

Report #07

EAT 2022

APPETITE FOR CHANGE



APPETITE FOR CHANGE

We saw COVID and climate change force food production even higher up the global agenda in 2021.

With the headline-grabbing COP26 and a historic UN Food Systems Summit, world leaders should be in no doubt that to ensure the safety and survival of humanity, the time to transform words and ideas into decisive action is now.

ENVIRONMENTAL AWARENESS AMONGST UK CONSUMERS HAS SURGED IN THE PAST YEAR

85% OF CONSUMERS ARE MAKING MORE SUSTAINABLE LIFE CHOICES, ADOPTING AT LEAST ONE SUSTAINABLE CHANGE

30% OF CONSUMERS LOOK FOR BRANDS WITH STRONG SUSTAINABLE CREDENTIALS

Source: Deloitte

Despite seismic shifts in attitudes and behaviours, the world of sustainability is not always smooth sailing.

Climate change deniers continue to push back. The vastness of internet opinion still makes it hard to get right to the truth. And as cleverly demonstrated in Adam McKay's comedy, Don't Look Up, even when we're presented with the facts we don't always want to hear them.

In 2021, Seaspiracy - the Netflix documentary about the fishing industry's impact on sea life and the oceans - divided opinion. While many viewers expressed shock at the industrial scale of fishing and said they would no longer eat fish, others argued it oversimplified a complex issue.

Sometimes, getting the sustainable message out there means opening up the floor to different vantage points so we can work towards a solution together.



OUR SPOTLIGHT ON SUSTAINABILITY HAS REVEALED HEIGHTENED AWARENESS AND RENEWED APPETITE FOR CHANGE.

In this issue, we look at how consumer habits are changing, the diet choices we're making to improve our own health and the health of the planet, and how brands are working hard to create, innovate and meet the new standards of sustainability.

Chapter 1

CLIMATE DIETS



AS CONCERN ABOUT THE GLOBAL THREAT OF CLIMATE CHANGE CONTINUES TO RISE, SO DOES THE AWARENESS OF WHAT WE PUT ON OUR PLATES AND THE IMPACT FOOD HAS ON OUR CARBON FOOTPRINT.

We know climate change is happening and is largely caused by human activity. For many years now, the focus has been on clean energy solutions.

But with food systems and food production responsible for a third of the world's greenhouse gas emissions, what we choose to eat is quite rightly gaining real traction as a key area of environmental focus.

Source: Crippa et al, 2021

20% OF THE UK'S GREENHOUSE GAS EMISSIONS ARE ATTRIBUTED TO FEEDING THE POPULATION

Source: WWF

FOOD SUPPLY CHAIN STAGES

The food supply chain is complex and nuanced. Although the steps for individual foods can vary considerably, each typically has seven stages:

- | | | | |
|--------------------|----------------|--------------|--------------|
| 1. Land Use Change | 3. Animal Feed | 5. Transport | 7. Packaging |
| 2. Farm | 4. Processing | 6. Retail | |

FOUR STEPS TO REDUCING THE FOOTPRINT OF OUR PLATES

1 EAT LESS MEAT AND DAIRY

Livestock is one of the biggest contributors to the global agricultural carbon footprint. Animals need land, food and water, so vast amounts of energy and resource are used up to rear them for meat and dairy.

2 AVOID AIR-FREIGHT

Importing food from overseas represents a very small portion of overall greenhouse gas emissions, but we should still be mindful of the types of transport used and the amount of food miles incurred. Wherever possible, it's good practice to source food more locally.

3 EAT SEASONALLY

Growing fruit and veg out of season requires more energy than traditional production, because the correct conditions have to be re-created artificially. Food that's in season is not only tastier, but better quality and higher in nutrients.

4 REDUCE FOOD WASTE

Cutting food waste isn't just about throwing less in the bin. It's about considering the time and energy things take to produce. Whilst the odd bit of waste might not seem like much, taking care to plan meals and use up leftovers can have a cumulative impact on greenhouse gas savings.

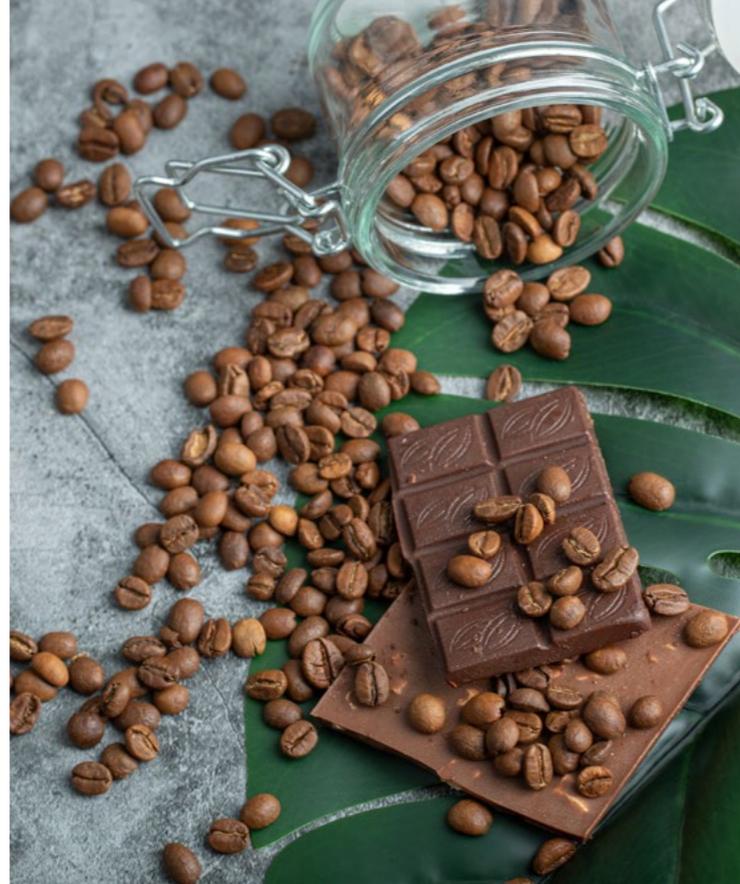
CLIMATE CULPRITS

It is not just meat and dairy that come with a heavy environmental impact. As our awareness grows under the ever-expanding spotlight of climate change, other foods in the supply chain are being highlighted as climate change contributors.

In terms of greenhouse gas emissions across the supply chain, coffee has been named the sixth most polluting food product, beaten only by meat, dairy and chocolate.

Source: Poore & Nemecek 2021

Around 98million cups of coffee are drunk in the UK every single day. And now we're thinking about more than just the caffeine fix, we're seeing brands go above and beyond to make positive changes to their supply chains.



CARBON NEUTRAL COFFEE

At the end of 2021, coffee chain **Benugo** introduced a carbon neutral coffee menu across its estate of cafés, restaurants and grab-and-go formats.

Created in partnership with ClimatePartner, the range is billed as carbon neutral from cradle to grave. From the raw ingredients and how they're transported, to the grinding, the milk added and the takeaway Benugo cup – all have been measured and offset.

At point of sale, illustrated menus show customers the carbon footprint highlighted in kg CO₂ equivalent greenhouse gases, so they can make a more informed choice from the range of flat whites, lattes, cappuccinos, macchiatos and hot chocolates.

Customers are also encouraged to scan a QR code to understand more about the footprint measurement, reduction measures being implemented, and the offset projects being supported.



“WE HOPE THAT BEING TOTALLY TRANSPARENT WITH OUR CUSTOMERS ON THIS CARBON COST WILL HELP THEM MAKE AN INFORMED CHOICE TO REDUCE THE CARBON EMISSIONS ASSOCIATED WITH EACH CUP OF BENUGO COFFEE.”

“WE HAVE AN ONGOING CARBON REDUCTION PROGRAM WHICH WE WILL KEEP CHALLENGING AND DEVELOPING. WE HAVE CHOSEN TO OFFSET ALL OF THE CARBON EMISSIONS ASSOCIATED WITH OUR COFFEE MENU INTO HIGH QUALITY CERTIFIED PROJECTS WHICH ALSO SUPPORT LOCAL COMMUNITIES IN COFFEE-GROWING AREAS.”

Shane Kavanagh – Benugo Commercial Director



Case Study: The Collective

THE COLLECTIVE CLAIMS A CARBON NEUTRAL FIRST

Yoghurt brand **The Collective** is on a mission to become a fully carbon-neutral business by 2025 and has already made headway by launching the UK's first carbon-neutral dairy yoghurt.

Championing the mantra 'eat better, do better', The Collective achieved carbon-neutral status for its new Blended range via partnership with sustainability consultancy Climate Partner.

The credentials of the Blended products are:

- All carbon emissions generated in production are offset
- 11% less sugar than Public Health England (PHE) recommendations and 12.2% below the category average
- Packaging is 100% recyclable and made from 100% recycled material

To support and promote education, The Collective has also announced a year's funding for pilot scheme Grow – a London charity that teaches children about the environment, sustainability and mental wellbeing as part of their curriculum.



Case Study: Gousto

GOUSTO TO TRIAL CARBON LABELLING

Meal box provider **Gousto** is trialling carbon labelling on its recipes 'to empower customers to make more environmentally conscious dinner choices'.

A selection of Gousto's 50+ recipes will display the total carbon impact of the dish, with the option to swap out ingredients that have a higher carbon footprint when placing an order.

The brand will also be introducing more seasonality to its menus, using food that requires less energy to produce.

The initiative follows research conducted by environmental services company Foodsteps, which compared the environmental impact of an average Gousto box to the equivalent meals bought from a supermarket store.

The study swung in Gousto's favour, with dinners from the recipe box producing 23% less carbon emissions than the supermarket equivalents.

Another win for the meal box delivery model was its impact on food waste. By sending fresh, precise ingredients for weekly dinners, food waste in the home was down to almost zero.



Case Study: Atomo

BEANLESS COFFEE

Could the future of coffee be beanless? The team at Atomo believes so.

A brand built on the growing need for a viable and sustainable alternative to traditional coffee, Atomo began as a Kickstarter in 2019.

Since then, the Seattle-based company has been perfecting and scaling the reverse engineering of the coffee bean, eliminating it from the process entirely and replacing it with naturally sustainable, upcycled waste ingredients.

The first-of-a-kind molecular cold brew in a can was launched by Atomo. It's made without coffee beans and using fewer resources.

By the end of 2021, Atomo had created its first run of 1,000 units, with additional flavour launches planned for 2022.



The brand claims that its innovative product:

- Uses 94% less water
- Produces 93% less carbon emissions
- Is made up of 98% upcycled ingredients from farmers' plant waste

KNOWLEDGE IS POWER

There is currently no legislation in place for brands to reveal what the production of their goods costs the planet, so any company using carbon labelling is doing so voluntarily, to meet growing consumer awareness.

Basic food labelling is nothing new, with calorie value, nutritional breakdown and – more recently – allergen information already part of UK guidelines. Labels highlighting a product's ethical virtues have also been in place for some time, with brands such as Fairtrade, Rainforest Alliance, the Soil Association and organic labelling informing consumers of their food's provenance.

Labels outlining carbon footprint are the next logical step to help empower conscious consumers.



COMMON LABELLING

80% OF PEOPLE CLAIM THEY OFTEN LOOK AT NUTRITIONAL INFORMATION

20% OF PEOPLE ALWAYS READ NUTRITIONAL INFORMATION

Source: The International Food Information Council Foundation

CARBON EMISSIONS LABELLING

53% OF PEOPLE AGREED THAT CARBON EMISSIONS OF A PRODUCT ARE A FACTOR IN THEIR PURCHASING DECISION

40% OF PEOPLE RECOGNISED THE LABEL AS AN INDICATION THAT THE COMPANY RESPONSIBLE FOR THE PRODUCT IS UNDERTAKING BROADER ACTIVITIES TO COMBAT AND MITIGATE THEIR CLIMATE IMPACT

Source: Climate Partner

CALCULATING CARBON

Calculating the carbon footprint of food items is not simple either.

In 2007, Tesco chief executive Sir Terry Leahy made a bold promise to cut carbon levels on all 70,000 of Tesco's products. But the amount of work needed to collect and analyse the data was too much, and five years later the pledge was abandoned.

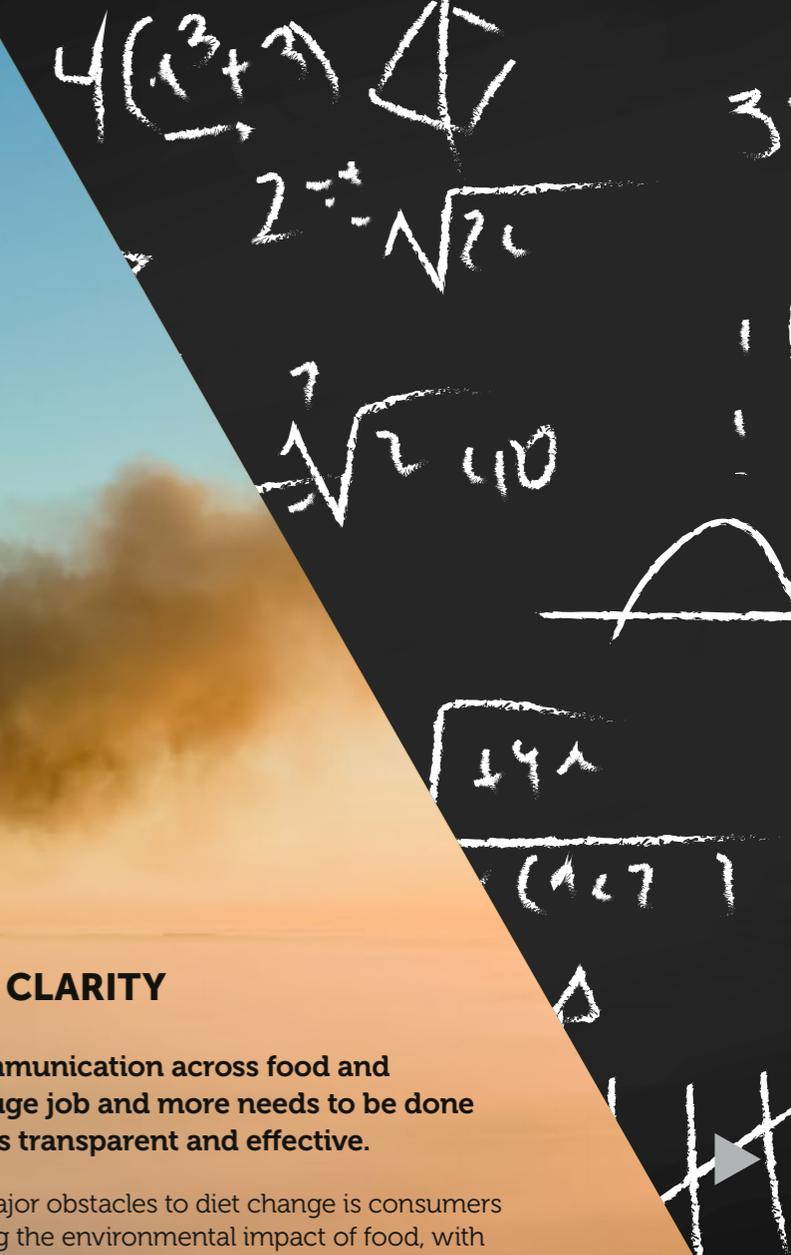
Pepsico, Walkers and Tropicana launched similar schemes. None of them were able to go the distance.

CARBON CLARITY

Carbon communication across food and drink is a huge job and more needs to be done to ensure it's transparent and effective.

One of the major obstacles to diet change is consumers understanding the environmental impact of food, with many being either unaware or misinformed.

The factors contributing to a carbon footprint are varied and include many different elements, making it a challenge to understand the language.



PERFECT PARTNERSHIPS

Whilst calculating carbon emissions is an evolving piece of work, more brands are trying to tackle the challenge and recognising that – in this instance – doing something is better than nothing, and collaborating with independent bodies and consultancies is the key to success.

BUILDING FOUNDATIONS WITH FOUNDATION EARTH

Foundation Earth is a non-profit organisation, driving front-of-pack environmental scores on food products so consumers can make more sustainable choices.

Led by a team of expert scientists and leading figures from food production and retail across the UK and EU, the brand's vision is a food industry that doesn't destroy the planet.

In the autumn of 2021, Foundation Earth launched a pilot scheme traffic-light system, developed using data from the academic paper Poore & Nemecek. The pilot will test consumer response and run parallel to an intensive nine-month development programme supported by Nestlé, that allows two products of the same type to be compared on their individual merits via a complete product life cycle analysis, as opposed to using secondary data to estimate the environmental impact of an entire product group.

Foundation Earth says it is dedicated to development, with continued research that will shape and inform the future of carbon impact labelling.

The mission is to create an optimum global method that will be ready to roll out in 2022.

A range of brands has signed up to the pilot, including Finnebrogue, White's Instant Oats, and Original Mighty plant-based milks. Once graded, each product receives a 12-month Foundation Earth certificate containing detailed information on the impact of the food.



Pilot One

Assess a product's environmental impact using four key criteria: water usage, water pollution, biodiversity and carbon.

Gather information about the product and conduct a 'Life Cycle Assessment' to put numbers to the impacts and award a score for the front of packaging.



Pilot Two

Produce a simple five-scale label (A-E) to communicate the environmental impact of food and beverage products based on the Product Environmental Footprint (PEF).

This method was developed by an EU-funded EIT Food consortium of AZTI and Leuven University, called EnviroScore.



THE 'SO WHAT'

- ▲ Reducing emissions from food production will be one of the greatest challenges in the upcoming decades, both in the short and long term. A range of solutions from changes to diets, reducing food waste and making improvements to agriculture, to food source alternatives and development in technologies, will need to evolve hand in hand with incremental changes to mindset and behaviour.
- ▲ Avoid carbon jargon. The landscape is riddled with terminology such as 'net zero', 'carbon neutral', 'offsetting', 'carbon negative and active' which can cloud communication and understanding.
- ▲ Calories continue to be a focus for dietary and health reasons, but will carbon counting become a predominant feature on food products and menus as we become more aware of our impact on climate change?
- ▲ Quantifying the carbon bill of food and drink is complex, and brand transparency and consumer education will be necessary to support better, more informed consumer decisions. ▲

Chapter 2

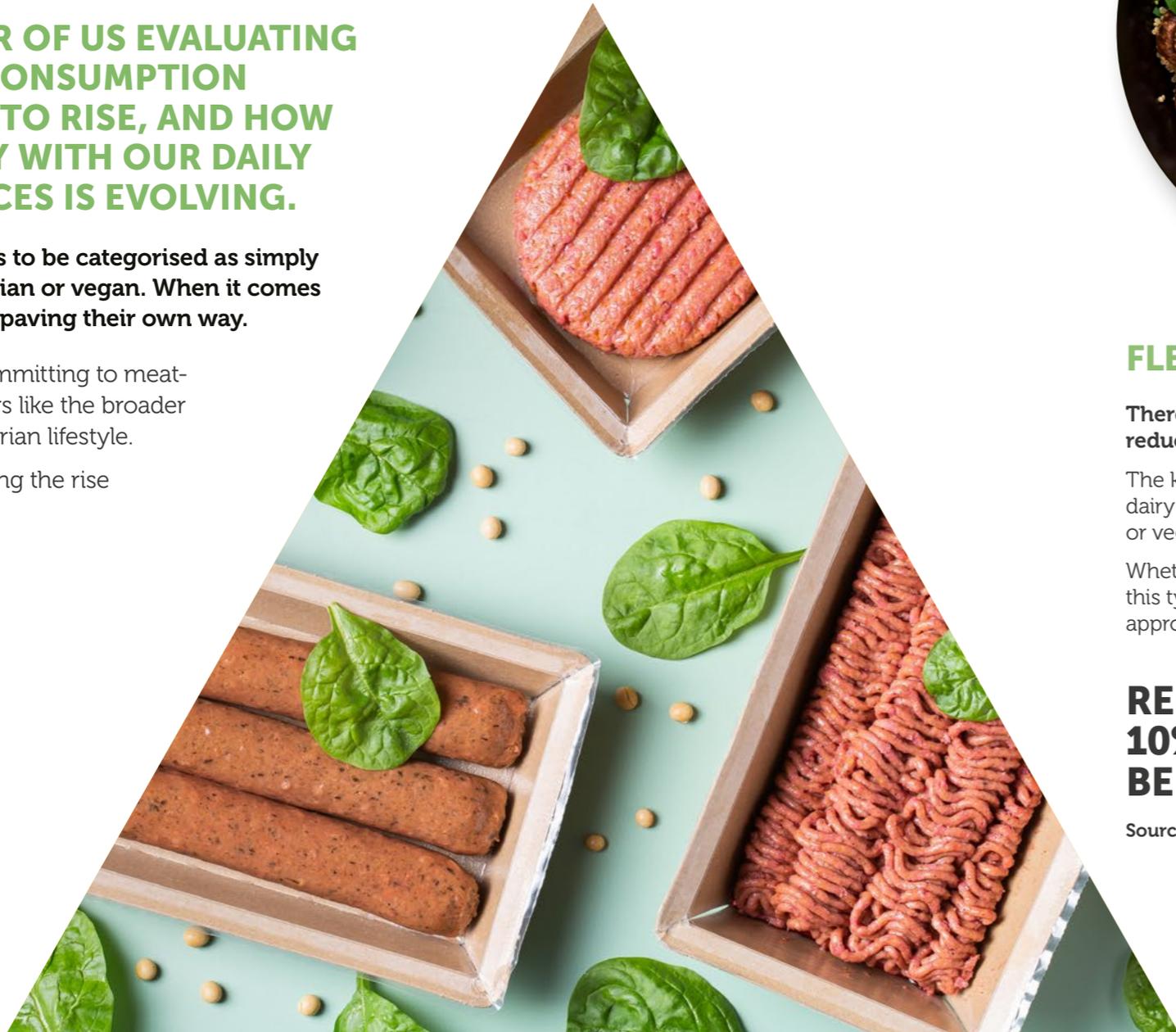
A REDUCETARIAN REVOLUTION

THE NUMBER OF US EVALUATING OUR MEAT CONSUMPTION CONTINUES TO RISE, AND HOW WE IDENTIFY WITH OUR DAILY FOOD CHOICES IS EVOLVING.

Not everyone wants to be categorised as simply meat-eater, vegetarian or vegan. When it comes to food, people are paving their own way.

Some are happy committing to meat-free Mondays. Others like the broader approach of a flexitarian lifestyle.

This year, we're seeing the rise of the reducetarian.



FLEXITARIAN VS REDUCETARIAN

There's plenty of common ground between flexitarians and reducetarians, with not much off the menu.

The key difference is that a flexitarian diet is primarily plant-based, with meat, eggs and dairy classed as an occasional treat. Reducetarians, meanwhile, aren't ready to go full veggie or vegan, but are proactively reducing the amount of animal products they consume.

Whether you're team flexi or flying the flag for the reducetarian lifestyle, the drivers for this type of dietary change are about balance. And we're seeing a much more mindful approach, not just to our health, but to animal welfare and the environment.

REDUCING MEAT CONSUMPTION BY JUST 10% HAS BEEN SHOWN TO HAVE SIGNIFICANT BENEFITS FOR HEALTH AND THE ENVIRONMENT.

Source: RSPCA

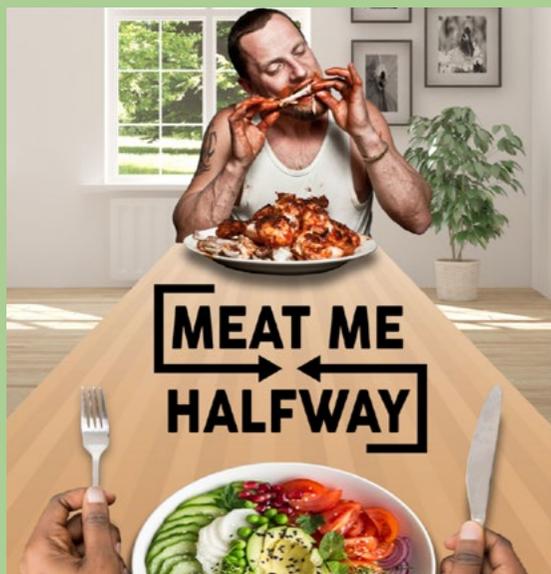
Case Study:
Meat me Halfway

ITS NOT ALL OR NOTHING

Fronted by Brian Kateman, the leader of the reducetarian movement, 2021 documentary *Meat Me Halfway* explores why meat can be such an emotive and divisive subject.

As president and co-founder of the Reducetarian Foundation, Brian knows first-hand the challenges associated with getting people to change their eating habits.

A reducetarian himself, Brian presents well-rounded arguments from both ends of the spectrum, ultimately hitting on the need for an inclusive, non-judgemental space where we're all open to a better way forward, for the sake of our health and the planet.



PLANT CURIOUS

With retailers still working hard to launch and expand their plant-based offering, there's never been a better time to test meat and dairy-free options.

Reducetarianism is ideal for plant-curious eaters who aren't quite ready to give up the chicken or cheese entirely. And current data is reflecting this.

There's a perception that veggies, vegans and pescatarians consume the most plant-based alternatives. And yet because they still make up the lion's share of shoppers, it's mostly plant-curious meat-eaters and flexitarians taking advantage of the healthier, more sustainable options on supermarket shelves.

EATING LESS MEAT IS A TOP-THREE DIETARY RESOLUTION FOR MALES AND FEMALES IN 2022, BEHIND CONSUMING LESS SUGAR AND CARBS – 43% FOR MEN AND 28% WOMEN

Source: The New Statesman – Redfield and Wilton

FOR 2022...

29%
of Britons made New Year's resolutions linked to their diet

6%
of people said their planned diet change included going vegetarian

4%
aim to go vegan

16%
want to eat less dairy

34%
hope to eat less meat

Case Study: Sainsbury's

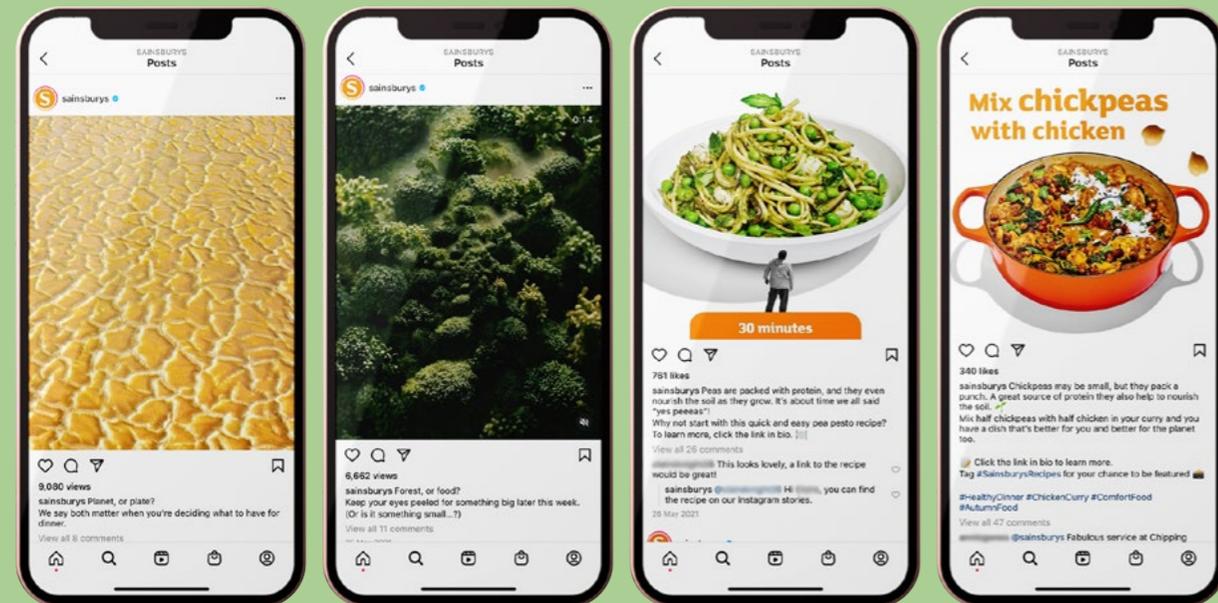
EATING THE WORLD BETTER ONE PLATE AT A TIME

In the spring of 2021, one of the UK's biggest supermarkets launched a direct response to Government research that revealed just 27% of adults manage five pieces of fruit and veg per day.

Help Everyone Eat Better, an exciting and colourful campaign from Sainsbury's featuring a motivational voiceover from actor Stephen Fry, marked out a commitment to making a healthy and sustainable diet accessible to everyone.

Like many of the UK's supermarkets, Sainsbury's recognises that more and more customers are shopping with their health and the planet in mind. As a retailer it wants to be proactive, supporting consumers in reducing carbon emissions, tackling food waste, and making healthy choices.

Following on from the exciting, fruit and veg-packed launch, phase two of Help Everyone Eat Better featured recipes for classic dishes with half the meat swapped for vegetable alternatives.



THE 'SO WHAT'

SIMPLY THE BEST

The flip side of current consumer attitudes to animal-based products is demand for the highest-grade meat, dairy and eggs.

When buying these products, there's been a shift in preference to quality over quantity, with customers happy to pay more for an occasional treat.

- ▲ We have an opportunity to explore our eating habits and choices without being confined to one particular label.
- ▲ Reducetarianism is a great option when eliminating meat and dairy feels too big a challenge.
- ▲ Meat consumption doesn't have to be all or nothing. Shaking things up with more plant-based foods has never been easier.
- ▲ To keep audiences informed and engaged, new product development and impactful campaigns will continue to be important. ▲



Chapter 3

THE WAR ON WASTE



THE TOP FIVE MOST WASTED FOODS IN THE UK:

WASTE GENERATED BY FOOD AND PACKAGING HAS DOMINATED SUSTAINABILITY HEADLINES FOR A NUMBER OF YEARS, AND THE SPACE FOR INNOVATION IS STILL WIDE OPEN.

Manufacturers, brands, restaurants and retailers are working hard to push the boundaries of sustainable solutions, with delicious by-products, and reusable and edible packaging.

In 2022, the end-to-end impact of a product will be just as important as the product itself.

OVER A THIRD OF ALL FOOD PRODUCED GLOBALLY GOES TO WASTE

THE UK PRODUCES THE HIGHEST AMOUNT OF WASTE IN EUROPE

Source: Business Waste



Source: River Cottage

RETHINK

Case Study: Morrisons

SCRAP AND SNIFF

MILK IS THE THIRD MOST-WASTED FOOD AND DRINK PRODUCT IN THE UK. AROUND 490 MILLION PINTS ARE WASTED EVERY YEAR – 85 MILLION OF THEM DUE TO CUSTOMERS ADHERING TOO STRICTLY TO USE-BY DATES.

Source: Wrap

At the start of 2022 **Morrisons** announced it was scrapping use-by dates on 90% of its own-brand milk, and replacing with best before.

The advice to customers?
Don't chuck it, sniff it.

Yes, to help curb the millions of pints going down the drain, **Morrisons** brought back the sniff test.

“WASTED MILK MEANS WASTED EFFORT BY OUR FARMERS AND UNNECESSARY CARBON BEING RELEASED INTO THE ATMOSPHERE”

Ian Goode – Senior Milk Buyer

A sour smell or curdled consistency are reliable indicators of milk that's gone off, and **Morrisons** is leading the charge by championing a simple, common-sense approach as a more sensible and sustainable solution.

REPURPOSE

We've all seen the images – our oceans are drowning in plastic and we need to do everything we can to stop packaging polluting the planet.

Case Study: Gousto

PASS ON PLASTIC

With the help of UK developer Xampla, recipe box brand **Gousto** is trialling the world's first edible pea-protein packaging.

Created by drying pea protein into sheets, it not only packages stock ready for cooking but dissolves with it, without affecting safety or flavour.

If permanently adopted, it could save **Gousto** 17 tonnes of plastic waste annually – a significant contribution to the brand's sustainability goals.



REUSE

With more of us wanting to waste less, demand for a way of shopping where we have the choice to buy exactly what we need is growing.

Supermarkets are going back in time with trials of various refill stations continuing to take place across the UK.

Aldi was the first discounter to add zero waste refills in Spring 2021, and we expect more grocers to try and incorporate this more traditional way of shopping on the shop floor.

Case Study: World Refill Day

A REFILL REVOLUTION

On June 16th 2021, World Refill Day promoted awareness about choosing to reuse and taking action to reduce plastic pollution.



80% OF UK ADULTS ARE TAKING STEPS TO REDUCE THEIR CONSUMPTION OF SINGLE-USE PLASTIC.

Source: Friends of the Earth



Case Study: Costa

MEET 'BURT'

On 30 September 2021 – the day before National Coffee Day – Costa announced plans to trial an innovative reusable cup scheme, powered by blockchain.

BURT: Borrow, Use, Reuse, Take Back

As part of the trial, Costa customers will be encouraged to set up an account with BURT by scanning a QR code and making a one-off £5 payment to join.

Cups with QR codes will be available in store, with the customer choosing and paying for their drink as normal.

After enjoying their latte, customers will return the cup to a participating store where it will be re-scanned and delinked from their account.

All cups will then be hygienically machine-washed in store, ready to be reused.

The six-month trial will be used to gather feedback and learn about thoughts, feelings and behaviour around reusable cups. The findings will allow the brand to optimise and develop the scheme before rolling it out across the Costa estate.



SUSTAINABLE INCENTIVES

Coffee shops and brands are rewarding customers for making more sustainable choices by offering money off products or embedding it within loyalty schemes.

- **Wimpy** launched a nationwide 'Drink, Rinse, Repeat' reusable hot cup scheme. For £2.50 customers get their own Wimpy-branded reusable cup, and 25p off any regular drink
- As part of the loyalty scheme at **Costa** (1), customers who use a reusable cup earn double reward beans and get to their free coffee quicker
- Throughout December 2021, **Pure** (2,3) doubled their discount on hot drinks in a reusable cup, increasing the saving from 50p to £1



THE 'SO WHAT'

- ▲ Changing the perceptions of waste is key to changing behaviour.
- ▲ There are opportunities to get creative with waste across the food and packaging landscape.
- ▲ Refill and reuse solutions need to be accessible and affordable to engage consumers.
- ▲ Utilise the power of incentive and reward to encourage change. ▲



Chapter 4

IN-VITRO CUISINE

THE BENEFITS OF ALTERNATIVE AND SUSTAINABLE PROTEINS ARE WELL ESTABLISHED, WITH SEVERAL YEARS OF INNOVATION AND DEVELOPMENT ALREADY IN THE BAG.

Today, we are seeing the fruits of this time and knowledge gather momentum, along with the recognition that there are opportunities to go back to basics and slash the environmental impact of food production even further.

WORKING WITH NATURE

When crops are grown on farmland repeatedly without a break, the quality of the soil and its nutrients declines, risking not only the long-term health of the land but also the ability to grow food at all.

To safeguard the future of farming, industrial agriculture, and the food chain, efforts to combat over-farming, restore ecosystems and protect wildlife must be stepped up.

The idea is that a focus on regenerative agriculture, working in tandem with traditional farming practices, will work towards an equilibrium.

BEYOND IMPOSSIBLE

Plant-based pioneers are going mainstream, making their mark on the menus of some of the UK's most popular fast-food restaurants.

Impossible Foods supply the key ingredient of Burger King's Impossible Whopper, and Beyond Meat collaborated with McDonald's to create the long-awaited McPlant, which went nationwide in January 2022.

With demand for tasty meat substitutes at an all-time high, other players are keen to get a slice of this growing market.

THE MAIN CHALLENGES FACING THE FUTURE OF ALTERNATIVE PROTEINS AND FOOD SOURCES ARE:

1. Time for innovation
2. Cost of creation and production
3. Consumer perception of 'unnatural' food
4. Maintaining true end-to-end sustainability

THE ALTERNATIVE PROTEIN MARKET IS ESTIMATED TO REACH OVER \$27BILLION BY 2027

Source: GlobalNewswire

Case Study: Zeastar

THE END OF THE LINE FOR FISH?

Funky vegan brand **Zeastar** have got their hooks into the faux-fish market with uncanny salmon and tuna sashimi that is 100% plant-based.

Made from tapioca starch, the sashimi is completely allergen- and gluten-free, and holds flavour just like the raw fish equivalent.



THE TECH TOOLKIT IS EXPANDING

The future of alternative proteins lies in the development of technology that can either reduce or replace the production of animal protein.

MAN-MADE MEAT

The next step in the meat replacement market could be slaughter-free meat.

Also known as cell-based or lab-grown, this technology has already seen investment top £257million.

A survey by the Food Standards Agency found 34% of respondents were willing to try lab-grown meat, with a further 27% saying they could be persuaded if they knew it was safe.

NEW AGE MEATS

Meat and veg hybrid New Age Meats believes it can cultivate meat at scale from the cells of livestock, without harm to the animal, our health or the planet.

In 2021 the brand secured funding of \$25million, enabling production of a variety of pork sausage to take them to market for 2022.

Utilising technology and creativity, with a deep understanding for why consumers enjoy eating meat, the New Age Meats ethos is that everyone should have access to real meat, without the ethical or environmental cost.

THE RED TAPE

One of the hurdles facing innovators like New Age Meats is global regulation.

As of January 2022, the only nation to approve the production and sale of cultivated meat was Singapore, where it granted approval for manufacturer Esco Aster.

However, 2022 could be the year more consumers get to try cultivated meat and seafood.

Since 2018, the U.S. Department of Agriculture and U.S. Food and Drug Administration have been working in partnership for a joint regulatory framework for cultivated meat.

Waiting in the wings are companies like UPSIDE Foods, and Wild Type, who are ready to go with cultivated meat products as soon as they get the green light.

NEXT-GEN FARMING

The vast majority of commercial crops are annual, providing only one harvest which must be replanted every year.

Because growing these foods on an industrial scale requires so much water, fertilizer and energy, agriculture is a major source of carbon and other pollutants, destroying soil and vital habitats, and contributing to global warming.

So, what's on the cards for the future of farming?

Case Study: Land Institute

AGAINST THE GRAIN

A new type of wheatgrass that mimics the way natural ecosystems work has been developed by scientists at the non-profit Land Institute.

Kernza helps keep soil healthy by forming deep roots that store carbon and prevent erosion. It can be planted alongside other crops to reduce the need for fertilizer and provide habitat for wildlife, and a single seed will grow into a plant that provides grain year after year after year.

Boasting a sweet, nutty flavour that's perfect for bread, cereals, and snacks, Kernza contains less gluten than wheat and can be used as whole grain, ground into flour, malted, or directly added to beer and whiskey.

No pain no grain

As exciting as it sounds, Kernza still has a long road from the lab to the kitchen table.

Transforming the traditional farming practices humans have relied on for centuries is a slow process. But if the scientists, farmers and processors are successful, perennial foods might make it onto grocery store shelves.

PAVING THE WHEY

We've heard of lab-grown meat and now the same concept is being applied in the dairy sector, with processes including microbial and precision fermentation for milk and cheese.

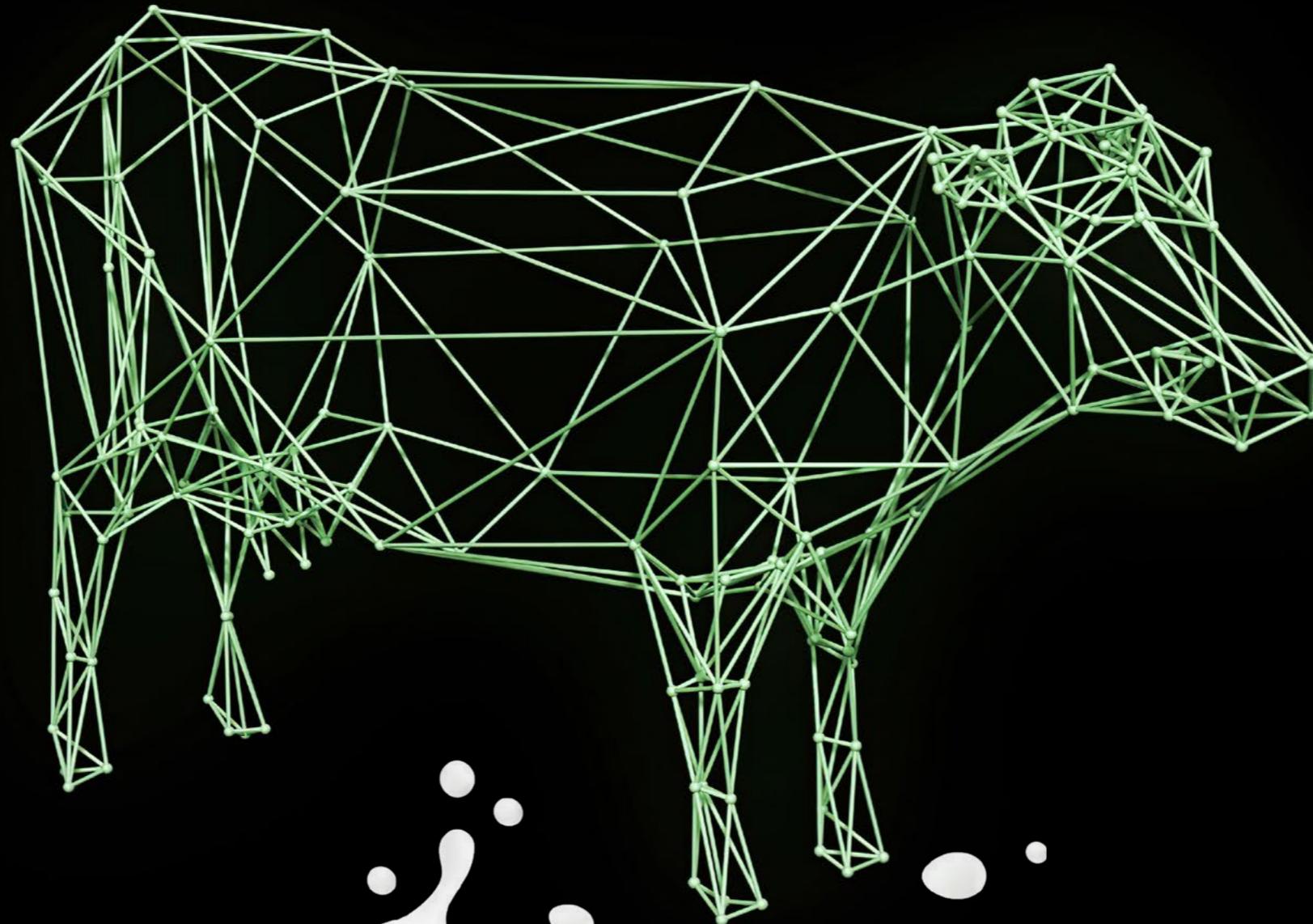
Case Study: *Brave Robot*

AGAINST THE GRAIN

In 2021 Brave Robot launched a vegan imitation ice cream using synthesised milk proteins which are molecularly identical to dairy from cows.

The process

1. To produce real milk protein, the genetic blueprint from a female cow is added to tiny organisms called microflora (flora)
2. Fermentation techniques are used to convert plant sugars into milk protein
3. The result is an animal-free milk protein – identical to the protein in cow's milk – that can be used to make any dairy product



THE 'SO WHAT'

- ▲ The plant-based and alternative meat category continues to diversify and reach higher fidelity to animal products
- ▲ Cell-cultured meat could be part of the future of food production, but there are regulatory and consumer perception challenges to overcome
- ▲ The positioning of lab-created products will need to be clear and reassuring, with a focus on safety and sustainability
- ▲ Grains and dairy could support consumer adoption
- ▲ Carbon concerns continue to be raised over cultivation of food sources at mass scale. ▲



Insights within this report are gathered from proprietary Linney research, third party resources and materials in the public domain. If you'd like to know more about the source of an item, please contact katieoliver@linney.com

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