



MAKING A PLANT BASED FUTURE

AN IDEA WHOSE TIME HAS COME

WHY THE WORLD NEEDS TO CHANGE ITS MEAT AND
DAIRY HABITS AND HOW THIS CAN BE BEST ACHIEVED

Ipsos Trends & Foresight



1. FROM NICHE TO MAINSTREAM

Over the past few decades, the avoidance or reduction of meat in diets has typically been presented as something of an extremist choice. Storylines featuring vegans often centred around the limitations of a meat-free diet or the assumption that abstainers must be craving meat persisted throughout the mainstream media¹.

Gradually, though, and almost imperceptibly, the tide started to shift. We are now at a point where meat and dairy reduction is not just seen as something for those with strong principles or specific dietary requirements. Eating diets without (or low in) meat and dairy is now very much part of the mainstream. Vegan and plant-based options are now on the menu for more and more restaurants and fast-food outlets and all supermarkets have ever expanding product lines of plant-based foods and beverages.

It is possible to map the journey that brought vegan and vegetarian diets to public acceptance and to extend that journey into a future where it is understood that such dietary practices are vital to developing more sustainable food production. Therefore become the new norm.

A global shift towards a more sustainable way of eating is vital; an essential step in this is a large-scale shift, which is moving away from a reliance on consuming meat and dairy towards a plant-based lifestyle. This report seeks to identify how we have gotten to where we are now and how to overcome the barriers that stop us from embracing a truly sustainable relationship with food.

¹ <https://creativeherbivore.com/2016/06/22/food-fanatics-the-representation-of-vegans-and-vegan-food-in-popular-movies-and-tv-series/>



Phase 1:

Vegans and vegetarians are generally regarded as well-meaning but extremist niche groups in Western societies, driven by dietary necessity or deeply held ethical/moral principles who struggle to find retailers and manufacturers that cater to their needs.



Phase 2:

Veganism and vegetarianism have become accepted as valid, mainstream lifestyle choices, and product offerings catering to their dietary needs have become more readily available.



Phase 3:

The realisation that eating a fully or partly plant-based diet offers health and sustainability benefits for individuals, societies and the planet begins to grow and the concept of flexitarianism is born.



Phase 4:

Consumers, manufacturers and retailers embrace the idea of Planetary Health, linking how the food we consume is produced and our health, both as individuals and for our planet and reducing the amount of meat we eat becomes more commonplace.



Phase 5:

Most people eat and drink little or no animal products in their everyday diets. Meat and dairy produced traditionally become a very rare and expensive item – for a very occasional treat or for the wealthy elite while most of the population eat plant-based alternatives that either mimic or entirely replace their animal-based counterparts.



2. WHY PLANT-BASED HAS TO “GROW”

Rising global populations and higher standards of living have placed an ever-heavier burden on food production systems. By and large they have coped, with increases in the efficiency of food production delivering unprecedented amounts of food to the world's tables. More recently, however, the emphasis has begun to switch onto how our food is produced and how to shift consumer demand onto less damaging types of food. Shifting more consumption into plant-based options and increasing the availability and uptake of other environmentally friendly options such as edible insects and lab-grown proteins will be crucial.

A hungry planet

Feeding people takes work. Both the supply of and demand for food calories have risen substantially and steadily over the past sixty years, in both absolute and relative terms. In 1961 the world was producing around 2,200kcal per person per day²; it is now 30% higher at nearly 2900kcal, quite a feat when you factor in a global population that has rocketed from around 3 billion to approaching 8 billion over the same period³. Feeding a much bigger population with more calories every day has required global food production systems to deliver over three times as many calories as they used to. And, while alarmist projections of the global population reaching 10 or 11 million are unlikely to be realised (current thinking is that humanity will just about get to 8.5 billion before it tips into decline and will round out the century about where it is now⁴) the transition of large parts of the world beyond subsistence living will require continuing increases in food production⁵.

Feeding the planet comes at a high cost

While fundamental to human existence, the processes involved in food production take a heavy toll on our environment – in terms of land and water usage, emissions, and pollution. Food production accounts for over a third of all emissions of greenhouse gases – and 60% of the total accounts for by meat production⁶.

This is well-trodden ground. Others have done a great job of documenting the full impact of global meat and milk production on emissions, pollution, and climate change. Rather than waste time characterising the landscape, we have included a complete reading list in the Bibliography at the end of this report. But, in brief, looking at milk production, the world's 278 million dairy cows⁷:

- **Use a lot of land:** 9% of available US cropland is used to grow feed crops for dairy cows⁸
- **Use a lot of water:** dairy cows require 9.2 trillion gallons of water per year (with around 144 gallons of water needed to produce each gallon of milk produced)⁹
- **Cause a lot of pollution:** dairy cows produce 1.7 trillion gallons of urine and manure each year¹⁰. Unless managed properly, manure emits greenhouse gases, pollutes water and air, and damages wildlife habitats. Properly managed, it can fertilize crops and produce energy.

² <https://ourworldindata.org/food-supply>
³ <https://ourworldindata.org/world-population-growth>
⁴ <https://www.bbc.com/en/amp1/health>
⁵ <http://www.fao.org/global-perspectives-studies/food-agriculture-projections-to-2050/en/>

⁶ <https://www.theguardian.com/environment/2021/sep/13/meat-greenhouse-gases-food-production-study>
⁷ <https://www.worldwildlife.org/magazine/issues/winter-2019/articles/milks-impact-on-the-environment>

Something has to change

The developed world's taste for meat and milk is unsustainable. It places huge demands on resources that could be better used elsewhere. It creates vast quantities of emissions that contribute to global warming.

Moreover, our reliance on meat and dairy is contributing to unhealthy lifestyles. A growing body of research from the Viva, the vegan charity⁸, Science Daily⁹ and PETA¹⁰ links diets heavy in animal products like meat and dairy to poor health outcomes, weight issues and specifically obesity.

Climate change is one of humanity's most pressing issues over the coming decades. All sectors, food included, must develop radical solutions to increase sustainability¹¹. The concept of sustainability is also broadening out from merely describing "green issues" to include wider lifestyles issues such as spending and eating habits. For many, food and sustainability are inextricably linked to our health as individuals under the banner of planetary health¹². It may be that convincing populations that they can address their own health whilst simultaneously addressing the planet's health may represent our best hope for progress.



8 <https://viva.org.uk/health/why-animal-products-harm/health-the-truth-obesity-and-weight-gain/>
9 <https://www.sciencedaily.com/releases/2016/08/160801093003.htm>
10 <https://www.peta.org/issues/animals-used-for-food/obesity>

11 <https://www.oecd.org/newsroom/oecd-fac-agricultural-outlook-presents-production-consumption-trade-and-price-trends-for-the-coming-decade.htm>
12 <https://eatforum.org/learn-and-discover/the-planetary-health-diet/>

Some have already started

This report asks how we can reduce society's dependence on meat and dairy by looking at why some people eat less or none of these products and the barriers others have for not doing so. To inform our view, we canvassed the latest published research and the views of 35 experts from various disciplines, including nutrition, paediatric health, supply chain, agriculture and food science.

We recognise that such considerations may not be top of mind for everyone. The complex and uncertain health and economic landscapes have meant that many are more concerned with putting food on their tables rather than with whether their food choices will adversely affect their health or that of the planet. We hope that by making it easier for food and beverage providers to empathise with the concerns and challenges of different people with different relationships with food; we encourage more people to start considering the healthiness and sustainability of their food choices to make plant-based choices a priority.

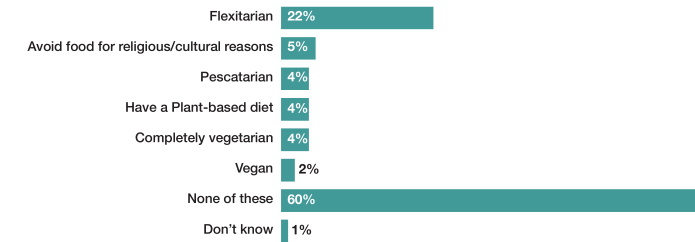
3. THE CURRENT STATE OF PLAY

All over the world, diets are under scrutiny. A rising awareness of the health and sustainability issues associated with a diet heavy with meat and dairy has contributed to a shift in eating habits and a new lexicon of terminology. Of course, veganism and vegetarianism have long been culturally entrenched dietary practices throughout much of the developing world. Many worldwide are physiologically incapable of digesting lactose, meaning they avoid dairy. Still, over recent years people in the “West” are increasingly trying to eliminate or reduce the amount of meat and dairy they consume.

The growing acceptance of vegetarian and vegan diets have increased in recent years. However, they still represent the exception rather than the rule in the UK. According to recent Ipsos research, 60% of UK adults do not feel that any of the six “alternative dietary labels” applies to them, suggesting that meat and dairy are still very much on their menu. Of the remainder, over half (22%) describe themselves as flexitarian, with only 4% and 2% describing themselves as either vegetarian or vegan, respectively.

The rising interest in “alternative” diets has been accompanied by a proliferation of terminology around ever more niche and fluid personal choices. Where once we had vegetarians and vegans on one side and everyone else (i.e., meat-eaters) on the other we now have a burgeoning and diverse middle ground occupied by pescatarians¹³, flexitarians¹⁴, reducetarians¹⁵, carnesparians¹⁶, plant-based¹⁷, and climatarians¹⁸ reflecting the cross-category consumer preference for flexibility and fluidity of lifestyle choice that we see in categories ranging from mobile phones (contract-free plans) to gyms (pay as you go rather than memberships, from diets (5:2) to hybrid working.

Vegetarianism and Veganism are still very niche in the UK; 6 in 10 are still ‘meat eaters’
Q1. Which, if any of the following, applies to you?



NOTE: Flexitarian = mostly vegetarian, includes meat in moderation, may include processed or refined foods
Have a Plant-based diet = tend to eat mostly plant-based foods and avoid refined or processed foods, may consume meat or dairy on occasion
Base: 2100 adults aged 16-75 in the UK, conducted between 28th January and 29th January 2022



¹³ Pescatarianism is the practice of eating vegetarian foods but still including seafood in one's diet.

¹⁴ A flexitarian diet is one that is centered on plant foods with the occasional inclusion of meat.

¹⁵ Reducetarians reduce the amount of meat they consume in order to improve their health, protect the environment, and spare farmed animals from cruelty.

¹⁶ A carnesparian is someone who eats meat only occasionally

¹⁷ A plant-based diet is based on foods that come from plants with few or no ingredients that come from animals. This includes vegetables, wholegrains, legumes, nuts, seeds and fruits. People choose a plant-based diet for a variety of reasons.

¹⁸ The climatarian diet is about eating with the planet in mind. It's a predominantly plant-based diet focusing on whole rather than processed food. The main difference between climatarianism and veganism is that it doesn't rule out meat consumption or animal products, encouraging people to reduce them instead.



¹⁹ <https://www.dairyfoods.com/blogs/14-dairy-foods-blog/post/95247-exploring-the-growth-of-plant-based-milk-alternatives>

²⁰ <https://www.theguardian.com/food/2021/jul/31/lab-grown-dairy-is-the-future-of-milk-researchers-say>

Plant-based milk alternatives

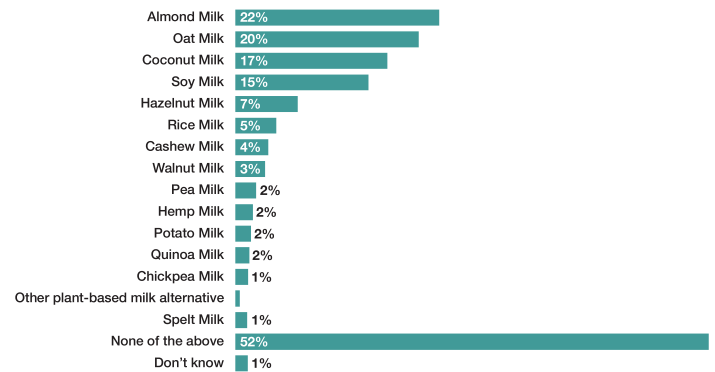
Currently, in the UK, some 48% of the adult population claim to include at least one type of plant-based alternative to cow's milk in their everyday diet. The most common forms are almond milk (used by around 22%), oat milk (20%), coconut milk (17%) and soy milk (16%). However, there is also a "long tail" of more niche offerings, including hazelnut, rice, cashew, walnut, pea, hemp, chickpea, quinoa, spelt and even potato. There is also overlap between the various types, with the average consumer of plant-based milk alternatives consuming between two and three varieties.

Plant-based alternatives to cow's milk now make up 10% of the global market¹⁹, and most analysts expect this proportion to continue to grow. Each alternative has fans and detractors among the mainstream population and industry experts.

Looking to the future: Lab-grown milk alternatives

According to an article in The Guardian²⁰, "A growing number of start-ups from Silicon Valley to Singapore are rapidly joining the race to create the first imitation cow's milk, based on artificially reproducing the proteins in curds (Casein) and whey, that is suitable for mass market consumption". Perfect Day, a US start-up, is the only company to have brought protein fermentation-based products to market so far. Currently, such products remain very niche and expensive, but they may represent the early signals of a growing industry.

There's a long tail of plant-based milks: Almond, Oat, Coconut, Soy dominate. 48% use at least one PBMA
Q1. Which, if any of the following, do you include in your diet nowadays?



Base: 2100 adults aged 16-75 in the UK, conducted between 28th January and 29th January 2022

Plant-based alternatives to meat

Using plants as a key source of protein is not new: falafel and tofu have been around for thousands of years, margarines based on vegetable oils started to compete with butter in the 1950s and even mycoproteins (based on fungi) have been an option for consumers since the 1980s. Sales of plant-based meat alternatives surpassed 1 million Euro in value in 2016²¹. But, over the past few years, there does seem to have been an explosion of activity, with the launches of more brands, more supermarket private label activity and the giants of the fast-food industry adding plant-based lines to their traditional burger or chicken options.

This growth is set to continue or even accelerate. According to BCG, by 2035, every tenth portion of meat, eggs and dairy eaten around the globe is likely to be “alternative”, and nine out of ten of the world’s favourite dishes will have a realistic alternative protein²².

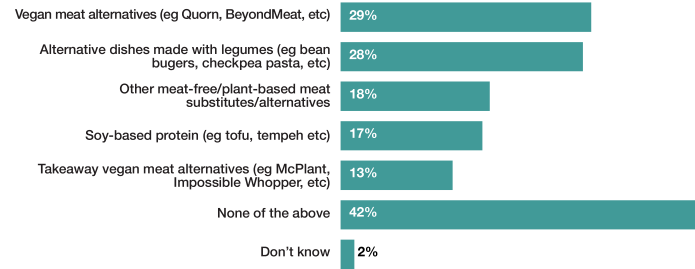
Currently, some 58% of the adult population in the UK claim to include at least one type of plant-based alternative to meat in their everyday diet. The most common forms are vegan meat alternatives such as Quorn or Beyond Meat

(used by around 29%) and alternative dishes made with legumes such as bean burgers (28%). Other meat-free substitutes and alternatives, soy-based proteins and takeaway plant-based options have a significant user base.

Looking to the future:
Lab-grown meat alternatives

Meat grown in a laboratory has been around for around a decade since Dutch scientist Mark Post presented the first lab-grown burger to the world in 2013²³. Starter stem cells are extracted from living animals and grown in nutrient media until the cells have multiplied enough to harvest, cook, and eat. The process remains too expensive to bring to the market at this point, and regulatory approval is also an issue. But with venture capital streaming into the sector and companies like Upside Foods, Mosa Meat and Eat Just frantically innovating, all expectations are that this can become a viable alternative to traditional but damaging farming. The global cultured meat market is expected to grow from \$110.09 million in 2020 to reach \$275.59 million in 2025 at a CAGR of over 21%²⁴.

58% use at least one Plant-based meat alternative
Q5. Which, if any of the following, do you include in your diet nowadays?



Base: 2100 adults aged 16-75 in the UK, conducted between 28th January and 29th January 2022

‘We invented the cow [as a domesticated food supply] 10,000 years ago. Lab-grown meat is just the next step²⁵’
ERIC SCHULZE, UPSIDE FOODS’
VICE-PRESIDENT OF PRODUCT AND REGULATION

²¹ https://think.ing.com/uploads/reports/ING_report_-_Growth_of_meat_and_dairy_alternatives_is_stirring_up_the_European_food_industry.pdf

²² <https://www.bcg.com/en-gb/publications/2021/the-benefits-of-plant-based-meats>

²³ <https://www.bbc.co.uk/news/science-environment-23576143>

²⁴ <https://www.businesswire.com/news/home/20211230005089/en/Cultured-Meat-Global-Market-Trends-and-Growth-forecasts-A-276.69-Million-Market-by-2025>

²⁵ <https://www.newstatesman.com/long-reads/2022/04/we-invented-the-cow-10000-years-ago-lab-grown-meat-is-just-the-next-step>

'Overall, experts at the moment feel that no single plant-based alternative can completely match cow's milk just for the breadth of nutrients it can provide.'

DR DAVID COX,
FREELANCE HEALTH JOURNALIST

'And then there is this very, very big difference in just the thousands and thousands of compounds that are in milk naturally versus what would potentially be in these plant-based milks, and we don't know what those health differences are or their long-term effects.'

TY BEAL,
TECHNICAL SPECIALIST, KNOWLEDGE
LEADERSHIP, GAIN

'As David Katz, would frequently say 'what's the point of a healthy diet on a planet that's dead', so I think it's very difficult to pull these things apart. So I think to get away from the environmental aspect of what we're eating is, I think, not something that we can do for the future; it's something we did in the past but not the future.'

PROFESSOR DAVID JENKINS,
PROFESSOR OF NUTRITIONAL SCIENCES,
UNIVERSITY OF TORONTO

The drivers of the rise in plant-based alternatives to date

Consumption of plant-based alternatives to meat and milk have been rising. Understanding the relative importance of the various growth drivers is key to maintaining or even accelerating that growth.

The key drivers behind the shift towards plant-based alternatives are, broadly speaking, the same for both milk and meat: they are perceived to be healthier, to be more sustainable and to have a nicer taste and texture compared to milk or meat. Consumption for plant-based alternatives is also driven by dietary requirements for about one in five of those consuming them.

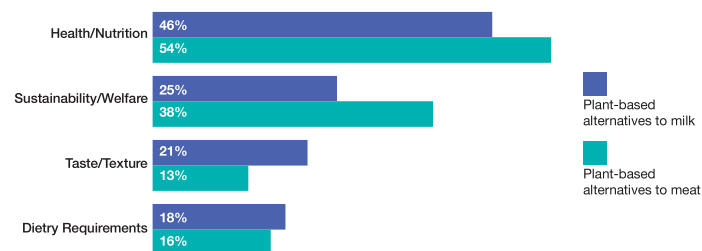
Health & Nutrition

The perception that plant-based options are healthier than dairy or meat equivalents underpins much of the consumption of these products – typically half of the users of

these products cite health as a key driver. As well as the general and simplistic assertion that these products are healthier, some cite lower fat content (19% for meats and 18% for milks), that they have higher levels of certain vitamins or minerals (8% for meats and 9% for milks) or that they do not contain hormones (9% for both milks and meats).

It is also worth pointing out that rather than being two separate issues, nutrition/health and sustainability are increasingly being seen as two aspects of the same overarching issue of planetary well-being.

Variety (of diet), health, sustainability and taste are all reasons for choosing plant-based alternatives Q4a/5a. Which if any of the following best describes why you include plant-based milk/meat in your diet nowadays? Please select up to three main reasons



NOTE: *Dairy based milk = e.g. cow's milk, goat's milk, etc
Base: 981 adults aged 16-75 in the UK who use any plant-based milk, conducted between 28th January and 29th January 2022 and 1118 adults aged 16-75 in the UK who use any plant-based meat alternative, conducted between 28th January and 29th January 2022

Sustainability and Welfare

After health, sustainability and welfare concerns are the next most important in driving plant-based consumption, particularly in the case of meat alternatives. In addition to having a lower environmental impact, broader sustainability benefits such as animal welfare also encourage some to choose these products. 22% and 12% cite animal welfare as a reason for choosing plant-based meats and milks respectively.

Taste & Texture


As we will see later the taste and texture of plant-based alternatives to meat and dairy is quite a divisive issue, but many cite the taste as a reason why they choose these products, while some also clearly like the role that they can play alongside traditional meat and dairy as part of a varied and interesting diet (21% for meats and 27% for milks. Some 15% specifically feel that plant-based milks taste nicer than dairy.

Dietary requirements

Dietary requirements can include broader concerns such as following vegan or vegetarian diets, or specific intolerances – 9% of those drinking plant-based milks cite an intolerance or allergy to lactose as their reason.

Naturalness

There is some debate around the naturalness (or otherwise) of plant-based alternatives to meat and dairy but some (10% for meats and 13% for milks) feel that plant-based options are the more natural.



'Sustainability is the major driver behind the rise of plant-based milks, definitely. The nutritional driving factor, is playing much less of a role in terms of driving this. Sustainability, and then I would say ethical concerns in terms of dairy farming, and then I'd say three is probably nutritional.'

DR DAVID COX,
FREELANCE HEALTH JOURNALIST

'The greenhouse gas emissions from milk are about 30 times higher than what people estimate... I suspect that most consumers underestimate the greenhouse gas emissions saved by switching from dairy milk to plant-based milk such as soya milk.'

DR ADRIAN CAMILLERI,
UNIVERSITY OF TECHNOLOGY SYDNEY

'Cow's milk is actually very complicated, and hard to replicate in plant-based alternatives. These are basically little bits of protein, carbohydrate and fibre are ground up to be as small possible but even so, they will usually settle out with time and can make the mouthfeel gritty. So, manufacturers have to put various texturants back into the milk (including stabilisers, emulsifiers and fats), which improve the mouth feel and makes it texturally similar to milk.'

DR ROB WINWOOD,
DIRECTOR, WINWOOD BIOSCIENCE



'I don't think that there will be more people with intolerances but there will be more people hearing about things like intolerances and self-diagnosing not necessarily always correctly. I think that's something that has been around definitely for at least the last five to eight years and is probably escalating.'

LUCY UPTON,
SPECIALIST PAEDIATRIC DIETITIAN AND
NUTRITIONIST, THE CHILDREN'S DIETICIAN /
INFANT & TODDLER FORUM

'You'll buy the product once based on novelty, you'll come back if the taste was good and if there are benefits such as nutrition and sustainability, and you'll buy it in the long run if the value is right.'

NICK HALLA,
IMPOSSIBLE FOODS

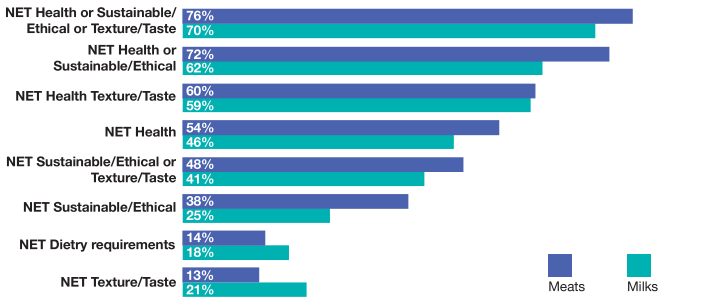
²⁶ <https://www.bbc.com/en-gb/publications/2021/the-benefits-of-plant-based-meats>

Two drivers are better than one (and three are better than two!)

Broadening out the perceived benefits of plant-based offerings raises their appeal. Layering a second benefit on top of a single advantage can make them attractive to significantly more people. Adding a third raises the appeal even more.

While sustainability alone is enough of a benefit to draw in some of the plant-based audience, adding taste and texture benefits, or health benefits, or better still both, makes plant-based propositions even more attractive. This is consistent with wider Ipsos work on the advantages of messaging on sustainability as a co-benefit rather than the sole benefit. Layering benefits also opens up the routes to market and the communications options.

Variety (of diet), health, sustainability and taste are all reasons for choosing plant-based alternatives Q4a/5a. Which if any of the following best describes why you include plant-based milk/meat in your diet nowadays? Please select up to three main reasons



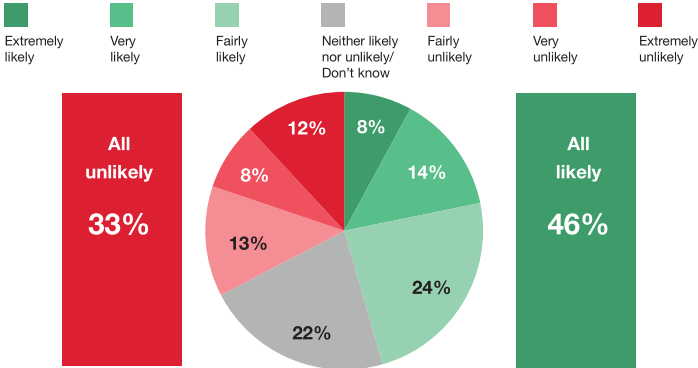
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4. The future is plant-based

Current levels of consumption of plant-based alternatives are just the beginning, with many set to reduce their intake of animal-based products for the first time or to reduce them even further.

Nearly half (of UK adults) intend to cut their intake of products derived from animals. A further 22% are on the fence, describing themselves as neither likely nor unlikely to reduce, with only around one-in-three claiming to be unlikely to reduce their intake, and only 20% very/extremely unlikely to do so. Clearly there are huge opportunities for those who can bring appealing products to this seemingly ready-made market.

Nearly half intend to cut their intake of animal products
Q2 How likely, or unlikely, are you to reduce the amount of animal products that you personally eat or drink in the future? This includes any products derived from animals, such as milk, cheese, eggs, honey, gelatines, fish oils, etc.



Base: 2055 adults aged 16-75 in the UK who are not vegan, conducted between 28th January and 29th January 2022



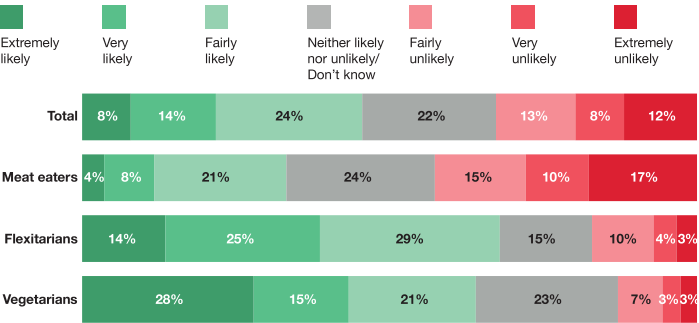


The first step is the hardest

Not surprisingly, there is a strong link between what people have already done in this space and what they claim they are likely to do in the future. “Meat-eaters” (here we are using the term more broadly to include those who eat meat and/or milk animal products) are half as likely (33%) to want to reduce their consumption of animal products as are flexitarians (68%) and vegetarians (64%) who have already partially moved away from meat and dairy. Indeed many “meat-eaters” have no real intention to change their consumption habits – some 42% say they are unlikely to cut back on animal products, with some 17% saying that such a shift is “extremely unlikely”.

We can use these claimed changes in behaviour to make some best-guess estimates about the future. In doing so, we are aware that we are taking some leaps of faith in an attempt to craft a positive narrative about the changes that could happen if there is a collective will between consumers and drink industry. Our key assumption is that if we regard the “journey” from meat-eater to vegan, via flexitarian and vegetarian, as a ladder, the claimed reductions in meat and dairy consumption will be sufficient to move those who carry through on their promises from one level to the next.

The intent to reduce (or reduce further) is seen across diet types
Q2 How likely, or unlikely, are you to reduce the amount of animal products that you personally eat or drink in the future? This includes any products derived from animals, such as milk, cheese, eggs, honey, gelatines, fish oils, etc.



Base: 2055 adults aged 16-75 in the UK who are not vegan, conducted between 28th January and 29th January 2022

We have further used industry-standard weighting factors to assume that:

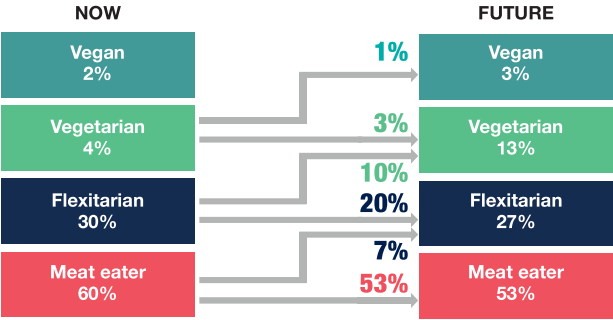
- 75% of those who say they are “extremely likely” to reduce their intake will do so in reality
- 50% of those who say they are “very likely” to reduce their intake will do so in reality
- 25% of those who say they are “fairly likely” to reduce their intake will do so in reality
- No-one who at this point says they are unsure or unlikely to reduce their intake will do so in reality

Overall, this leads us to an estimate that **19% of UK adults will reduce (or further reduce) the amount of meat and milk they consume.** The likelihood of (further) reductions in intake

varies depending on the current dietary status of individuals. Vegans do not have many opportunities to act further, while “meat-eaters” don’t seem to have as much appetite to do so. Flexitarians and vegetarians are between these two extremes. Using the same assumptions, around 12% of “meat-eaters” might be expected to reduce their intake of animal products. In comparison, the corresponding numbers for flexitarians and vegetarians are much higher (30% and 34%, respectively).

These responses and the estimates are, of course, predicated on current social, environmental, economic, political and marketplace conditions. They can change if for example, the government undertook promotional campaigns around dietary change, or if meat prices rose sharply, or if the climate emergency gathers momentum.

How the dietary segments might change as more shift to plant-based diets

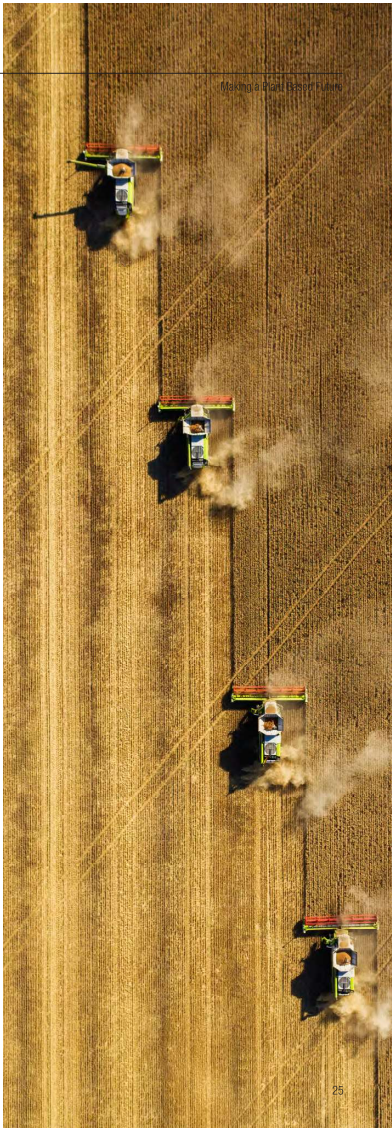


Based on these assumptions we estimate that the changes could be as follows:

- Some 12% of those who are currently classified as “meat-eaters” (or 7% of the adult population) will become flexitarians, reducing the size of this group overall to 53% of the population
- These 7% will join the flexitarians group but some 10% of that group will themselves reduce their intake of animal products – this could be to such an extent that they become vegetarians. If this were to be the case then, overall, this group will be reduced slightly because more will leave it to become vegetarians than will join it from ex “meat-eaters”. We are estimating this group could go from 30% of adults currently to 27%.
- Using the same logic, we estimate that vegetarians could benefit from a large influx of new members who were formerly flexitarians, to grow from 4% to 13% while vegans will still grow only slightly, from 2% to 3%.

It is very clear that those who have already made some kind of change to their diet will find it relatively easier to continue and/or extend those changes than those who haven't yet made any changes will to make that first small step. Given that the “meat-eaters” represent 60% of the adult population it is absolutely critical to encourage even small changes in behaviour within this group.

At the same time, increasing the frequency and/or consumption of plant-based alternatives by flexitarians will also be important as will encouraging vegetarians to become vegans.



The barriers to going plant-based

Making changes to long-established and potentially much-loved food traditions and habits is not easy and it is all too common to see such changes being rejected on a combination of rational and emotional grounds. There is an array of barriers to wider uptake of plant-based alternatives to meat and dairy. Each of these can be significant for those citing them but, overall, price and taste are the two most mentioned barriers and addressing these will be vital if levels of meat and dairy consumption are to fall over the coming decade.

Habit

Old habits, as we all know, die hard. Inertia, apathy, and complacency are the enemies of innovation and overcoming our inbuilt tendency to buy and eat the same things week after week will be particularly important. Food and drink preferences can be very strongly entrenched within us and bolstered by centuries-old traditions and cultural norms. Moreover, with busy lifestyles, it is easier just to pick the same old products and make the same old meals and even if one person in a household wants to try something new, imposing that choice on the collective may be easier said than done.

Price

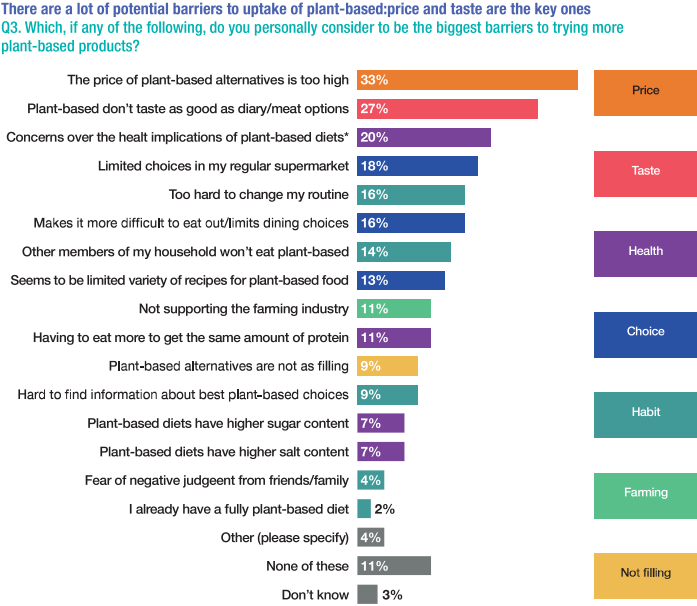
Plant-based alternatives to milk and meat often command a significant price premium, both in absolute terms and even more so regarding price per ml or price per kg. This represents a significant barrier to both trial and greater frequency/volume of consumption.

Taste/Texture

Many plant-based alternatives to cow's milk have their own unique profile of taste and texture – soya, coconut, oat, and pea milk may not be to everyone's taste. The role and impact of these flavour and texture profiles will depend on how they are being consumed – as a drink, as an addition to another drink like tea or coffee, as an addition to cereals or as an ingredient in cooking. The same is true with meat alternatives though here, the texture is arguably even more important than taste.

Access/Availability

Another major category of claimed barrier – that of access or availability to a good range of plant-based choices – seems like more of a psychological barrier than a genuine problem. All UK supermarkets now carry a wide variety of both brands and private label plant-based options. Perhaps the issue here is more about publicising them, making point-of-sale material more obvious and enticing within the store and better incentivising trial.



Base: 2100 adults aged 16-75 in the UK, conducted between 28th January and 29th January 2022

* (eg doesn't provide essential nutrients, such as B12, calcium, etc)

5. Making the future happen

The shift towards plant-based diets is best envisaged as a series of mini-challenges, getting meat-eaters to start thinking about replacing some of the meat or dairy they consume or encouraging flexitarians to go fully vegetarian, or for vegetarians to adopt vegan principles.

Encouraging meat-eaters to become flexitarians

Most “meat-eaters” (31%) already drink some plant-based milks, with one third (37%) of meat eaters saying they eat some form of plant-based meat alternative. This would suggest that the key challenge for this group is to encourage them to widen their repertoire of non-animal products and the frequency with which they consume them. It is also suggestive that there is a mindset shift that needs to be achieved – getting this group to think of themselves as flexitarians is key. This group may prefer to think of themselves as “normal”, ordinary people rather than belonging to a specific food choice group. Initiatives such

as Sainsbury's “**Halfest**” campaign²⁷ which encouraged people to reduce their meat consumption by replacing half of the meat within a given meal (such as a chilli con carne) with a meat substitute for both health and sustainability reasons rather than making whole meals that were totally meat-free, might be the perfect tactic for this group.

Our evidence concludes that price, taste, the availability of more meal choices, concerns over the nutritional profiles of a plant-based or plant-heavy diet and engrained habits are significant barriers to overcome.

Meat-Eaters: Currently 60%

Meat Eater	Flexitarian	
7% likely to change	53% unlikely to change	
General barriers to plant-based <ul style="list-style-type: none"> The price of plant-based alternatives is too high 42% Concerns over the health implications of plant-based diets (e.g. doesn't provide essential nutrients, such as B12, calcium etc) 29% Plant-based alternatives don't taste as good as traditional dairy and meat options 24% Makes it more difficult to eat out / limits dining choices 22% Limited choices in my regular supermarket 18% 	Why not MILK <ul style="list-style-type: none"> It doesn't taste as nice as dairy based milk 40% It's too expensive 30% I don't like the texture of plant-based milk alternatives 16% It isn't as healthy as dairy based milk 15% It isn't as natural as dairy based milk 14% 	Why not MEAT <ul style="list-style-type: none"> They don't taste as nice as meat 44% I don't find these types of food appealing 35% They are too expensive 28% I don't like the texture of plant-based meat alternatives 15% They aren't as natural as meat 15%

²⁷ <https://www.youtube.com/watch?v=ujk-2iW5cQQ>

Encouraging flexitarians to become vegetarians

Many flexitarians already drink plant-based milks (72%), while 85% eat some form of plant-based meat alternative. This group has already taken a conscious effort towards a plant-based diet. Efforts at encouraging consumers to eat even less meat and dairy and, transition into fully vegetarian lifestyles will need to focus more on plant-based milks than meats and highlight the perceived price and health shortcomings of plant based as a total replacement for meat. For milks the key issues stopping greater adoption and reliance seem to be taste and texture. There are also some question marks over the naturalness of plant-based milks. Despite their botanical origins, there seems to be a consensus that the heavy processing necessary to extract the components to make plant-based milk, compromises their claims to being a fully natural product.

Encouraging vegetarians to become vegans

Whilst 53% of vegetarians already drink some plant-based milks, 98% eat some form of plant-based meat alternative. This “final” step from vegetarian to vegan may be the hardest to achieve – around one-third of this group do claim that they intend to further cut down their intake of animal products, but the remainder clearly feel comfortable with their current choices. It seems likely that vegetarians are already doing what they consider necessary from the point of view of health; convincing them to apply the same principles to their “milk” consumption as they do for their “meat” consumption may take considerable effort.

Encouraging vegans to go even further

At least 95% of vegans already drink some plant-based milks, consuming on average at least three different types. Consumption of plant-based milks by vegans seems primarily to be a health-based issue (with 57% citing this as a reason), compared to 39% for sustainability and 20% for the taste of the products. While their usage is already very high, there might be benefits in convincing vegans of the sustainability credentials of plant-based milks.

Similarly, some 97% eat some form of plant-based meat alternative. Interestingly, the drivers of consumption are slightly different than for milks with sustainability and health being neck and neck as motivators. Animal welfare concerns are more motivating than planetary sustainability suggesting, as with milks, that even vegans could benefit from some education regarding the “impact of production” of the different foods they eat.

Flexitarians: Currently 30%

Flexitarian	Vegetarian	
10% likely to change	20% unlikely to change	
General barriers to plant-based	Why not MILK	Why not MEAT
<ul style="list-style-type: none">The price of plant-based alternatives is too high 32%Concerns over the health implications of plant-based diets (e.g. doesn't provide essential nutrients, such as B12, calcium etc) 23%Plant-based alternatives don't taste as good as traditional dairy and meat options 21%Makes it more difficult to eat out / limits dining choices 21%Limited choices in my regular supermarket 21%	<ul style="list-style-type: none">It doesn't taste as nice as dairy based milk 34%It's too expensive 30%I don't like the texture of plant-based milk alternatives 15%It isn't as healthy as dairy based milk 14%It isn't as natural as dairy based milk 12%	<ul style="list-style-type: none">I don't find these types of food appealing 31%I don't like the texture of plant-based meat alternatives 23%They don't taste as nice as meat 23%They are too expensive 19%

Vegetarians: Currently 4%

Vegetarian	Vegan	
1% likely to change	3% unlikely to change	
General barriers to plant-based	Why not MILK	
<ul style="list-style-type: none">The price of plant-based alternatives is too high 24%Concerns over the health implications of plant-based diets (e.g. doesn't provide essential nutrients, such as B12, calcium etc) 22%Plant-based alternatives don't taste as good as traditional dairy and meat options 21%Makes it more difficult to eat out / limits dining choices 18%Limited choices in my regular supermarket 13%	<ul style="list-style-type: none">It doesn't taste as nice as dairy based milk 41%It's too expensive 41%	

Recommendations for actions

Building a “MAPPS”²⁸ for change

Ipsos has created a behaviour change system called MAPPS which sets out the key dimensions that are important for driving change and seems particularly appropriate for the journey towards a meat-free future:

Motivation: Do I want to move to a plant-based diet?

- A combination of stressing the benefits of moving away from meat and milk and removing the barriers to change will be needed
- The benefits include both personal benefits (such as better health outcomes) and communal (such as the reduction of emissions associated with traditional food production methods)
- The barriers include factors such as price, availability, and poor taste perceptions

Ability: Am I able to move to a plant-based diet?

- Getting plant-based alternatives to become part of our routines will be key as will education on how to incorporate plant-based alternatives into recipes

Processing: How do we think about moving to a plant-based diet?

- Encouraging behaviour change in the area of diet, where habits are very entrenched will be difficult. Gaining the public's attention and engagement will work best

If people are presented with challenges to their current relationship with food that force them to confront issues that they might previously have overlooked or rejected Physical: Does the context encourage a move to a plant-based diet?

- Users and considerers will likely ask practical questions as well as the more emotive ones driving their overall motivation to make this change: Will the products be available where I normally shop (and in the right sizes or at the right price?), will I be able to fit meat/milk-free into my life and that of my family? Do plant-based choices work with on-the-go lifestyles and/or when I am eating out?

Social: What do other people do and value?

- Given the way that vegans and vegetarians have been viewed in the past, efforts to build momentum for plant-based alternatives must seek to normalise meat- and milk-free living. This might involve the recruitment of respected plant-based influencers, shining a light on societies where meat/milk-free living is the norm and incentivising or gamifying communal change might all be useful tactics to consider.
- Encouraging the adoption of dietary changes made by some members of a household to spread to all in the home will offer a quick multiplication of impact.



²⁸ <https://www.ipsos.com/sites/default/files/ct/publication/documents/2020-12/the-science-of-behaviour-change.pdf>



How do brands and legislators help?

This report clarifies that a large body of the population feels no need to change their meat or dairy consumption. The biggest “wins” will be gained by convincing these “traditionalists” to make changes, however small and partial. Replacing some of the meat or dairy in their diet or even blending meat/dairy options with plant-based equivalents in a single meal can all make a difference.

Health, costs and sustainability each represents a potential “convincer” for certain parts of the population and manufacturers and retailers should look to apply them singly and in combinations for specific parts of their consumer audiences

The current cost of living crisis may represent a potential tipping point to drive change: most vegetables are cheaper than most meats. However, other plant-based options also need to be offered at attractive price points so that the co-benefits of health and sustainability can add further motivation.

Policy makers can help too by supporting the move to more heavily plant-based diets with educational campaigns (along the lines of the “5-a-day” campaign) to build awareness of the health, cost and environmental benefits of reducing consumption of cow’s milk and meat. They might also wish to explore the introduction of more direct and tangible levers to changing consumption, along the lines of the sugar tax and the HFSS with levies applied to high-impact meat and dairy products, although this would, of course, be more controversial.

Making a plant-based future, an idea whose time has come, is clearly in the interests of both individuals and broader society. Making this a reality will require co-ordinated efforts from all players, and we hope this report offers insights into how to begin the conversation with consumers.

Method

Quantitative input

Unless otherwise credited the data included in this report comes from an Ipsos Observer survey of 2,100 adults aged 16-75 in the UK, conducted between 28th January and 29th January 2022.

Expert input

During this course of this study, we consulted some 40 experts from academia, policy, government and the private sector and we'd like to thank everybody for their time and insights, both those below who were willing to be named here and those who preferred to retain their anonymity.

- Rohini Bajekal, Freelance Nutritionist & Communications Lead for PBHP UK
- Ty Beal, Research Advisor, Knowledge Leadership, GAIN
- Professor Siegfried Bolenz, Prof of Food Technology, Institute of Human Nutrition, Neubrandenburg University of Applied Sciences
- Professor Judith Buttriss, Director-General, British Nutrition Foundation
- Roberto Cannataro, Sports nutrition specialist
- Dr Andrea Cattaruzza, Director / Consultant, Andcat
- Dr David Cox, Freelance Health Journalist
- Elizabeth D'Etigny
- Jennifer Earle, Writer, chocolate maker, consultant
- Professor Ian Givens, Professor - Food Chain Nutrition, University of Reading
- Sandra Hood, NHS Dietician, NHS
- Professor David Jenkins, Professor of Nutritional Sciences, University of Toronto
- Prachi Kashyap
- Dr Julie Lanigan, Principal Research Associate, UCL GOS Institute of Child Health
- Dr Reed Mangels
- Vesanto Melin, Dietician, Author, Speaker, Vegan, NutriSpeak
- Jackie Newgent, Plant-based Culinary Nutritionist
- Dr Karthik Pandalaneni
- Dr Joseph Poore, DPhil in Environmental Science, Queen's College, University of Oxford
- Dr Vijaya Raghavan, Professor - Bioresource Engineering, McGill University
- Celine Richonnet, Nutrition Director, MOM Group
- Professor Tom Sanders, Prof of Nutrition & Dietetics, Kings College, London
- Massimo Saracino, Senior Food Scientist and Technologist
- Colomba Sermoneta, Researcher, Istat
- Dr Alexandra Sexton, Research Fellow, Dept of Geography, University of Sheffield
- Dr Atul Singhal
- Rossana Stradiotto, Dietitian at ASL TO3
- Debby Thornley, Process Innovation Leader, Finlays
- Lucy Upton, Specialist Paediatric Dietitian and Nutritionist, The Children's Dietician / Infant & Toddler Forum
- Dr Stephan Van Vliet, Center for Human Nutrition Studies, Utah formerly of Duke University School of Medicine (at time of interview)
- Professor Carina Venter, Associate Professor, Paediatrics, University of Colorado Denver
- Dr Rob Winwood, Director, Winwood Bioscience

Literature Review: suggested further reading

- UN Food and Agriculture Organization – How to Feed the World in 2050 [https://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How to Feed the World in 2050.pdf](https://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf)
- BCG – Food for Thought: The Protein Transformation <https://www.bcg.com/publications/2021/the-benefits-of-plant-based-meats>
- Deloitte – Plant Based Alternatives <https://www2.deloitte.com/uk/en/pages/consumer-industrial-products/articles/plant-based-alternatives.html>
- ING – Big things have small beginnings [https://think.ing.com/uploads/reports/ING_report - Growth of meat and dairy alternatives is stirring up the European food industry.pdf](https://think.ing.com/uploads/reports/ING_report_-_Growth_of_meat_and_dairy_alternatives_is_stirring_up_the_European_food_industry.pdf)
- Bord Bia Dietary Lifestyle Report, March 2021 <https://www.bordbia.ie/industry/insights/publications/dietary-lifestyle-report-march-2021>
- Guardian: White Gold <https://www.theguardian.com/news/2019/jan/29/white-gold-the-unstoppable-rise-of-alternative-milks-oat-soy-rice-coconut-plant>
- McKinsey & Co- The Future of Food: Meatless? <https://www.mckinsey.com/featured-insights/the-next-normal/alternative-proteins>
- World Health Organisation – Plant-based diets and their impact on health, sustainability and the environment <https://apps.who.int/iris/bitstream/handle/10665/349086/WHO-EURO-2021-4007-43766-61591-eng.pdf>



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