



2022

CHANGING BEHAVIOUR FROM POLICY TO TABLE

MOVING THE DIAL TOWARDS HEALTHY SUSTAINABLE DIETS

Proceedings from the  e-symposium
celebrating the 25th anniversary of the Alpro Foundation

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EXECUTIVE SUMMARY

- Food systems have considerable influence on health and environment as well as the economy, cultural and socio-economic factors. To achieve health and environmental sustainable targets, substantial changes are needed in the way we farm, produce, transport, package, retail and advertise food as well as in consumer dietary behaviour
- Reductions in the intake of animal food sources and avoidable food waste are critical together with a shift towards more healthy plant-based eating
- Favourable trends in food consumption towards this are appearing across the globe, but the pace of change is slow. Innovative, evidence-based strategies and government policies are essential to further shift the dial towards diets that can sustain both human and planetary health

INTRODUCTION

The hot topic of translating policy into practice for more sustainable diets was the theme of this symposium to commemorate 25 years of the Alpro Foundation (www.alprofoundation.org). It was held at a particularly pertinent time during the week after the UN global warming conference (COP 26). Insightful presentations were delivered by seven leading experts from Europe and North America, to explore policies, along with scientific insights into how to nudge people into new habits. Topics included ways of communicating with consumers about healthier, more sustainable diets; labelling, and the role of the food environment.

Chairing the symposium were, **Professor Ian Rowland** from the University of Reading and chair of the Alpro Foundation Scientific advisory board, together with **GP Gemma Newman**, the Plant Power Doctor. In their opening remarks, they reminded the audience of the significant role our food systems play with regard to achieving health and environmental policy goals, highlighting that around 30% of all global greenhouse gas (GHG) emissions are attributed to how we produce, consume, prepare and dispose of food and drinks.¹

POLICIES FOR ACHIEVING HEALTHY SUSTAINABLE DIETS

THE EUROPEAN GREEN DEAL, ALTERNATIVE PROTEINS AND DIETARY SHIFT

In the opening session **Ms Cindy Schoumacher**, EU Policy Officer at the Healthy Planet Directorate of the European Commission, DG Research and Innovation [DG RTD], **set the scene by summarising the European Green Deal and highlighting the Farm to Fork strategy for a fair, healthy and environmentally sustainable food system.**

This strategy includes:

- Quantitative targets on proportions of organic farming
- Goals for reducing the use of pesticides, antimicrobials and nutrient losses
- Qualitative targets on food waste prevention and shifts in food consumption patterns

She explained how sustainable food systems need to consider **economic** and **social dimensions** such as accessibility and affordability alongside environmental sustainability to be effective.²

Research and innovation are important enablers of the strategy for transition, but **diets need to remain safe, nutritious** and of **high quality** in the shift towards more plant-based diets. For example, there is a range of existing projects underway for the development and testing of **alternative protein sources with lower environmental footprints** under the **Horizon 2020 programme**.

These include:

- Protein-rich crops and legumes
- Fungi
- Insects
- Microalgae and other marine-based sources

Ms Schoumacher outlined current work focussing on the Horizon Europe funding stream and the EU Food 2030 policy framework for widening participation, strengthening research and future-proofing nutrition and food systems.³

Aspects to consider in assessing new alternative protein food products to meat and dairy include health (safety, allergenicity and bioavailability) alongside drivers and barriers of dietary choices in addition to the environmental footprint.

With regard to the successful promotion of alternative proteins and dairy to drive consumer acceptability and trust, it is important to optimise level of awareness of the innovation through education and communication.

Ms Schoumacher urged the audience to let the Commission, DG RTD, know about the urgent research and innovation gaps on alternative proteins and dietary shift and to look at the ongoing calls for proposals in the Horizon Europe work programmes.^{3,4}

Key points

- Research and innovation are key enablers of the transition towards more sustainable diets for health and environment
- Alternative protein sources have great potential to help shift consumer diets
- Education and communication about innovation are important for building consumer acceptability and trust

**THE EUROPEAN GREEN DEAL:
ALTERNATIVE PROTEINS & DIETARY SHIFT**

CINDY SCHOUMACHER, EU POLICY OFFICER

EU FARM TO FORK STRATEGY

One of the elements comprehensively addressing the challenges of sustainable food systems in the European Green Deal is the 'Farm to Fork' strategy.

The primary goal of the 'Farm to Fork' strategy is to create a sustainable food system which ensures environmental, social and economic sustainability.

THE TRANSITION TO SUSTAINABLE FOOD SYSTEMS WILL NOT HAPPEN WITHOUT A SHIFT IN PEOPLE DIETS TOWARDS PLANT-RICH DIETS. THIS IS WHY THE EU ARE FUNDING RESEARCH TO FACILITATE THE SHIFT.

FACILITATING THE SHIFT

AS PART OF THE 'FARM TO FORK' STRATEGY, RESEARCH HAS BEEN FUNDED LOOKING INTO:

- ✓ ALTERNATIVE PROTEINS SUCH AS FUNGI, MICROALGAE & INSECTS
- ✓ SUSTAINABLE PRODUCTION & PROCESSING METHODS TO GROW PROTEIN-RICH CROPS
- ✓ EDUCATION ON SUSTAINABLE, HEALTHY DIETS IN SCHOOLS

Alternative proteins are one of the key areas of research for a sustainable food system and global food security.

ALTERNATIVE PROTEIN = ALTERNATIVE TO MEAT AND DAIRY THAT ARE PRODUCED IN A SUSTAINABLE AND HEALTHY WAY.

FUTURE RESEARCH & INNOVATION NEEDS:

- ASSESS ENVIRONMENTAL FOOTPRINTS OF ALTERNATIVE PROTEIN FOODS
- ASSESS IMPACTS ON HUMAN HEALTH AND BIOAVAILABILITY FOR ALTERNATIVE PROTEINS
- MAKE BETTER USE OF FOOD ENVIRONMENTS TO DIVERSIFY THE PROTEIN ON OFFER
- PROVIDE EDUCATION TO POLICY MAKERS AND OTHER FOOD SYSTEM PROFESSIONALS ON HOW TO ACHIEVE A DIETARY SHIFT
- IDENTIFY DRIVERS AND BARRIERS OF DIETARY CHOICES

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WHERE ARE WE NOW? SUSTAINABILITY GAPS IN THE UK AND EU

Continuing the theme of environmental policy, **Dr Rosie Green**, Associate Professor in Sustainability, Nutrition and Health at the London School of Hygiene & Tropical Medicine, illustrated how pressures from food systems are steadily increasing over time with impacts **going beyond carbon footprints and GHG emissions to encompass a wide range of environmental factors**. [See figure 1]⁵⁻¹²

She highlighted the potential impacts of climate change on food security by reducing cereal yields and nutritional quality.^{13,14}

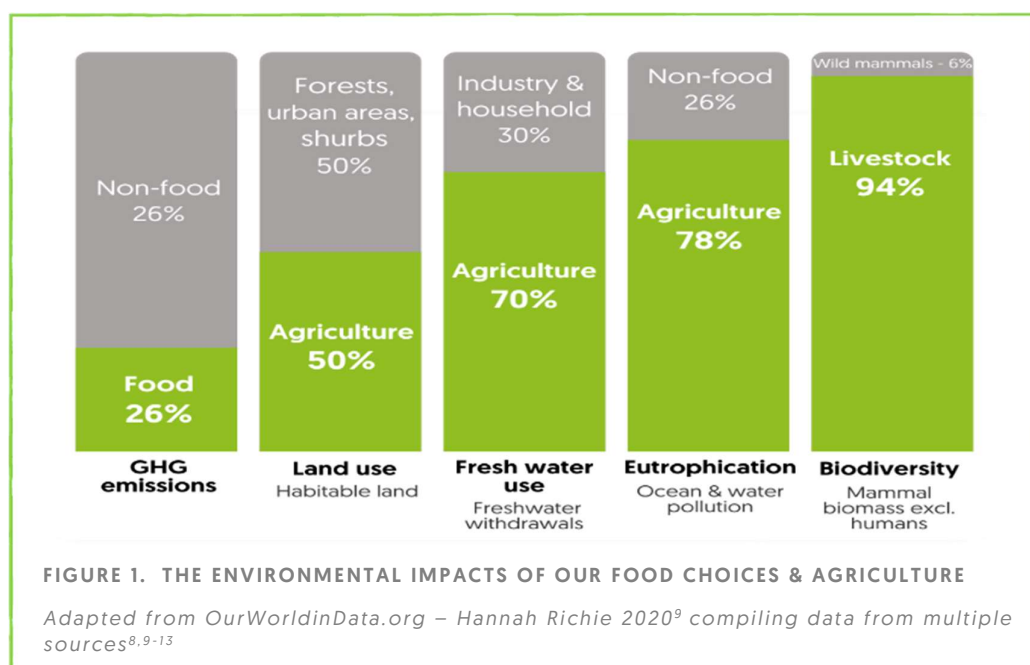
Changes are needed in both food production and dietary behaviour, but this had only been addressed briefly in the recent COP26 summit. In particular, many countries will need to:¹⁵

- Reduce red meat and dairy food intakes
- Reduce intake of starchy vegetables
- Increase intakes of fruit, vegetables, legumes and wholegrains

Most dietary consumption patterns within the EU are substantially different to those needed to achieve environmental targets.¹⁶

Dr Green continued by exploring the **UK as a case study** of research and policy on changing diets. Modelling studies show **adherence to the national food-based dietary guidelines** (the Eatwell Guide) would offer **substantial benefits for both health and the environment** (including carbon emissions and water use) but at present **only 0.1% of the population achieve them**.¹⁷

As part of the **Climate Change Act Framework** to **reduce UK GHG emissions to net zero by 2050, substantial reductions in animal protein and dairy consumption are required**. Although red meat intakes are declining, much of this is replaced with poultry which has other associated environmental impacts including deforestation and air pollution. Dairy intake is also declining slowly but intakes of fruit and vegetables remain well below recommended levels.¹⁷



It appears likely that a **combination of policy factors** such as taxation, subsidies and increased intakes of alternatives to animal protein will be needed to meet targets. These will have benefits and trade-offs for different measures of impact for the environment, health, economics and animal welfare.

Dr Green ended her session by focusing on **UK fruit and vegetable** showing how intakes are currently well below recommended levels. Patterns of consumption have changed dramatically over the

past 40 years with a lower domestic contribution to the supply and around **78% of fruit and vegetables imported from abroad**.¹⁸

The reliance on imports from climate vulnerable countries could negatively affect availability, price and consumption in future. An important consideration in the strategy to improve both health and environmental impacts may therefore be to look at including an emphasis for inclusion of varieties produced domestically.¹⁹

Key points

- Existing food systems need to change radically if we are to meet climate targets, ensure the future resilience of the food supply and promote health
- Some of this transformation will need to come from changing dietary behaviour and should consider a variety of environmental impacts beyond the carbon footprint
- Dietary modelling has shown changes need to involve the adoption of a more healthful plant-based diet together with consideration of how we source foods such as fruit and vegetables



WHERE ARE WE NOW?

SUSTAINABILITY GAPS IN THE UK & EU

DR ROSEMARY GREEN, ASSOCIATE PROF. IN SUSTAINABILITY

FOOD SYSTEM IMPACT ON THE ENVIRONMENT

We are exceeding planetary boundaries in our global resource and food and agriculture is a huge part of this problem.



FOOD AND AGRICULTURE ACCOUNTS FOR:

- ✓ 26% OF GREENHOUSE GAS EMISSIONS
- ✓ 50% OF LAND USE
- ✓ 70% FRESHWATER USE
- ✓ 78% OCEAN AND FRESHWATER POLLUTION
- ✓ 94% OF MAMMAL BIOMASS (EXCL. HUMANS)

Meeting climate targets and creating a resilient food system will require systemic transformation alongside individual dietary shifts.

DIETARY SHIFTS TO MEET PLANETARY BOUNDARIES

Many countries need to reduce consumption of red meat, starchy veg and dairy and increase consumption of fruit and veg, nuts, legumes and wholegrains.



People who meet more UK Eatwell Guide recommendations have **7%** less chance of dying early and **30%** lower carbon emissions.

Only around **30%** of people in the UK currently eat this way, and **only 1%** follow the Eatwell Guide closely.

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ACHIEVING TARGETS: UK

The UK Committee on Climate Change has set out ways of meeting its net zero target, including a **35-50%** reduction in all meat and dairy consumption by 2050 and a **20%** reduction by 2030.



SUGGESTIONS TO ACHIEVE THIS...

- 1 RELY ON CURRENT DOWNWARD TRENDS ON MEAT CONSUMPTION
- 2 TAX MEAT (20%) AND SUBSIDISE FRUIT & VEG WITH REVENUE
- 3 ENCOURAGE MEAT AND DAIRY ALTERNATIVES E.G. PLANT-BASED DRINKS ETC.

Although meat and dairy intake is trending down, we cannot rely on this alone to help the UK meet targets.



Modelling suggests that introducing a meat and dairy tax, in addition to encouraging more alternatives through product innovation would be best to help the UK meet planetary targets.

Increasing veg intake alone can have a significant impact on the environmental footprint of our diets and life expectancy!



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MOVING FROM POLICY TO PRACTICE

PERSUASION AND NUDGING TOWARDS HEALTHIER DIETS: BASICS AND PITFALLS

Tim Smits, Professor of Persuasion and Marketing Communication at Leuven University, Belgium, began by reminding us that **much of dietary behaviour is driven by subtle cues at the unconscious level**. His work has shown how images of suggested serving size depicted on the front of pack influences the amount served and eaten, leading to potential overconsumption of foods and excess food waste with subsequent impacts on both health and the environment.²⁰⁻²²

Other potential influences on attitude and behaviour that can help shift diets to be more sustainable were discussed, and Tim highlighted the important distinction between different approaches to behaviour change:²³

- **System 1 effects:** approaches addressing persuasion and nudges in behaviour which can have a cumulative impact with multiple small but repeated exposures
- **System 2 effects:** approaches addressing legislation and educational campaigns which are not always received by consumers in the way professionals hope they will be

Recent systematic reviews and meta-analyses of published studies show **advertising and marketing of food affects eating behaviours, particularly in children**. This has important implications for policy action to reduce exposure to unhealthy food advertising.^{23,24}

Professor Smits summarised his research, on the **unconscious bias from social media in shaping adolescent eating patterns**.²⁵⁻²⁷ Flemish adolescents were asked to take screenshots of food images they encountered on their social media platforms for a week. Analysis revealed that adolescents were most exposed to messages of non-core, less healthy and paid for or branded foods, often with excessively large portion sizes.

This work has also shown that **less healthy foods are often communicated via high volume, descriptive messages that promote excessive portion sizes whereas healthy foods are usually communicated via lower volume messages** that are **often less engaging** and require conscious processing.

Clearly, **the impact of social media on adolescents' food attitudes and eating habits cannot be underestimated**. This provides an opportunity for professionals to influence the promotion of core foods to reach out to consumers in novel and more personal ways.

Professor Smits illustrated the dilemmas of how we can change behaviour including consideration of how food imagery should be regulated to support sustainable consumption patterns. There is a challenge in the current food system in shifting behaviour towards greater intake of healthier foods and a need to raise awareness of the subliminal messages from media of all types.

Key points

- Shifting behaviour and attitudes towards sustainable diets needs to consider the role of unconscious thought processes which are influenced by marketing images in the media
- Approaches addressing persuasion and nudges, as well as marketing, provide an opportunity for professionals to influence the promotion of healthy foods and reach out to consumers in novel and more personal ways



PERSUASION & NUDGING TOWARDS HEALTHIER DIETS

PROF. TIM SMITS, PROFESSOR IN PERSUASION & MARKETING

CONSCIOUS VS UNCONSCIOUS

Most people's thought and decision processes are unconscious, these are called 'system one' processes. Only a small amount of our thoughts are conscious or 'system two' processes.



Everyday conscious actions like driving or making food choices soon become automatic 'system one' actions.

FOOD MARKETING & PACKAGING IS IMPORTANT

A study in children found that showing a different cereal package with a smaller vs larger portion size impacted the amount of cereal the children chose to serve into their bowl.



The larger image resulted in a **30% INCREASE** in cereal and milk consumption!

If we want to change people's attitudes and behaviours towards more healthy and sustainable diets, there are a number of tactics that can target both conscious and unconscious thought processes.



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COMMUNICATIONS TARGETING SYSTEM 1 & 2

It is no longer enough to just communicate with patients and clients to eat healthier. We need lots of little nudges that target the unconscious.

LEGAL
RESTRICTIONS

HARD
CAMPAIGN

SOFT
CAMPAIGN

DESIGN

SYSTEM 2
EFFECTS

SINGLE OR FEW
EXPOSURES =
HIGH IMPACT

SYSTEM 1
EFFECTS
"NUDGING"

MANY
EXPOSURES =
CUMULATIVE
IMPACT

EFFECTS OF SOCIAL MEDIA



Research suggests that the more unhealthy adverts adolescents see on their social media, the more they consume them. This also works to a lesser extent with healthier foods.

21 adolescents were exposed to **613** food adverts on social media in a week. The majority of these ads were for unhealthy, low nutritious foods.

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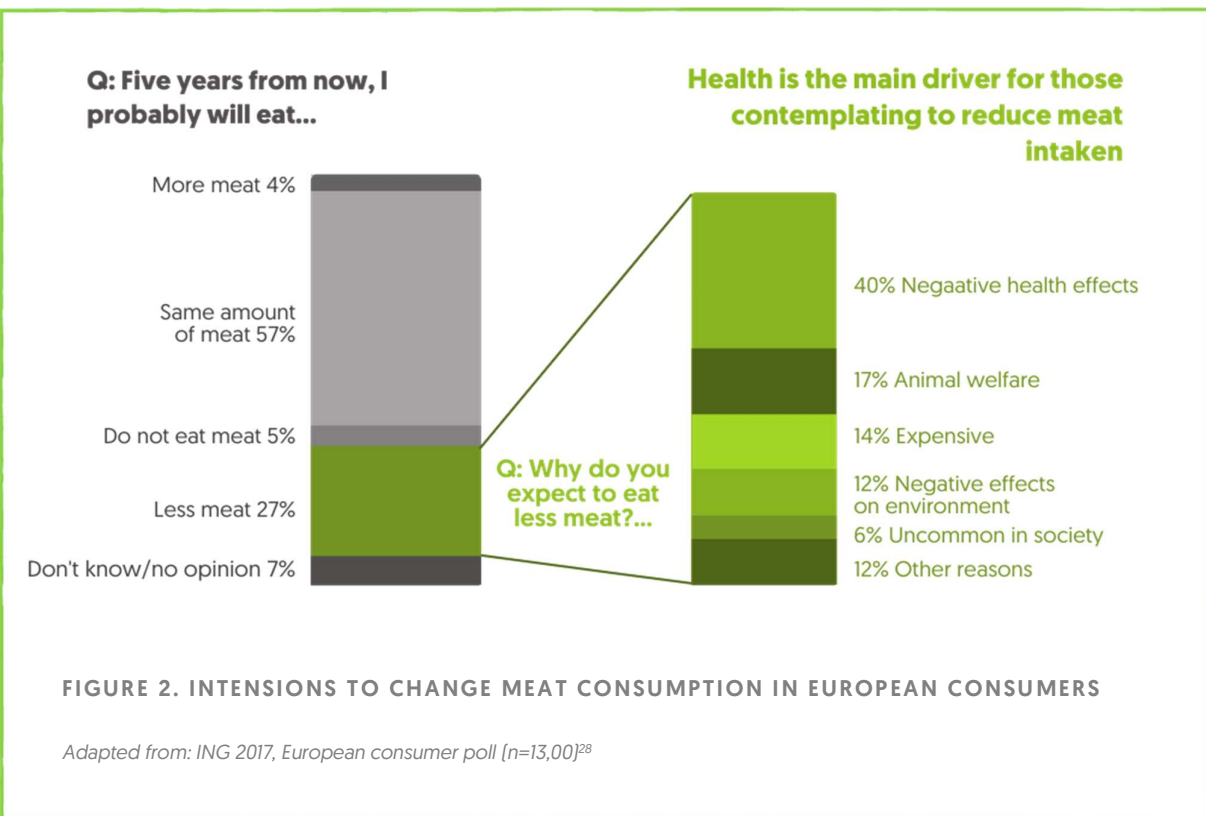
ENCOURAGING BEHAVIOURAL SHIFTS TOWARDS SUSTAINABLE DIETS: UNDERSTANDING INTENTION BEHAVIOUR GAPS

Dr Kate Laffan, from University College in Dublin, continued with the theme of behavioural change. She reported on polls across EU countries which suggest that **although most consumers were not inclined to change animal protein consumption, around 1 in 3 said they intended to reduce meat intake in the future**. Consumers gave a range of reasons for intended change including health, animal welfare, cost and environmental impacts. [See figure 2]^{28,29}

However, it is increasingly clear that planned dietary change does not always convert into action.

Dr Laffan suggests that a variety of factors may correlate with these “intention behaviour gaps” including:

- **Physical** (where people are)
- **Temporal** (meal type and day of the week)
- **Social** (who people are with)
- **Mental** (antecedent state and the self-reported decision factors that matter most in the moment)



Do you intent to reduce your consumption of meat in the coming four weeks?

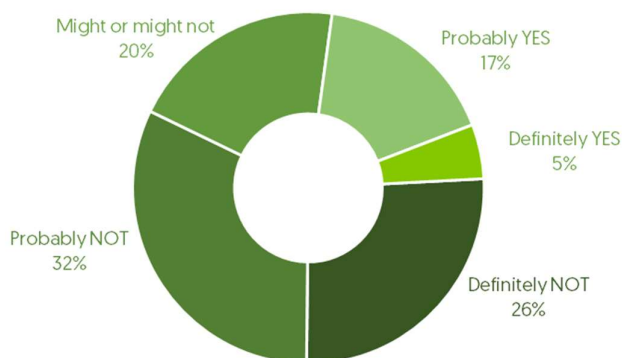


FIGURE 3. INTENSIONS TO REDUCE MEAT CONSUMPTION IN 1,316 UK ADULTS

Do you intent to reduce your consumption of dairy in the coming four weeks?

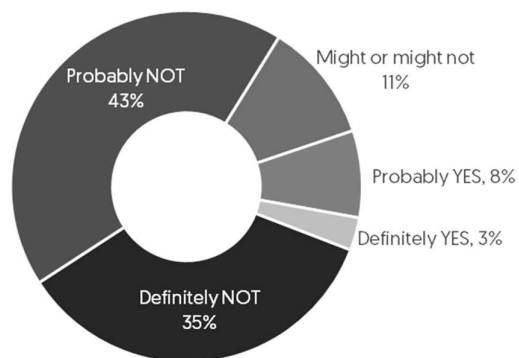


FIGURE 4. INTENSIONS TO REDUCE DAIRY CONSUMPTION IN 1,433 UK ADULTS

PRELIMINARY FINDINGS FROM DR LAFFAN'S CURRENT RESEARCH³⁰

Dr Laffan presented her current and on-going work funded by the Alpro Foundation, a **longitudinal study of UK adults**. She has explored **how to promote dietary change by examining the context in which consumption of meat and dairy occurs and the related correlates of intention behaviour gaps for the adoption of healthier and more sustainable diets**.

Her research uses the Day Reconstruction Method (DRM) which she has adapted along with her co-

authors [Dr Leonhard Lades and Professor Liam Delaney], to provide a systematic reconstruction of a day to explore how people's dietary behaviour relate to a variety of individual and situational factors.^{30,31}

Preliminary findings show **22%** of the sample **intends to reduce meat** [primarily red meat] with intention being **strongest in women and older adults**. [See figure 3]

Intention behaviour gaps in meat consumption are most likely to emerge:

- On Sundays
- When eating out at a restaurant or café
- At dinner time
- When eating with others (especially friends)
- When consumers are hungry in the lead up to a meal

Intention behaviour gaps in dairy consumption were most likely to emerge:

- At breakfast
- When they were unhappy or bored and when they were thirsty

Formulating specific plans to deal with high-risk situations when intention behaviour gaps emerge

- When convenience, nutrition and environment are not key decision factors
- When taste and craving Are reported as decision factors in the moment

Around **11%** of those sampled **intended to reduce dairy** intake and these intentions were more prevalent among **young adults** (see figure 4).

Dairy intake was found to be less closely associated with contextual factors than meat consumption.

[their danger spots] and ways to avoid or handle these could be useful in helping consumers who want to convert their intentions into action. Her future work in this area will further explore interactions between individual and contextual characteristics that lead to intention behaviour gaps, and more closely examine the roles of the social context and craving.³²

Key points

- Across Europe a proportion of consumers are looking to reduce their consumption of both meat and dairy
- Central to helping consumers achieve this intended dietary change is an understanding of the context in which meat and dairy consumption occur and a better understanding of the correlates for intention behaviour gaps



ENCOURAGING BEHAVIOURAL SHIFTS TOWARDS SUSTAINABLE DIETS

DR KATE LAFFAN, UNIVERSITY COLLEGE DUBLIN



More sustainable diets means a shift away from an over-reliance on animal-based proteins and a reduction in food waste. There are a number of benefits that can come from moving away from overconsumption of meat and dairy, for health, environment and animal welfare.

CONSUMER INTENTIONS

A recent (2017) European consumer poll found that **27%** of people were expecting to eat less meat in 5 years' time and **5%** of people expected that they would eat no meat at all.



REASONS GIVEN FOR SHIFTING AWAY FROM MEAT INCLUDE:

- 1 **NEGATIVE HEALTH EFFECTS (40%)**
- 2 **ANIMAL WELFARE (17%)**
- 3 **EXPENSE (14%)**
- 4 **NEGATIVE ENVIRONMENTAL IMPACT (12%)**
- 5 **LESS COMMON (6%)**



1 IN 3 consumers are willing to cut down on red meat.



Research has found that many have the intention and are willing to reduce their meat and dairy consumption for a number of reasons, but people do not always do the things that they intend to do.

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INTENTION-BEHAVIOUR GAPS

Dr Laffan's research found that although **22%** intended to reduce meat and **11%** intended to reduce dairy, there are many contextual factors that may prevent them from doing so.

COMPANY: Meat consumption is most likely when people are eating with friends and family.

MOTIVATION: If convenience, nutrition or environmental factors were important to a person in the moment they make their decisions, they are less likely to consume meat.

PLACE: People are more likely to eat meat when eating out.

MEAL: Meat consumption is most likely to occur at dinner, and dairy consumption at breakfast.

DAY OF THE WEEK: Sundays are the day where people are most likely to fail to not eat meat.



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FRONT-OF-PACK NUTRITION LABELLING AND HEALTHY FOOD CHOICE: OPPORTUNITIES AND DIFFICULTIES

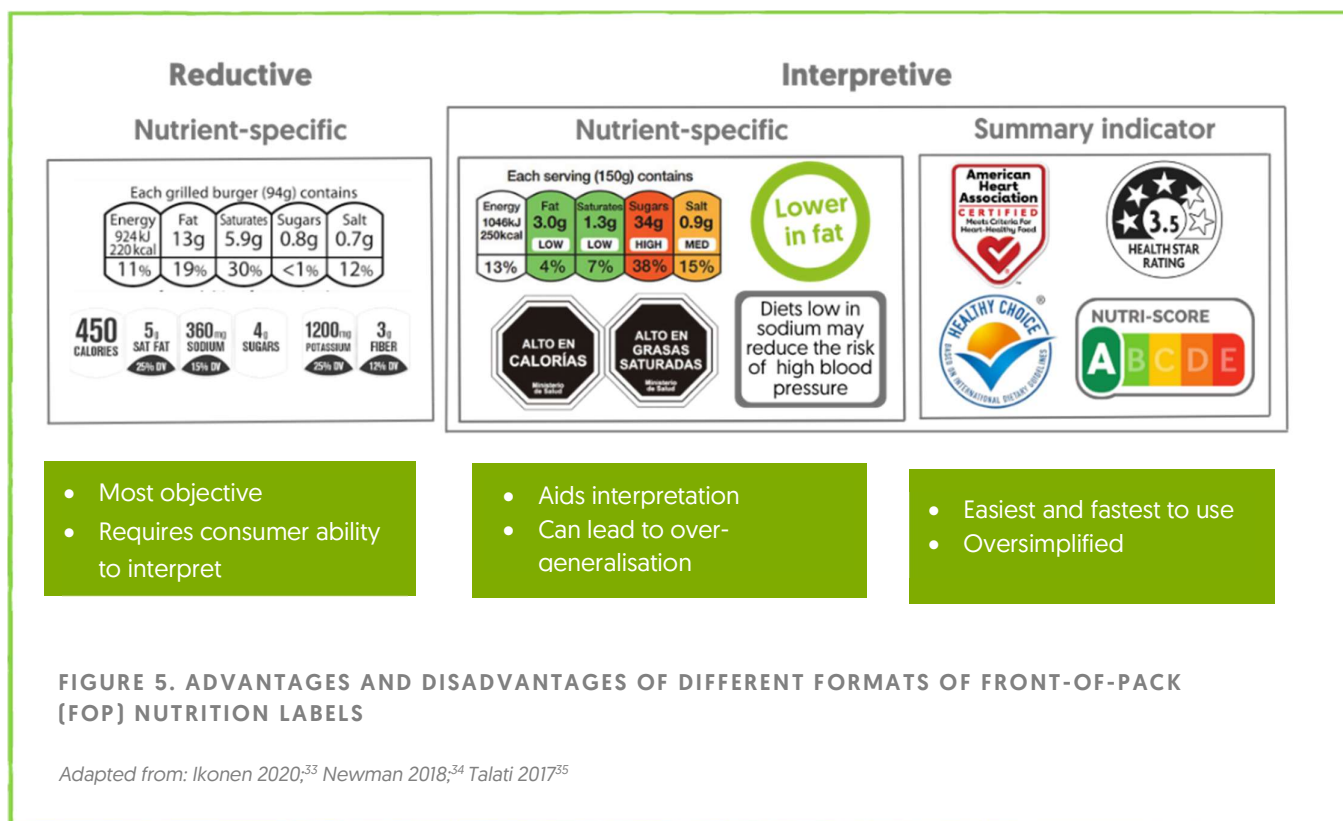
Dr Iina-Maija Ikonen, Lecturer in Marketing from the University of Bath, explored the opportunities from “point of purchase” information on food products for influencing and supporting consumers in following healthy and environmentally sustainable diets.

A variety of formats for providing front-of-pack (FOP) food labelling is in use worldwide including both voluntary and mandatory approaches, but use continues to be controversial.

Many countries are struggling to find the best method to implement FOP labelling for their

populations and it **remains unclear which is the best method with a trade-off between ease of use and detail provided.**

“**Reductive**” FOP labels are the most objective format but offer little or no degree of context and meaning of the information for the consumer. “**Interpretive**” FOP labels add context and meaning either on specific nutrients or as an overall summary for a food product (usually relating to health) but can lead to oversimplification of the nutrient science and interpretation for individual needs.³³⁻³⁵ [See figure 5]



To date, **limited research** has been carried out to assess individual responses in the use and **effectiveness of FOP labelling**, but findings suggest:

- Individual variations in motivation, knowledge and goals have some influence on effectiveness with consumers using health as a driver better able to identify suitable options³²
- Consumers are generally better able to identify healthier options when FOP labels are present, but the effect on choice are much smaller. Positive logos and warning labels help consumers choose between options within food categories^{36,37}
- Existing expectations on the healthfulness of a food influence the interpretation of nutrition information. For example, the same information on a cereal or nut bar may be interpreted more favourably than that on a biscuit or cake³⁸

Despite these behavioural influences, **research has shown minimal effects on actual consumption of foods**. For FOP labelling to be effective there needs to be not only a focus on increasing consumer health motivation but also **a consideration of other drivers for food choice**.³⁹⁻⁴¹ [See figure 6]

For instance, there is a **risk that food labelling focussing on health alone** may inadvertently lead **consumers to believe these foods will be less tasty or more expensive** even where this is not objectively true. A range of other aspects of healthy food may also need to be promoted to effectively influence choice. FOP labelling relating to sustainability such as local production or efficient use of imperfect quality fruit and vegetables for reducing food waste may also be of value. However, as for FOP nutrition labelling, these will be most effective if they relate to the drivers and motivation of consumers.



Key points

- The effects of FOP nutrition labels used at the point of purchase on actual food consumption appear to be small and there is no current consensus on the best way to implement them
- FOP labelling does however have the potential to help consumers choose healthy and environmentally sustainable diets, especially where attitudes and beliefs around these aspects are key drivers for food choice
- Increasing health motivation is important as a driver for food choice, but it is important to consider the influence of other drivers such as taste and affordability of food



FRONT-OF-PACK NUTRITION LABELLING & HEALTHY FOOD CHOICE

DR IINA-MAIJA IKONEN, ASSISTANT PROF. IN MARKETING

Simple nutrition labelling is included on the front of pack to ensure that consumers can make informed decisions more quickly. These include health claims, as well as Nutri-Score labelling.



Energy	Fat	Saturated	Sugars	Salt
1046kJ 250kcal	3.0g	1.3g	34g	0.9g
13%	6%	7%	38%	15%

NUTRITION LABELLING AS A BARRIER TO PURCHASE

The main driver of food choice is taste. There is a common belief that healthy food is not as tasty as unhealthy food.



The idea that if we tell consumers the food is healthy, they will buy it is wrong. Some consumers will interpret this to mean the product is less tasty, making them less likely to buy it.

A study found that using labels that emphasise the taste of healthier products drives consumers to choose more of these foods.



CONSUMERS ALSO HAVE A PERCEPTION THAT HEALTHIER FOODS COST MORE.

By highlighting the health benefits associated with certain products, we may be inadvertently telling some consumers that this product may be too expensive.



TYPES OF NUTRITION LABELLING

REDUCTIVE: Only gives information from the nutrition facts panel e.g. amount of salt, sugar, fat.

NUTRIENT SPECIFIC: Giving information about individual specific nutrients.

INTERPRETIVE: Summarises information from the nutrition facts panel and includes more information on if that is a 'good' or 'bad' thing.

SUMMARY INDICATOR: Giving information about the overall product, i.e. is the product considered healthy in general?



IT'S NOT CLEAR WHETHER ANY OF THESE TYPES OF NUTRITION LABELS ARE BETTER THAN ANOTHER!

Food labelling and packaging is highly effective. We should implement front-of-pack nutrition labelling but telling consumers what products are healthy is not enough, we need to increase the drive and motivation to eat healthier products by promoting other aspects such as taste and affordability.

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COMMUNICATING THE ENVIRONMENTAL IMPACT OF RECIPES: THE POTENTIAL OF APPS AND ECOLABELS

Dr Christian Reynolds, Senior Lecturer in the Centre for Food Policy at City University, London, continued the theme of consumer-facing information around sustainability.

We now have a wealth of open access ingredient level data for the impact of foods on the environment.^{8,42} In optimisation studies such as EAT Lancet,¹⁵ dietary guidance is given on food level e.g., increasing fruit and vegetables and decreasing animal proteins. However, in practice consumers typically think about food in terms of meals and recipes. **Consideration of the environmental impacts of how we cook food is important and information on sustainable recipes may be a way to help and empower practical consumer behaviour change.**^{43,44}

Dr Reynolds and colleagues, in research supported by the Alpro Foundation, are using a new technology to calculate **environmental impacts of digital recipes** using ingredient level data to create practical tools for consumer communication.⁴⁴⁻⁴⁶

Analysis of recipes shows unsurprisingly that **plant-based recipes have a lower environmental footprint** than those with animal products [e.g., tofu

vs beef recipes]. However, generalisations become more difficult within more complex food categories such as salads and cakes depending on the type of ingredients used.

As with FOP food labelling, difficulties arise in considering how best to communicate this information to consumers. One solution is to communicate carbon footprint per serving as a percentage of the daily amount of GHG emissions.

Another way to cut through this complexity may be via the use of environmental performance certification and labelling such as ecolabels. In much the same way as FOP labelling, multiple formats are possible using a range of designs and scoring systems.⁴⁷

There is a clear need to develop reference values for the classification of sustainability to enable standardised ecolabelling and to expand tools to include other metrics such as water use and biodiversity impacts. Ecolabels could be used to highlight sustainable recipes in multiple consumer settings including menus in hospitality alongside FOP and allergen labelling.

Key points

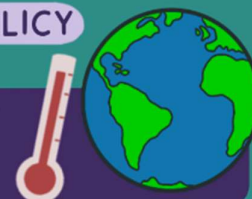
- When planning diets consumers think in terms of recipes and portions rather than individual foods
- It is now possible to calculate the environmental impacts of recipes using a variety of apps and technological solutions but communicating this information to the public is challenging
- Ecolabels could have a great potential to be used in dietary advice to shift eating patterns but finding the best method of communicating this complex information needs to be addressed in future research



COMMUNICATING THE ENVIRONMENTAL IMPACT OF RECIPES: APPS & ECOLABELS

DR CHRISTIAN REYNOLDS, CENTRE FOR FOOD POLICY

We are heading towards a warming food system. The two biggest reductions we can make to agricultural greenhouse gas emissions (GHGE) are through reducing food loss and waste, and shifting to more sustainable diets.



CHANGING THE WAY WE EAT

Whilst there are lots of other consumer and food system related solutions, the key action we can take now as individuals is to change the way we eat!



COOKING METHODS MATTER.

How we cook foods can make up the majority of the environmental impact of that food, so it's important to understand the environmental footprint a recipe may have as a whole.



However, current sustainable dietary guidance is given as ingredients and there is limited translation into sustainable recipes.



Ecolabelling is a voluntary method of environmental performance certification and labelling. There are many different types, from carbon labelling to fairtrade.



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Dr Reynolds and colleagues have worked to develop a tool, **FOODEX2**, that can process recipe data from popular recipe websites to provide a nutrition and environmental impact analysis.



THE TOOL COMBINES DATA FROM:

- + USDA FOOD DATA CENTRAL
- + MCCANCE AND WIDDOWSON'S COMPOSITION OF FOODS
- + WITH ENVIRONMENTAL DATA FROM POORE AND NEMECEK (2018)

In the future there are possibilities to link the FoodEx2 tool to other food classification systems such as NOVA and NutriScore.

DOES ECOLABELLING WORK?

!! The problem with communicating environmental data accurately to consumers is that raw figures on environmental measures such as carbon, water and biodiversity are hard to categorise into 'good' and 'bad'.

One suggested solution is to communicate it as a % of daily amount, similar to nutrient recommendations.



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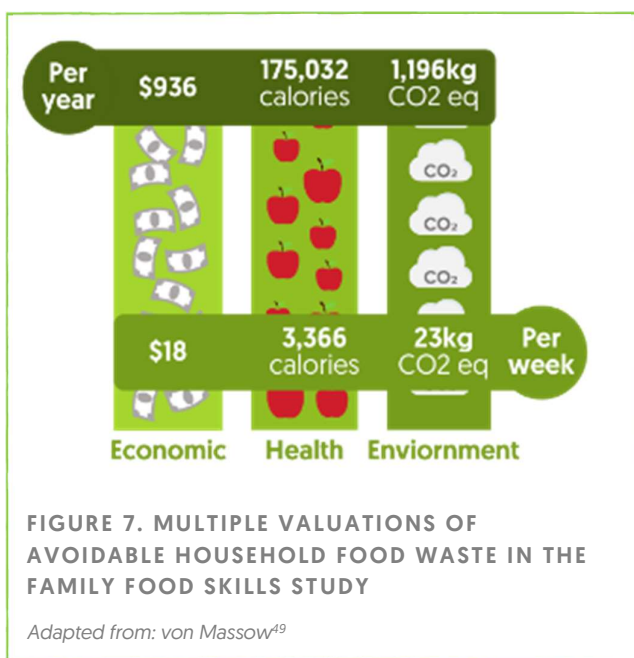
INFOGRAPHIC SUMMARISING THE SPEAKER'S PRESENTATION.
PRODUCED BY MYNUTRIWEB 2021.

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PROMOTING SUSTAINABLE HEALTHY EATING AMONG FAMILIES: FOCUS ON FOOD WASTE

In the final session **Dr Jess Haines**, Professor of Applied Nutrition at the University of Guelph, Canada, returned to the important environmental consideration of food waste. She shared the stark statistic that **around 30% of avoidable food waste in the United States occurs at the household level**.⁴⁸

She presented preliminary findings from 100 families enrolled in the Family Food Skills Study.⁴⁹ Families were found to have an average of 3kg of avoidable food waste per week with associated economic, nutritional and environmental impacts. (See figure 7).



Dr Haines presented interesting data showing the **most wasted foods were fruits and vegetables**

followed by **bread** and **cereals** with lower levels of animal foods being wasted. [See figure 8]. As with FOP food labelling, difficulties arise in considering how best to communicate this information to consumers. One solution is to communicate carbon footprint per serving as a percentage of the daily amount of GHG emissions.

She showed how consumer-level approaches involving the whole family can be effective in reducing household food waste.⁵⁰ Her team partnered with Love Food Hate Waste Canada (<https://lovefoodhatewaste.ca/>) to create and implement a home-based family-based intervention covering **3 key behaviours**:

1. Meal planning including shopping with a list and portion control
2. Efficient food storage
3. Using leftovers and understanding date labels

The intervention included the provision of **practical tools** such as **recipes, cooking classes**, a vegetable scrubber to reduce peelings and an “**eat first container**” to help efficient cycling of food by date.⁵⁰

This food waste intervention proved **acceptable and popular with families, increased awareness** of key issues and **led to significant reductions in waste**, especially in fruit and vegetables. Future work will look at whether this type of intervention can be applied to larger population groups and explore the degree to which behaviour change is maintained after the intervention.

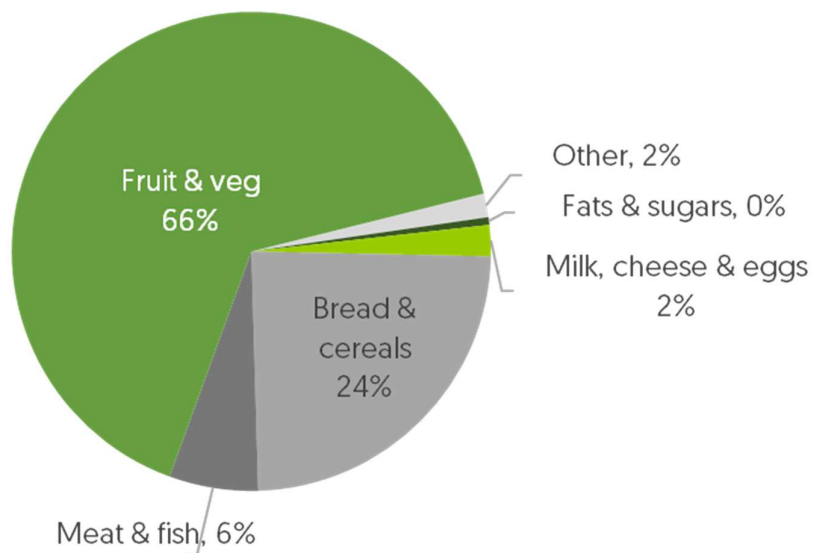


FIGURE 8. PROPORTIONS OF AVOIDABLE HOUSEHOLD FOOD WASTE BY CATEGORY IN THE FAMILY FOOD SKILLS STUDY

Adapted from: UN Environmental Programme⁴⁸

Key points

- Food waste is an important consideration for healthier and more sustainable diets. In many developed countries, a significant proportion of avoidable food waste occurs at household level: in the United States this is around 30%
- Interventions dealing with the planning, storage and preparation of food have potential to substantially reduce household food waste

Further information about this research, including the recipe book used, can be found at: www.guelphfamilyhealthstudy.com



PROMOTING SUSTAINABLE HEALTHY EATING AMONG FAMILIES: FOOD WASTE

DR JESS HAINES, PROFESSOR OF APPLIED NUTRITION

1/3

**OF THE FOOD
PRODUCED IN THE
WORLD IS WASTED**

In low-income countries, the majority of food waste happens at the production level, but in high income countries the majority of food is wasted at the household level. Households in high income countries account for approximately **30%** of food waste.

WHAT IS HOUSEHOLD FOOD WASTE?

AVOIDABLE FOOD WASTE: rotten fruit & veg, out-of-date meat, dairy, fish.

UNAVOIDABLE FOOD WASTE: Egg shells, coffee grinds, pepper stems.

Research conducted by Dr Jess Haines' study group found that families in Guelph, Canada waste around **3KG** of avoidable food waste each week, which translates to around **18USD** and **23KG** of CO₂ per week. That's **1,196 KG** of CO₂ per year, equivalent to a quarter of the emissions from driving a car!

By wasting good food, families are missing out on valuable calories and nutrients. This study found that **65.5%** of food wasted comes from fruits and vegetables.

alpro foundation
knowledge in plant-based nutrition

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ROCK WHAT YOU'VE GOT

To help families utilise the food they are buying better, the researchers developed the '**ROCK WHAT YOU'VE GOT**' Cookbook.

This free resource includes lots of helpful pointers to help families to reduce food waste, as well as simple family recipes including 2-in-1 recipes, fridge clean out recipes and use it up recipes using whole vegetables.

DID IT WORK?

A FEASIBILITY STUDY OF THE RESOURCE FOUND:

- ✓ **DECREASE IN AVOIDABLE FRUIT AND VEGETABLE WASTE**
- ✓ **INCREASE IN PARENT'S CONFIDENCE IN DECREASING FOOD WASTE**
- ✓ **INCREASE IN CHILD'S KNOWLEDGE ABOUT 'BEST BEFORE' DATES**
- ✓ **INCREASE IN FAMILIES SERVING VEGETABLES**

FREE RESOURCES FROM THE STUDY:
GUELPHFAMILYHEALTHSTUDY.COM

MyNutriWeb

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CONCLUSION

In their concluding remarks the chairs thanked the speakers for the wealth of innovative and evidence-based take home messages. They had shown the **value of collaboration between different organisations and branches of science** as well as the **importance of practical translation of messages around food purchasing, cooking and taste to reach those population groups most resistant to change**.

Although some shifts in dietary behaviour have been made, the chairs emphasised the consistent message from many of the speakers that **not only do diets need to shift significantly more towards healthful plant-based foods, but there are many challenges to overcome for consumers**. For individuals to make the shift, focusing on **taste cues** and providing **simple and easy solutions** is paramount.

Of particular concern for the chairs, was the **power of (social) media to influence food choices and excess intakes** especially with regard to children and adolescents. With consumers unable to distinguish between the different quality of the sources of information, it is important for credible communicators to be more active in the media space.

The chairs ended with **a call to action to all professionals to help drive the shift** in individuals' dietary behaviour as one of the most effective and accessible actions to influence both health and the environment.

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