, 155-166.

Stewart, C., Piernas, C., Cook, B., & Jebb, S. A. (2021). Trends in UK meat consumption: analysis of data from years 1–11 (2008–09 to 2018–19) of the National Diet and Nutrition Survey rolling programme. *The Lancet Planetary Health*. [https://doi.org/10.1016/S2542-5196\(21\)00228-X](https://doi.org/10.1016/S2542-5196(21)00228-X)

Treich, N. (2021) 'Cultured Meat: Promises and Challenges', *Environmental & Resource Economics*. Nature Publishing Group, 79(1), p. 33. doi: 10.1007/S10640-021-00551-3.

The Food Foundation (2022). *The Broken Plate 2022: The state of the Nation's food system*.

The Food Foundation (2023). *The Broken Plate 2023: The state of the Nation's food system*.

The Food Foundation analysis of The National Diet and Nutrition Survey (2024), waves 9-11. Publication forthcoming.

The Grocer (2023a). Meat-free 2023: Plant-based feels brunt of tight budgets. Available at: <https://www.thegrocer.co.uk/top-products/meat-free-2023-plant-based-feels-brunt-of-tight-budgets/686245.article>

The Grocer (2023b). Consolidation in the plant-based meat market is inevitable. Available here: <https://www.thegrocer.co.uk/plant-based/consolidation-in-the-plant-based-meat-market-is-inevitable/683625.article>

Thompson, A. S., Candussi, C. J., Tresserra-Rimbau, A., Jennings, A., Bondonno, N. P., Hill, C., Sowah, S. A., Cassidy, A., & Kühn, T. (2024). A healthful plant-based diet is associated with lower type 2 diabetes risk via improved metabolic state and organ function: A prospective cohort study. *Diabetes and Metabolism*. <https://doi.org/10.1016/j.diabet.2023.101499>.

Van Huis, A. & Rumpold, B (2023). Strategies to convince consumers to eat insects? A review. *Food Quality and Preference*, Vol 110, 104927. <https://doi.org/10.1016/j.foodqual.2023.104927>.

Verkuijl, C., Dutkiewicz, J., Scherer, L. *et al.* (2024). FAO's 1.5 °C roadmap for food systems falls short. *Nat Food* 5, 264–266. <https://doi.org/10.1038/s43016-024-00950-x>

Von Koeller, E., Ravi, N., Tanovic, E., Taylor, L., & Clausen, M. (2023). Taking Alternative Proteins Mainstream. Available at: <https://www.bcg.com/publications/2023/taking-alternative-protein-trends-mainstream>

World Economic Forum (2019). Meat: the Future series Alternative Proteins. Available at: [https://www3.weforum.org/docs/WEF\\_White\\_Paper\\_Alternative\\_Proteins.pdf](https://www3.weforum.org/docs/WEF_White_Paper_Alternative_Proteins.pdf)

Wellcome Trust (2023). The human cost of climate change Health is needed for accelerated and equitable climate action. Available at: <https://cms.wellcome.org/sites/default/files/2023-11/cop-28-human-cost-of-climate-change-report.pdf>.

World Economic Forum (2023). Climate change is costing the world \$16 million per hour: study. Available at: <https://www.weforum.org/agenda/2023/10/climate-loss-and-damage-cost-16-million-per-hour/>.

WWF-UK (2023). Eating for Net Zero: How diet shift can enable a nature positive net zero transition in the UK. Available at: [https://www.wwf.org.uk/sites/default/files/2023-05/Eating\\_For\\_Net\\_Zero\\_Full\\_Report.pdf](https://www.wwf.org.uk/sites/default/files/2023-05/Eating_For_Net_Zero_Full_Report.pdf)

# ANNEX 1

## PRODUCTS IN OUR SAMPLE

MEAT BASED		PLANT-BASED ALTERNATIVES	
CATEGORY	PRODUCT	CATEGORY	PRODUCT
Meat, Mince	Tesco Beef lean steak mince 5% fat	Processed (new generation), Mince	Beyond meat plant-based mince
Meat, Mince	Tesco Beef steak mince 15% fat	Processed (new generation), Mince	Linda McCartney Vegemince
Meat, Mince	Tesco Beef mince 20% fat	Processed (new generation), Mince	Quorn Mince
Meat, Mince	Tesco Lamb mince 10% fat	Processed (new generation), Mince	Tesco Plant chef meat free
Meat, Mince	Tesco Lamb mince 20% fat	Processed (new generation), Mince	THIS Mince
Meat, Mince	Tesco Pork lean mince 5% fat	Processed (new generation), Mince	Richmond Meat Free Vegan No Beef Mince
		Processed (new generation), Mince	The Meatless Farm Plant-Based Mince
		Processed (new generation), Mince	Vivera Plant mince
CATEGORY	PRODUCT	CATEGORY	PRODUCT
Meat, Bacon	Tesco Unsmoked thick cut back bacon	Processed (new generation), Bacon	La Vie Plant-Based Smoked Bacon
Meat, Bacon	Tesco Smoked thick cut back bacon	Processed (new generation), Bacon	This Isn't Bacon Streaky Plant-Based Rashers

Meat, Bacon	Tesco Smoked back bacon rashers	Processed (new generation), Bacon	This Isn't Bacon Plant-Based Rashers
Meat, Bacon	Tesco Unsmoked streaky bacon 14 rashers	Processed (new generation), Bacon	Tesco Plant Chef 8 Meat Free Smokey Rashers
		Processed (new generation), Bacon	Richmond 8 Meat Free Vegan Streaky Bacon
		Processed (new generation), Bacon	Vivera Veggie Bacon Pieces
CATEGORY	PRODUCT	CATEGORY	PRODUCT
Meat, Sausage	Tesco finest 6 Pork Sausage	Processed (new generation), Sausages	Cauldron Foods Lincolnshire Sausages 6 Pack
Meat, Sausage	Tesco british pork sausage	Processed (new generation), Sausages	Richmond 8 Meat Free Vegan Sausages
Meat, Sausage	Richmond 12 Thick Pork Sausages	Processed (new generation), Sausages	This Pork sausage
Meat, Sausage	Woodside Farms 8 pork sausage	Processed (new generation), Sausages	Linda McCartney Vegetarian sausages
Meat, Sausage	Simon Howie premium pork sausages	Processed (new generation), Sausages	Future Farm Vegan sausage

RETHINKING PLANT-BASED MEAT ALTERNATIVES

Meat, Sausage	Broad oak farm 8 premium pork sausage		
Meat, Sausage	Powters 6 newmarket sausages		
Meat, Sausage	Musks 6 newmarket sausages		
Meat, Sausage	Walls 8 thick pork sausages		
Meat, Sausage	The black farmer premium pork sausages		
Meat, Sausage	Riverway foods 10 british pork sasuaes		

CATEGORY	PRODUCT	CATEGORY	PRODUCT
Meat, burger	Tesco finest 4 british beef steak burgers	Processed (new generation), Burger	This Burger
Meat, burger	Tesco 4 1/4Lb Beef Burgers	Processed (new generation), Burger	Quron Burger
Meat, burger	Heck Steak & Butter Burger	Processed (new generation), Burger	Vivera Plant burger
Meat, burger	Tesco Finest The Ultimate Brisket & Chuck Burgers	Processed (new generation), Burger	Linda McCartney Vegetarian Quarter Pounder
		Processed (new generation), Burger	Beyond Meat Burger
		Processed (new generation), Burger	Future Farm Vegan burger

		Processed (new generation), Burger	Tesco PB burger
--	--	---------------------------------------	-----------------

CATEGORY	PRODUCT	CATEGORY	PRODUCT
Meat, meatballs	Tesco Finest 12 Beef & Herb Meatballs	Processed (new generation), Meatballs	Beyond Meats Meatballs
Meat, meatballs	Tesco 12 Beef Meatballs	Processed (new generation), Meatballs	Vivera Plant Veggie Balls
Meat, meatballs	Tesco Finest 20 Mini Meatballs	Processed (new generation), Meatballs	Quorn Meatballs
Meat, meatballs	Tesco 12 British Pork Meatballs	Processed (new generation), Meatballs	Richmond 12 Meat Free Meatballs
Meat, meatballs	Heck Steak & Butter Meatballs	Processed (new generation), Meatballs	Tesco Plant Chef 12 Meat Free Balls

RETHINKING PLANT-BASED MEAT ALTERNATIVES

CATEGORY	PRODUCT	CATEGORY	PRODUCT
Meat, Chicken fillets	Tesco Mini Chicken Fillets	Processed (new generation), Chicken fillets	Vivera Plant chicken breast
Meat, Chicken fillets	Tesco 2 British Chicken Breast Fillets	Processed (new generation), Chicken fillets	Beyond Meats Chicken fillets
		Processed (new generation), Chicken fillets	Quorn Crispy Fillets
		Processed (new generation), Chicken fillets	This Chicken
		Processed (new generation), Chicken fillets	Future Farm Vegan chicken

CATEGORY	PRODUCT	CATEGORY	PRODUCT
Meat, Nuggets	Hearty Food Co. 28 Breaded Chicken Nuggets	Processed (new generation), Chicken nuggets	Quorn Crispy Nuggets
Meat, Nuggets	Tesco 72 Breaded Chicken Nuggets	Processed (new generation), Chicken nuggets	Linda MacCartney Vegetarian chicken nuggets
Meat, Nuggets	Birds Eye 44 Chicken Nuggets With Golden Wholegrain		
Meat, Nuggets	Snacksters 20 Chicken Nuggets	Processed (new generation), Chicken nuggets	Beyond Meats Nuggets

CATEGORY	PRODUCT
Processed (traditional)	The Tofoo Co Naked Tofu 280G
Processed (traditional)	Cauldron Original Tofu Block 396g
Processed (traditional)	Tofu King Fresh Tofu (Medium Firm)
Processed (traditional)	Tesco Plant Chef Organic Firm Tofu
Processed (traditional)	Tofoo Co Tempeh 200G
Processed (traditional)	Better Nature Organic Tempeh 200G
Processed (traditional)	Better Nature Mediterranean Tempeh Pieces 180g
Processed (traditional)	Marigold Mo-Du Vegan Braised Seitan Slices
Processed (traditional)	PlantLiving: 2 Frozen Crisp-Crumbed Seitan Slices
Less processed alternatives*	Tesco Red Split Lentils 1Kg
Less processed alternatives*	Great Scot Red Split Lentils 500G
Less processed alternatives*	Tesco Green Lentils In Water 390G
Less processed alternatives*	Tesco Black Eyed Beans In Water 400G
Less processed alternatives*	Tesco Cannellini Beans Water 400G
Less processed alternatives*	Tesco British Garden Peas In Water 290G
Less processed alternatives*	Chickpeas, tinned, tesco
Less processed alternatives*	Kidney beans, tinned, tesco
Less processed alternatives*	Tesco Buckwheat 500G
Less processed alternatives*	Tesco Microwave Basmati Rice
Less processed alternatives*	Tesco Easy Cook Long Grain Rice 1Kg
Less processed alternatives*	Tesco Easy Cook Brown Rice 1Kg
Less processed alternatives*	Tesco Pearl Barley 500G
Less processed alternatives*	Tesco Barley
Less processed alternatives*	Tesco Scottish Oats Porridge
Less processed alternatives*	Tesco Quinoa
Less processed alternatives*	Merchant Gourmet Spanish-Style Grains/Rice 250G
Less processed alternatives*	Merchant Gourmet Puy Lentils Ready To Eat 250G
Less processed alternatives*	Merchant Gourmet Red & White Quinoa 250G
Less processed alternatives*	Merchant Gourmet Beluga Lentils 250g

\*(beans and grains)



International House, 6 Canterbury Crescent, Brixton, London SW9 7QD

[foodfoundation.org.uk](http://foodfoundation.org.uk) | +44(0)20 3086 9953 | [@Food\\_Foundation](https://www.instagram.com/food_foundation)