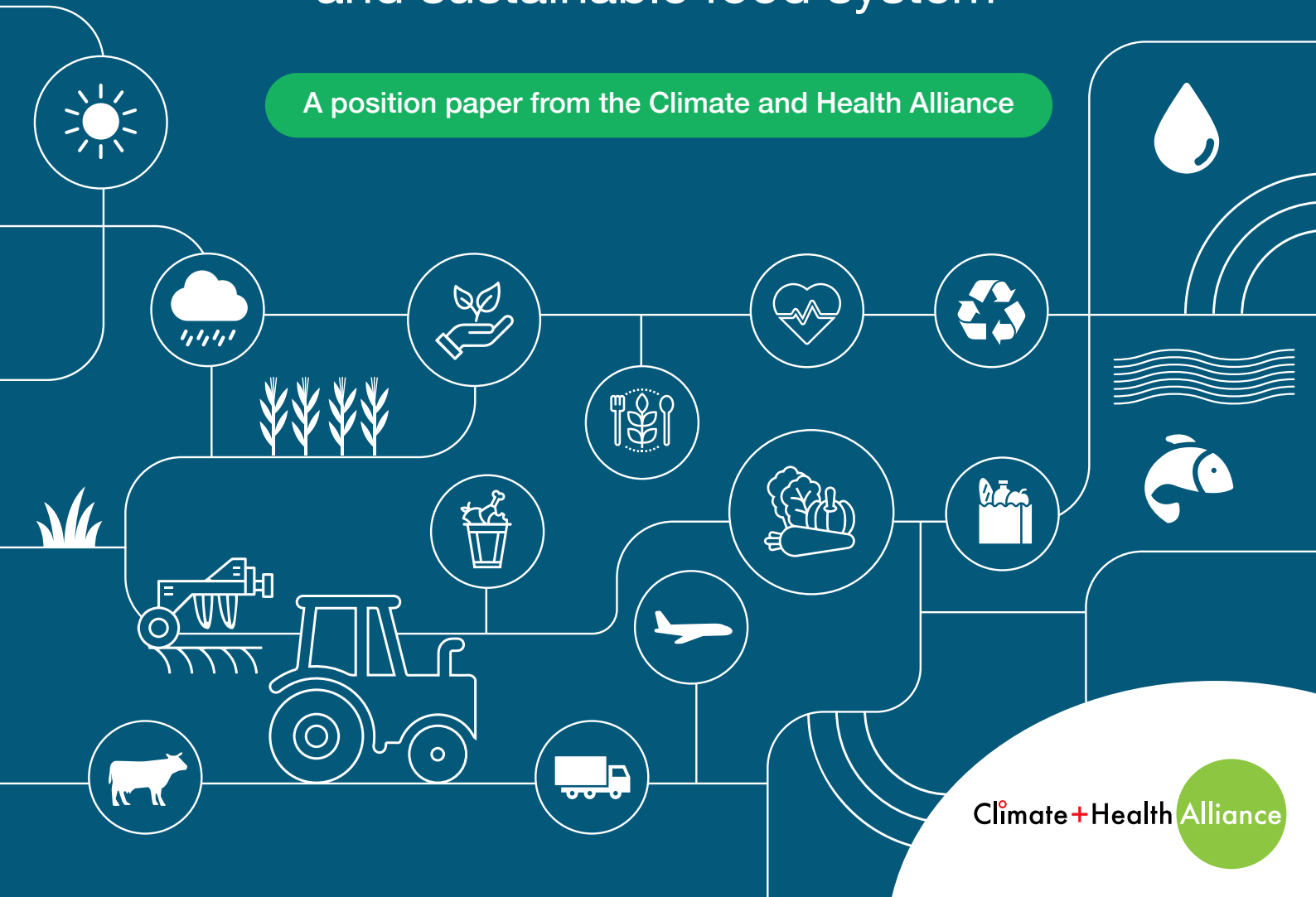


FIXING FOOD TOGETHER



Transitioning **Ireland** to a healthy
and sustainable food system

A position paper from the Climate and Health Alliance



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Fixing Food Together

Transitioning Ireland to a healthy and
sustainable food system

A position paper from the Climate and Health Alliance

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About the Climate and Health Alliance

Ireland has a proud record in international development and advocacy on a wide range of global issues. In May 2019, Ireland became the second country in the world to declare a climate and biodiversity emergency, but if we are to become an effective and credible voice for change globally, we must lead from the front and take bold and timely action. However, to date, the debate around the climate crisis has focused on the environmental destruction being wrought, with little public discourse about the significant links between climate change and health.

The Climate and Health Alliance was established in the midst of this unprecedented crisis that requires new thinking and major shifts in how we organise our lives and impact on our environment. The Climate and Health Alliance is made up of a range of medical, health and social care professional organisations, non-governmental organisations, public health organisations and advocacy groups from the island of Ireland.

Objectives of the Climate and Health Alliance

- Raise awareness and understanding among the public, health professionals and policy makers of the link between health and climate change and the health benefits of action.
- Provide a strong voice for professionals and organisations to seek policy responses to the climate crisis that protect and promote public health, mitigate the worst health impacts of global warming, and ensure that the climate crisis does not deepen social and health inequalities.
- Advocate for measures that will minimise the carbon footprint of the Irish health service and other sectors.
- Advocate that Ireland plays a genuine leadership role in the quest for effective global action.

Specifically, we use our medical, healthcare and public health expertise to seek action to address and mitigate the impact of air pollution and adverse weather events, food systems (including farming and food production), transport systems (including public transport and active travel) and the built environment.

Members of the Climate and Health Alliance

Association for Health Promotion Ireland	Irish Society of Chartered Physiotherapists
Asthma Society of Ireland	National Children’s Hospital Ireland
British Heart Foundation Northern Ireland	Royal College of Physicians of Ireland
Irish Cancer Society	Royal College of Surgeons in Ireland
Irish Doctors for the Environment	Stroke Association Northern Ireland
Irish College of General Practitioners	University College Dublin – School of Public Health, Physiotherapy and Sports Science
Irish Gerontological Society	University College Cork – School of Public Health
Irish Global Health Network	
Irish Heart Foundation	
Irish Medical Organisation	
Irish Nutrition and Dietetic Institute	



Find out more

For any questions or queries about this position paper from the Climate and Health Alliance, or to discuss it further, please get in touch: info@climateandhealthalliance.ie

For further information, go to: www.climateandhealthalliance.wordpress.com

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Executive Summary

Vision of this paper

The Climate and Health Alliance believes that every person in Ireland, irrespective of the place or socioeconomic circumstances they live in, has the right to a life free from avoidable death from malnutrition in all its forms and from diet-related chronic diseases caused by their food environment. We believe that food systems must work with nature and should not contribute to further degradation of ecosystems and biodiversity collapse.

The purpose of this paper, therefore, is to:

-  Demonstrate the need for a food system transition for the benefit of human health, planetary health and equality;
 -  Discuss the six major challenge areas that must be addressed to adequately transform our food system;
 -  Outline the Climate and Health Alliance's recommendations for a healthy, sustainable diet in the Irish context;
 -  Outline the Climate and Health Alliance's recommended policies and actions for a healthy, sustainable food system in Ireland.
-

The food system we have today was created with the primary aim of avoiding mass starvation in a booming global population. Luckily for us, it succeeded in generating more than enough food to feed us all, but along the way it also created new problems. It has caused lives to be cut short and greater disability due to diet-related chronic diseases, including cardiovascular disease, type two diabetes and obesity. It has resulted in devastating climate change, pollution, biodiversity collapse and nature loss. It perpetuates inequality and food insecurity, leaving the poorest of our society to suffer the worst health and environmental effects. This triple burden of pandemics - obesity, climate change and malnutrition - are all interrelated in a global 'syndemic' that shares common underlying societal and political drivers, for example, powerful commercial engineering of food overconsumption, weak political governance systems and unchallenged pursuit of economic growth.

Taking a food systems approach, the Climate and Health Alliance explores Ireland's **six challenge areas** that must be addressed if we want to move towards a more sustainable food system.



Area 1

Ending the **junk food cycle**



Area 2

Promoting transition to a more **plant-based diet**



Area 3

Harnessing the power of **international and national guidelines**



Area 4

Reducing **food waste**



Area 5

Improving **agricultural practices and land use**



Area 6

Using a policy approach to affect **behaviour change**

Sustainable diets are diets that have low environmental impacts and contribute to food and nutrition security and to healthy life for present and future generations. They are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable, nutritionally adequate, safe and healthy while optimising natural and human resources. In this paper, the Climate and Health Alliance presents two sets of recommendations. The first set serves to inform individuals who wish to make individual-level dietary changes towards a healthier, more sustainable diet, and also to inform future updates to the Irish food-based dietary guidelines.

The Climate and Health Alliance describes a healthy sustainable Irish diet as having the following characteristics:

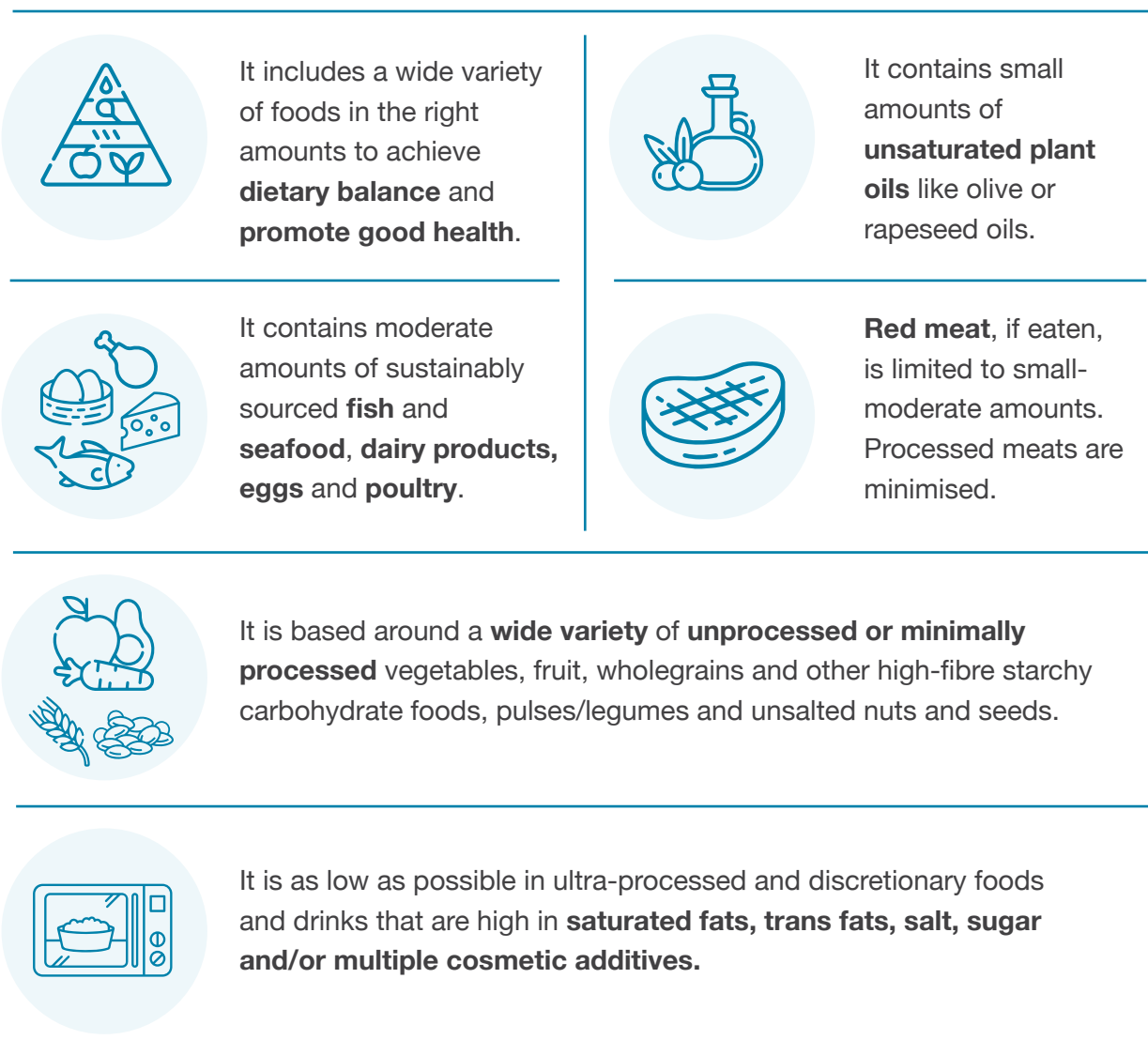


































Figure 1 summarises the Climate and Health Alliance’s recommendations for a healthy, sustainable diet for the general population in Ireland.

Figure 1: Climate and Health Alliance’s recommendations for a healthy, sustainable diet for the general population in Ireland

	 Avoid	 Reduce	 Moderate	 Increase
Breastfeeding		If possible, exclusively breastfeed for at least six months. Continue breastfeeding until two years and beyond, combined with appropriate complementary feeding.		
Energy balance		Adjust energy intake and expenditure to achieve dietary and energy balance and promote good health.		
Foods high in saturated/trans fat, sugar and salt		Minimise consumption of ultra-processed foods and drinks high in saturated and trans fats, sugar or salt. Minimise the addition of saturated and trans fats, sugar or salt to meals.		
Plant proteins		Diversify protein intake by choosing more beans, peas, lentils, soya products, mycoprotein, unsalted nuts and seeds, and less meat and poultry overall.		
Red meat and processed meat		Red and processed meat Reduce red and processed meat, if eaten, to 350-500g cooked weight per person per week, especially high consumers (>90g per day). If there is a tendency towards eating large portion sizes, i.e., more than 50-70g cooked weight per person per day, include red and processed meat fewer times per week.		Processed meat Minimise processed meat.
Fish		Consume a wide variety of fish and seafood from sustainable sources only. Include a 140g portion twice a week, one of which should be oily fish.		
Dairy		Moderate dairy consumption to consume three portions of milk, yogurt or cheese every day, choosing unsweetened options. Minimise higher-fat, higher-sugar options like butter, cream, ice-cream and flavoured milks. If choosing dairy alternatives, read the label and choose unsweetened, calcium-fortified options that are a source of protein.		

Starchy carbohydrate foods		Choose wholegrains, minimally processed potatoes and other unrefined grains.
Fruit and vegetables		Eat 5-7 x 80g portions of a variety of fruit and vegetables daily. If possible, choose seasonal, locally produced options with minimal packaging.
		Minimise air freighted, pre-packed and ready-prepared options, except where their use helps to reduce food waste from perishable fruit and vegetables, such as frozen or tinned options.
Hydration		Choose tap water or unsweetened tea or coffee over sugar-sweetened beverages.
Food waste		Reduce food waste, especially from perishable foods.
		Recycle as much food waste as possible.

In addition to individual-level recommendations, the Climate and Health Alliance also makes recommendations for policies and actions because targeted policies and structural changes are significantly more effective in achieving wider system changes. Recommended policies and actions are presented under the following seven areas to orientate the Irish food system towards a healthier and more sustainable diet for all (see page 67).

- | | |
|---|---|
| <p>1.  National guidelines </p> | <p>5.  Agricultural actions </p> |
| <p>2.  Regulations and laws </p> | <p>6.  Public institution actions </p> |
| <p>3.  Research, processing and technology actions </p> | <p>7.  Education and public awareness actions </p> |
| <p>4.  Financial actions </p> | <p>Read our recommendations here</p> |

▶ Introduction

We live in a remarkable world. Planet Earth is full of diverse wonders that nourish us in many ways. It is the place where we live out our lives, work, eat, love, play; in short, it is the place we call home. And it is our only home.



Introduction

We live in a remarkable world. Planet Earth is full of diverse wonders that nourish us in many ways. It is the place where we live out our lives, work, eat, love, play; in short, it is the place we call home. And it is our only home. However, consumptive patterns of living have resulted in the single greatest global health threat of the 21st century: climate change.¹ This has resulted in the crossing of several planetary boundaries, tipping points of ecosystems and the global crash in biodiversity that we are already witnessing.²

The time has passed for apathy and inaction. The evidence that something catastrophic has begun is overwhelming, and scientific consensus now informs us that we have a limited window for real action to reduce emissions and ensure that current and future generations can live sustainably in a low-carbon and climate-resilient world.³ To keep global warming within the critical threshold of 1.5°C according to the Intergovernmental Panel on Climate Change (IPCC), global greenhouse gas emissions (GHG) must be reduced by almost half by 2030. In the words of one of the chairpersons of the IPCC report, ‘It’s now or never’.⁴

An important aspect of tackling climate change is the transition to a more sustainable food system, which represents the possibility of a triple win for health:

		
<p>better health for people</p>	<p>better health for the economy, and</p>	<p>better health for the planet.</p>



1.5°C

GHG
global
greenhouse
emissions



50%

To keep global warming within the critical threshold of 1.5°C according to the IPCC, global greenhouse gas emissions must be reduced by almost half by 2030. In the words of one of the chairpersons of the IPCC report,

‘It’s now or never.’





However, as we will outline in this paper, many of the past efforts to create a healthier, more sustainable food system in Ireland, although well-intentioned, have been uncoordinated, underfunded, influenced by vested interests, made high demands on individual agency (relying on individuals to change their behaviour) rather than shaping external influences, or have simply been not ambitious enough to avert the worst consequences of climate change within this limited window.

Food systems are immensely complex, and as the title of this paper alludes to, we must work together to achieve any meaningful change to food systems. Every citizen has an important specific contribution to make, from primary producers of food like farmers and fishers, manufacturers, retailers and providers, to the health sector, the education sector, planners, local authorities, communities, individuals and many more. However, the big drivers of poor human and planetary health can only be addressed through national policies that are free from vested interests and focused on enabling a healthy, environmentally friendly food environment. This will support people to make healthy sustainable food choices and protect the most vulnerable groups from a proliferation of cheap and intensely marketed energy dense food.

Vision of this paper

The Climate and Health Alliance believes that every person in Ireland, irrespective of the place or socioeconomic circumstances they live in, has the right to a life free from avoidable death from malnutrition in all its forms and from diet-related chronic diseases caused by their food environment. We believe that food systems must work with nature and should not contribute to further degradation of ecosystems and biodiversity collapse.

The purpose of this paper, therefore, is to:

-  Demonstrate the need for a food system transition for the benefit of human health, planetary health and equality;
-  Discuss the six major challenge areas that must be addressed to adequately transform our food system;
-  Outline the Climate and Health Alliance's recommendations for a healthy, sustainable diet in the Irish context;
-  Outline the Climate and Health Alliance's recommended policies and actions for a healthy, sustainable food system in Ireland.

01

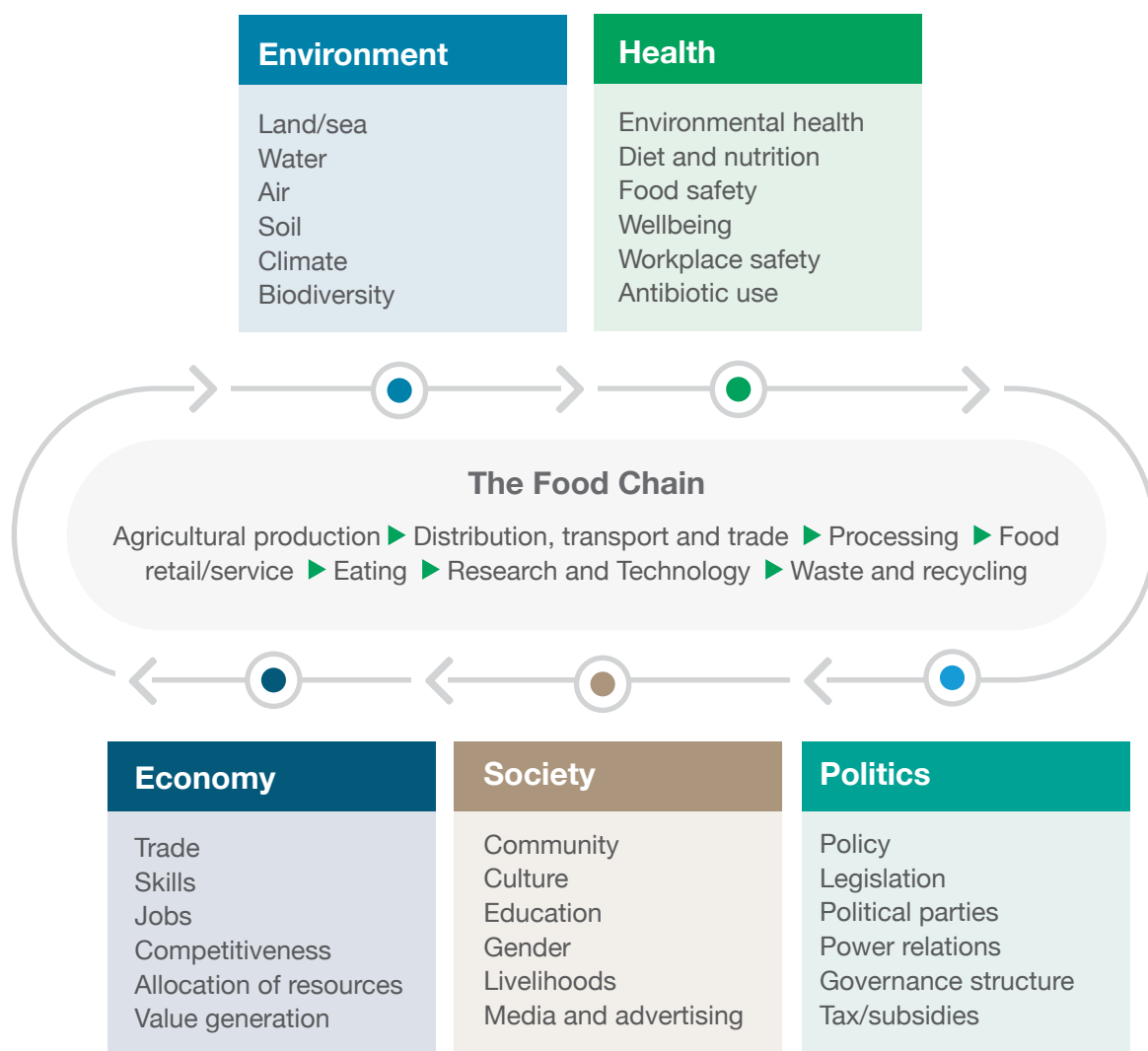
The need for a food
system transition

The need for a food system transition

The story of the global food system

To understand the relationship between the food we eat, our health and the health of the planet, we need to first recognise that both the problems we have and solutions we need lie in our food system. First things first: what is a food system? Our food system is an interconnected system of everything and everybody that influences, and is influenced by, the activities involved in bringing food from farm to fork and beyond.⁵ As visualised in Figure 2, a food system is a complex web of the activities and actors that play a part in growing, processing, transporting, supplying, marketing and, ultimately, eating food. Food systems influence diets by determining what kinds of foods are produced. They also influence what foods people want to eat and can access.

Figure 2: The food system



Source: Adapted from Parsons et al., 2019⁶

To understand the food system we have today, it is important to understand how and why it came to be. The year was 1945 and World War II was coming to a close. Despite the bloodshed of the war, the human population had doubled in the previous 150 years from one billion to two and a half billion and was predicted to grow to a staggering nine billion within the following 100 years. As a result, mass starvation looked inevitable. Enter Norman Borlaug, an American botanist, who, seeing such hunger and desperation around him, endeavoured to create a new strain of more productive, resilient wheat. He was successful, and his developments were applied in many countries and with other grains like rice and corn. His efforts, combined with new irrigation, fertiliser and pesticide developments ushered in a new era of intensive, productive farming called the ‘Green Revolution’ that enabled farmers to save billions of people from starvation.



The Green Revolution



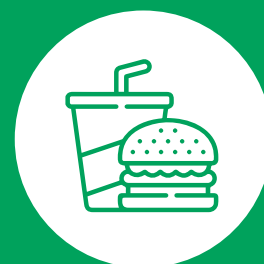
Norman Borlaug

Our modern-day food system is a marvel of human ingenuity, producing more than enough calories, albeit unevenly distributed, to feed all 8 billion of us. However, solving one problem often creates others. Food became more abundant, and companies found more innovative ways to process, package and market excess food through cheap products high in the sugar, fat and salt that humans find hard to resist. The food system we created can feed the world but has also made us heavier and sicker, it destroys wildlife, pollutes our rivers and air and produces 23-42% of our greenhouse gas (GHG) emissions.⁷ GHGs include several different gases, mainly carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), all of which contribute to climate change in different ways. As we now confront the challenge of feeding a population of 10 billion people on the planet by 2050, the message is clear – we need to rethink our food system to feed the world in a healthy, safe, equitable way that also protects our climate, biodiversity and environment.

The food system we created can feed the world but has also made us heavier and sicker, it destroys wildlife, pollutes our rivers and air and produces

23-42%

of our greenhouse gas (GHG) emissions.



How is Ireland’s food system harming our health?

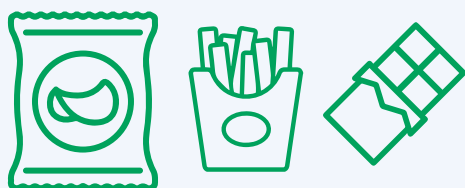
The typical Irish dietary pattern is making many of us sick. The findings of many nationally representative nutrition surveys over the past 25 years – the National Adult Nutrition Survey⁸ and the Surveys of Lifestyle and Attitudes on Nutrition (SLÁN) 1998, 2002 and 2007⁹– show that the average diet in Ireland is based mainly on potatoes, bread, meat and dairy products. On average, we under-consume fruit, vegetables, wholegrains, legumes, nuts and seafood, and over-consume energy (calories), red and processed meats, sugar, salt and fat.

This has resulted in an ‘overconsumption-overnutrition’ paradox, a detrimental dietary pattern largely driven by the increased consumption of ultra-processed foods that are typically low in fibre and important nutrients but high in saturated or trans fats, sugar and salt. According to the 2021 Healthy Ireland Survey, over a third (35%) of participants reported that they eat two or more unhealthy snack foods every day, while only a third (34%) of participants reported that they eat the recommended five to seven portions of fruit and vegetables every day.¹⁰ According to the 2019 Healthy Ireland Survey, about three in ten people drink sugar-sweetened beverages at least once a week, with younger people and males more likely to drink them every day.¹¹ High intakes among children are particularly worrying, as they are associated with weight gain, obesity, type two diabetes, heart disease, kidney diseases, tooth decay and more.¹²

According to the Global Burden of Disease survey (2017), poor diet is one of the leading risk factors for death, disability and chronic disease worldwide.¹³ Irish trends are no different. As demonstrated in Figure 3, 11 of the top 15 risk factors for death and disability in Ireland are linked with a poor diet.¹³

1 in 3

Irish people eat two or more unhealthy snack foods every day.



1 in 3

Irish people eat the recommended 5-7 portions of fruit and vegetables every day.

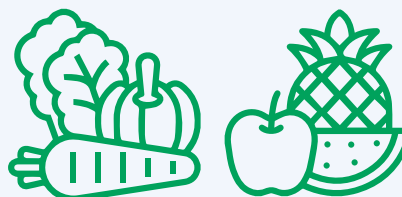


Figure 3: Diet contributed to 11 of the top 15 risks contributing to total number of disability-adjusted life-years in Ireland in 2017, all ages combined

Risk factors directly affected by diet	Risk factors not directly affected by diet
<ul style="list-style-type: none"> ✓ High blood pressure ✓ High body mass index ✓ High fasting plasma glucose ✓ High 'bad' cholesterol (low-density lipoprotein) ✓ Impaired kidney function ✓ Low wholegrain intake ✓ High sodium intake ✓ Low fruit intake ✓ Alcohol use ✓ Unsafe water source ✓ Child malnutrition 	<ul style="list-style-type: none"> ✓ Smoking ✓ Ambient particulate matter ✓ Short gestation for birth weight ✓ Low birthweight for gestation

Source: *Global Burden of Disease 2017*¹³

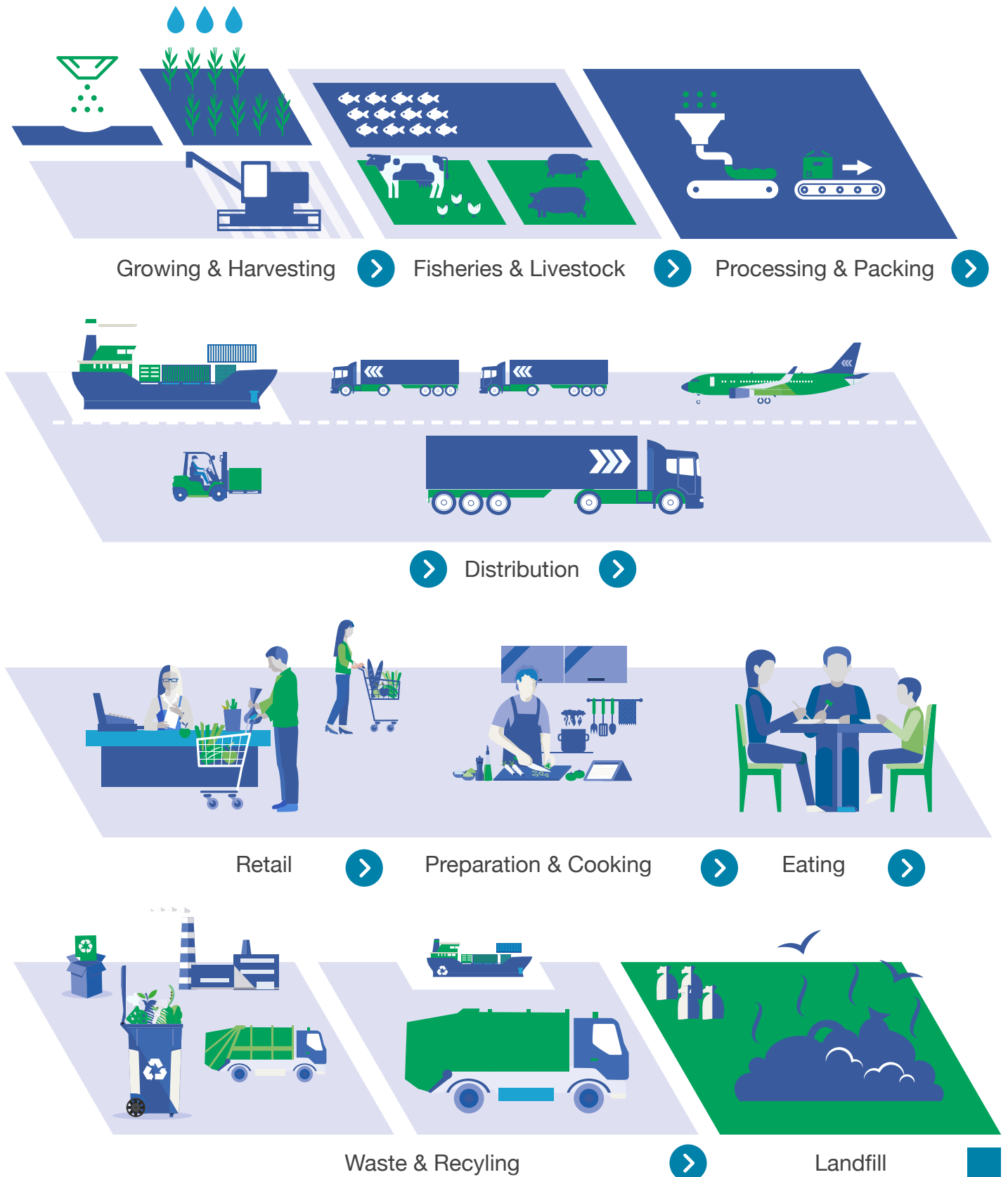
In Ireland, we have high rates of overweight and obesity, affecting six in ten adults and one in five children and young people. Obesity increases the risk of chronic diseases and premature death,¹⁴ but you don't have to have obesity to be made sick by an unhealthy diet. In Ireland, cardiovascular disease (heart disease and stroke) is one of the leading causes of death, accounting for over one in four (26.5%) of all deaths,¹⁵ and one in 15 adults aged 20-79 years is estimated to have diabetes.¹⁶ This high prevalence is particularly regrettable because at least 80% of premature cardiovascular disease (CVD)^{17,18} and type two diabetes^{19, 20, 21} is preventable through lifestyle change alone, in which a healthy diet plays an important role. In addition to the individual suffering it causes, poor diet is also associated with astronomical costs of up to €4.3 billion per year in healthcare, lost productivity and informal care.²²

How is Ireland's food system harming our planet?

The food system we have created is doing terrible damage to our planet, and its effects are becoming clearer, year by hotter year, with deforestation, high GHG emissions, biodiversity loss and pollution, to name just a few. Food production is a leading cause of deforestation, biodiversity loss, deteriorating soil quality and water pollution.²³ Every stage of our food system as depicted in Figure 4, from farming and processing through to food waste, has a major impact on the planet.

Figure 4: From farm to fork to waste

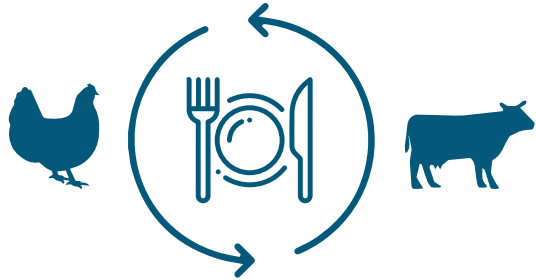
All stages of food production impact on the environment



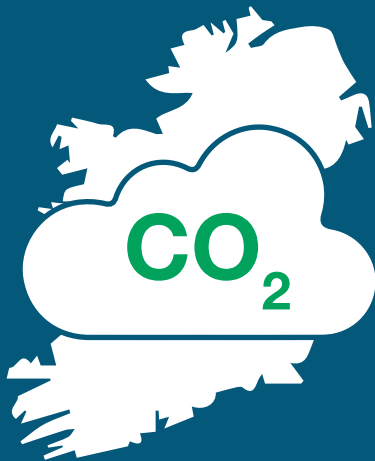
Source: Reproduced from *One Blue Dot* with kind permission of the British Dietetic Association²⁴

Here are examples of the detrimental planetary impacts of our food system:

Climate change



Food systems account for about **23-42% of anthropogenic GHG emissions globally**, which, for context, easily outstrips the 3.5% caused by air travel.^{7, 25}



Agriculture contributes over

37%

of total GHG emissions in Ireland, higher than other EU countries.

This is driven primarily by our livestock-based system, which is mainly oriented towards the agri-food export market.²⁶ Despite efforts to reduce agricultural GHG emissions, they actually increased by three per cent between 2020 and 2021; this change was not due to increased activity as we emerged from the COVID-19 pandemic as the pandemic did not significantly impact agricultural emissions.²⁶



99%
ammonia
emissions in
Ireland

Ireland's agricultural sector accounts for over **99% of ammonia emissions**. The nitrogen in manure and fertilisers is a significant source of nitrogen dioxide.²⁷

Biodiversity



85%
▼

Globally, the wild biomass of mammals has fallen by 85% since the rise of human civilisation.²⁸



Overfishing and destructive fishing practices, including bottom trawling, have impacted on fishing stocks, with 90% of fisheries worldwide now fully exploited and/or overfished.²⁹ The fish and seafood population has fallen by more than a third in the last 50 years, and the marine ecosystem has been badly damaged.^{28,30}

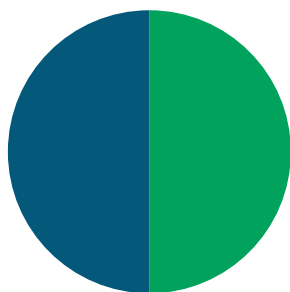


Despite 300,000 species of plants having edible parts, just 20 species account for 90% of the world's food, and just three species – wheat, maize and rice – provide over half, making us vulnerable if any of these crops fail.³¹



In Ireland, 30% of species have an 'inadequate' or 'bad' status. Approximately one third of the 98 wild bee species in Ireland are close to extinction while 60% of birds in Ireland are now on the red or amber conservation lists.³² According to the government's 6th National Report to the Convention on Biological Diversity, these declines are due to changes in land use alongside increasing levels of production from the agriculture sector.³³

Landuse



About 50% of the world's habitable land is used for agriculture.



Meat and dairy farming put a particular extra strain on our land resource, with 77% of all farmlands used to graze farmed animals or grow crops to feed farmed animals, leaving less land for nature and wildlife habitats.³⁴

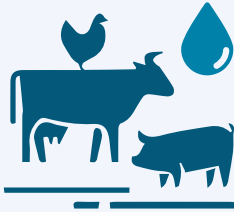
Zoonotic diseases and antibiotic resistance

Globally, the change in land use has been the main cause of emerging infectious diseases.³⁵ Clearing wild areas for agriculture brings the farmed animals closer to wild animals carrying diseases, potentially creating new zoonotic diseases – diseases that jump between species.

Furthermore, intensive farming where farmed animals – particularly pigs and poultry – are housed together in a small area of land to increase product output and reduce the price of meat can lead to the widespread use, and overuse, of antimicrobial drugs.³⁶ Intensive farming does exist in Ireland; as of Spring 2019, there are 120 pig units and 106 poultry units that operate under an industrial emissions licence granted by the Environmental Protection Agency (EPA), i.e., facilities with a capacity greater than (1) 40,000 birds; (2) 2000 production pigs (over 30kg); or (3) 750 sows.³⁷

This, along with antimicrobial overuse in humans, is responsible for most of the antimicrobial resistance worldwide,³⁸ which poses a huge threat to human health. In Ireland, antimicrobial overuse in farmed animals cannot be accurately assessed due to the lack of a standardised antimicrobial data collection system, which has resulted in significant knowledge gaps.³⁹ That being said, sale trends for antibiotics for food-producing animals has held steady at about 90-100 tonnes per year despite an increase in herd sizes since the 2015 lifting of milk quotas, which suggests positive progress regarding antimicrobial use in these animals.⁴⁰

Water use and quality



Food production accounts for **70%** of all human water use.²²



The use of nitrogen-containing fertilisers in farming leads to nitrogen run-offs into rivers, lakes and sea water, and causes excessive plant and algal blooms, a process called eutrophication. These blooms restrict sunlight from penetrating the water, preventing plants from growing, and fish from hunting because they cannot see, therefore causing fish to starve to death. It makes the water more alkaline, so many species can no longer survive. And when algal blooms die, they remove oxygen from the water, creating ‘dead zones’ where marine life can no longer live.

As a result of the increased intensification of the dairy sector in particular, the number of ‘pristine’ rivers in Ireland has fallen from more than 500 in the 1980s to 20.⁴¹

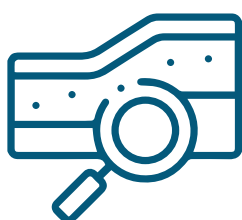


According to the EPA’s 2022 ‘Water Quality in Ireland 2016-2021’ report, Irish water quality is declining at an ‘alarming’ rate, and 63% of waterbodies are now impacted by agricultural activities – a 30% increase in just five years.⁴² The EPA has warned that a disproportionate and unacceptable amount of non-compliance with environmental obligations comes from the agriculture sector.

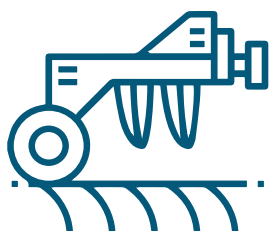
Soil quality



Maintaining soil quality with high organic matter content is important for water and air quality, food production and lowering GHG emissions.



While Irish soils are considered relatively good by international standards, concerns include the decline in organic matter, erosion by wind and water, compaction, loss of soil biodiversity, contamination and landslides.



Soil quality is impacted by the intensification of farming practices – this can be across agriculture, forestry, horticulture and spreading of organic wastes on land, for example, peat extraction, energy crops (crops grown for fuel not food) and ploughing rough or permanent grassland for tillage.

Food waste



One million tonnes of all food produced is spoiled or wasted in Ireland every year. A quarter of this (250,000 tonnes) occurs in the home at an annual cost of €700 per household.⁴³

How is Ireland’s food system perpetuating inequality?

Social determinants of health encompass the broad range of economic, social, environmental and psychological factors that influence health. Social inequalities in health refer to the systematic differences in health that exist between socioeconomic positions, social classes, genders, ethnicity, sexual orientations or other social groups with differentiated access to the resources that determine health and wellbeing. Through this lens, we can see that health inequalities are deeply interconnected with inequalities in education, income, power and status.

The inequalities within, and created by, our food system are stark.⁴⁴⁻⁴⁵ In Ireland, people of lower socioeconomic status – those with a lower educational level and/or lower income level – tend to have less healthy dietary habits.^{9, 46, 47, 48} According to *safe food’s* report on the ‘Minimum Essential Standard of Living (MESL) Healthy Food Basket for 2020’, meeting the cost of the MESL food basket requires a significantly greater proportion of household income for lower-income families than higher-income families.ⁱ Lower-income households may also sacrifice a healthy diet given competing budget demands such as energy bills.⁴⁹

Health inequalities play a significant role in the development of diet-related risk factors for chronic diseases and premature death. For example, people of low socioeconomic status are more likely to suffer and die from diet-related conditions like CVD, cancer and obesity.⁵⁰



Social inequalities in health refer to the systematic differences in health that exist between socioeconomic positions, social classes, genders, ethnicity, sexual orientations or other social groups with differentiated access to the resources that determine health and wellbeing.

ⁱ Requires 23–35% of household income for working-age social welfare dependent households compared to 13–28% for working-age employed households.

The Committee on World Food Security defines ‘food and nutrition security’ as when ‘all people at all times have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life’.⁵¹ Through this definition, we can see that food and nutrition security is not simply about having enough food. In fact, we often paradoxically see obesity and hunger co-exist in households with low food and nutrition security. For example, although plenty of cheap and nutritious food exists, multiple barriers can determine one’s ability to consume this food, such as:



Geographical barriers – living in a food desert, far from the closest nutritious food shop



Transport barriers – restricting access to a nutritious food shop



Skills barriers – restricted ability to turn raw ingredients into something nourishing and tasty due to lack of training in cooking skills



Material barriers – lack of cooker, fridge or freezer restricts ability to safely store and prepare food.

As we will discuss later, ultra-processed foods – typically high in fat, sugar and salt – are normally less expensive than healthier foods⁵² and less processed foods, and usually require little or no preparation, which is important if you are not a confident cook. Furthermore, poverty is stressful, and stress can impact the hormones that regulate our appetite, increasing our hunger and prompting us to desire less healthy foods.⁵³ On top of this, lower socioeconomic areas tend to have more ‘food swamps’, areas with more fast-food outlets and less places to buy fresh ingredients.

Many people have also experienced health impacts because of their own role in the food system. For example, people working in meat processing plants had disproportionate COVID-19-related illnesses and mortality during the pandemic.^{54,55}

Despite producing more than enough food to feed the world, food supply is shared unequally, causing chronic under-nutrition in almost one billion of the world's population, and depriving three billion people of access to a healthy diet.⁴³

In Section 1 we have discussed the need to transform a food system that makes us sick, damages the planet and perpetuates inequalities. However, while our food system has created these problems, it also contains the levers and actors to rectify these problems. Section 2 will identify our challenge areas and the levers that can help us shift towards a healthier and more sustainable food system.

02

What changes do we
need to make?

What changes do we need to make?

Ireland's food system challenge areas



In such a complex and nuanced food system, is it possible to accurately identify **challenge areas specific to Ireland** so that we can concentrate system changes on the areas we can benefit most from addressing?

Yes, it is.

The Food Systems Dashboard⁵⁶ is a publicly available tool that combines data from multiple sources to give users a complete view of food systems. It was developed by the Food and Agricultural Organization of the UN (FAO), Johns Hopkins University and the Global Alliance for Improved Nutrition (GAIN). Using the dashboard, we can compare components of food systems across countries and regions. We can also identify and prioritise ways to sustainably improve diets and nutrition in different food systems. According to the dashboard, Ireland's most significant challenge areas are:⁵⁷

- ✓ high consumption of **ultra-processed foods**
- ✓ high prevalence of **obesity**
- ✓ low supply and intake of pulses like **peas, beans and lentils**
- ✓ high **GHG emissions**
- ✓ high **water consumption** from food and
- ✓ poor **quality of bodies of water**

Obesity is closely linked with excessive intake of energy (calories), in particular those from ultra-processed foods, and high water use and water pollution are typically linked more with meat and dairy food production. Therefore, in Section 4 we will explore the above challenges as well as other important levers to help us shift to a healthier and more sustainable food system.

Transforming a food system means transforming a culture

How we produce, prepare and eat food is often the key expression of culture and a fundamental expression of what it is to be human. When we picture Irish food culture, particular foods and traditions spring to mind. Our long agricultural and food heritage represents our connection to the land and the natural world around us. However, most foods we eat directly conflict with what we typically identify as traditional Irish food culture. As discussed later in Section 4, almost half the food in Irish shopping baskets is ultra-processed⁵⁸ and typically mass-manufactured in global factories. Globalisation of our food system has brought us many benefits, like greater access to a wider variety of foods and access to seasonal foods all year round. However, it also drives major changes in dietary patterns, for example, towards cheap and hyper-palatable ultra-processed foods, and in doing so can undermine and dilute the rich mosaic of food cultures of individual countries and regions. It promotes a productionist method of food production which prioritises economic growth and trade over health, environment, biodiversity, land and animal welfare. It also leads to ever-more-complex food chains that leave us vulnerable to global political, climate change and health impacts. But in the words of the EU's commissioner for agriculture, Janusz Wojciechowski:

‘Agriculture is not an industry, agricultural land is not a factory, and animals are not machines.’⁵⁹

Globalised food systems widen the gap between farm to fork, generating greater disconnection from the land and centring food cultures around fewer, more specialised foods, rather than diversification. A 2021 report from the Endangered Species Coalition, called ‘Justly Biodiverse’, illustrates this point well:

‘Western thought reinforces the idea that, through science and technology, we can pick and choose the parts of the environment we want to protect — adapting nature to our human needs rather than acknowledging that we ourselves are part of the landscape being impacted.’⁶⁰

The report highlights the many ways biodiversity is essential to food sovereignty and food security and a host of other social justice issues.

In contrast to globalisation, food sovereignty is the principle that people have the fundamental right to define their own food and agriculture systems. It means societies can grow and consume food that is economically, ecologically, socially and culturally appropriate to local conditions as opposed to imposed by speculative financial market forces and transnational corporations. Food sovereignty aligns with the UN Sustainable Development Goals (SDGs) to reinforce the need to transition to a healthier, more sustainable and more equitable food future.

This discussion about food culture, food system globalisation and food sovereignty serves to show us that the major underlying challenges that we face in addressing the climate emergency are actually cultural. Who are we as a society? What are our values and priorities? We need to ensure, in line with SDGs, that it is no longer acceptable to work towards economic growth at the expense of social equality, health and the environment. We must consider how environmental and public health scientists and activists can work with other disciplines and groups in the social sciences, arts and humanities as a catalyst for a collective narrative and shared sense of purpose that will be needed at the local, national and global level if we are to confront this existential crisis. We need to realise that we are all in this together.

Lastly, we need to reconnect with the intrinsic and somewhat intangible, but nevertheless sacred, value of nature. As described by Henry Dimbleby, food tsar and author of the UK's National Food Strategy:

‘Being in nature, having access to wild spaces, enriches the human spirit. It raises the quality of human life...The natural world is precious in and of itself.’⁶¹

The same goes for our connection with animals. It is possibly this reason that animal welfare issues are now an important moral and ethical consideration for an increasing segment of our population. We need to expand our circle of compassion and moral concern to include animals, plants and the wider environment.

In short, transforming our food system is not just about avoiding disaster. It is also an opportunity to shift our culture towards creating a better world. We can increase the beauty of our unique Irish landscape, create more woodland, cleaner waters and abundant wildlife. We can leave the Earth in a fairer, healthier shape for our children – and ensure they have longer, healthier lives to enjoy it.

Based on the discussion in this section, the Climate and Health Alliance proposes that the following six priority action areas can transform our food system into a healthier and more sustainable one:

		
<p>Area 1</p>	<p>Area 2</p>	<p>Area 3</p>
<p>Ending the junk food cycle</p>	<p>Promoting transition to a more plant-based diet</p>	<p>Harnessing the power of international and national guidelines</p>
<hr/>		
		
<p>Area 4</p>	<p>Area 5</p>	<p>Area 6</p>
<p>Reducing food waste</p>	<p>Improving agricultural practices and land use</p>	<p>Using a policy approach to affect behaviour change</p>

Section 4 will focus on each of these areas. However, it is important to ground this discussion in a good understanding of what a healthy and environmentally sustainable diet actually means, which is explored now in Section 3.

03

What is a healthy
sustainable diet?

What is a healthy sustainable diet?

Definitions

Exactly what do we mean by the term ‘sustainable diet’? Defining a sustainable diet is difficult because there is currently no consensus, and multiple definitions and criteria frameworks exist.⁶² The UN Food and Agriculture Organisation (FAO) offers the most widely used definition, describing sustainable diets as:

‘...diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. They are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy while optimising natural and human resources.’⁶³

The World Health Organisation (WHO) defines a ‘healthy diet’ as one which protects against malnutrition and non-communicable diseases, such as diabetes, heart disease, stroke and cancer.⁶⁴


Guiding principles


A sustainable diet must, by definition, be nutritionally adequate for the health of a population. It is worth noting that not all healthy eating patterns are guaranteed to be sustainable and a diet that has a low environmental impact is not necessarily nutritionally adequate. For example, sugar has a relatively low environmental burden while perishable air-freighted fruit and vegetables grown out of season can have a high environmental burden due to the high level of wastage, greenhouse energy use, water use and transport fuel used.⁶⁵ However, despite the conflicting evidence, there are clear themes that represent the intersection between sustainable and healthy diets. The FAO and WHO has translated these intersections into guiding principles (Figure 5). All three overarching principles of sustainable diets – health, environment and sociocultural aspects – are equally important.


Figure 5: Guiding principles of sustainable diets⁶⁶





Regarding the Health Aspect: Sustainable Healthy Diets...

1 ...start in life with early initiation of breastfeeding, exclusive breastfeeding until six months of age, and continued **breastfeeding until two years and beyond**, combined with appropriate complementary feeding. 


2 ...are based on a great variety of **unprocessed or minimally processed foods**, balanced across food groups, while restricting highly processed food and drink products. 


3 .. include wholegrains, legumes, nuts and an abundance and variety of fruits and vegetables. 


4 ... can include moderate amounts of **eggs, dairy, poultry and fish**; and small amounts of red meat. 

5 ...include **safe and clean drinking water** as the fluid of choice. 



6 ... are adequate (i.e., reaching but not exceeding needs) in **energy and nutrients for growth and development**, and to meet the needs for an active and healthy life across the lifecycle. 

7 ... are **consistent with WHO guidelines** to reduce the risk of diet-related NCDs, and ensure health and wellbeing for the general population. 

8 ...contain minimal levels, or none if possible, of **pathogens, toxins and other agents** that can cause foodborne disease. 



Regarding the Environmental Aspect: Sustainable Healthy Diets...

9

...maintain **greenhouse gas emissions, water and land use, nitrogen and phosphorous application and chemical pollution** within set targets.



10

...**preserve biodiversity**, including that of crops, livestock, forest-derived foods and aquatic genetic resources, and avoid overfishing and overhunting.



11

...minimise the use of **antibiotics and hormones** in food production.



12

...minimise the use of **plastics and derivatives** in food packaging.



13

... reduce **food loss and waste**.



Regarding the Sociocultural Aspects: Sustainable Healthy Diets...

14

...are built on and **respect local culture, culinary practices, knowledge and consumption patterns**, and values on the way food is sourced, produced and consumed.



15

...are **accessible and desirable**.



16

... avoid **adverse gender-related impacts**, especially with regard to time allocation (e.g., for buying and preparing food, water and fuel acquisition).



Source: Adapted from FAO & WHO⁶⁴

Nutrient-dense dietary patterns that are based on minimally processed plant foods with lower intakes of meat and dairy products and ultra-processed foods generally have lower GHG emissions and better overall sustainability scores.⁶⁷ Based on current emissions, land use and water use data, a diet based predominantly on plants will lower GHG emissions significantly.^{68,69} Dietary patterns high in wholegrains, legumes, nuts, fruit and vegetables, while meeting national micronutrient recommendations, also tend to be higher in fibre and lower in energy-dense foods and saturated or trans fats. Notably, these patterns contrast starkly with typical Irish dietary patterns discussed in Section 1. Healthy sustainable diets have been associated with reduced risk of obesity, type two diabetes and cardiovascular disease, and could result in reductions in total mortality by up to 16%.^{67,70}

Examples of healthy sustainable diets

As will be discussed later, while vegan and vegetarian diets based around minimally processed whole foods can indeed be both healthy and environmentally sustainable, diets can also contain meat, fish, dairy and other animal products and still be considered healthy and sustainable. Published in 2019, the EAT–Lancet Commission Report is one of the first attempts to summarise and communicate the best available science on what constitutes a healthy diet within environmental targets.⁷¹ To summarise, it recommends reducing highly processed foods and red and processed meat by over 50%, and increasing fruit, vegetable and legume consumption by over 100%. It has been heavily criticised for being overly prescriptive, e.g., limiting red meat to 14g per day, the equivalent size of an AAA battery, and for inappropriately prescribing a global dietary pattern without reference to regional and local dietary options, preferences and circumstances. This has sparked concern that the dietary pattern may not be accessible, affordable, or indeed appropriate for many cohorts of our society, particularly for children, women of childbearing age and the elderly. In reality, the 2019 report should be seen as the first step in an ongoing international collaborative process to identify a range of potential transition pathways to healthy, sustainable and equitable food futures, adapted to local circumstances. It also provides a clear indication of the degree of change necessary to sufficiently reduce environmental impact from our food system. A further report (EAT-Lancet 2.0) is due in 2024 and Ireland should engage positively with adapting its recommendations to the Irish context.

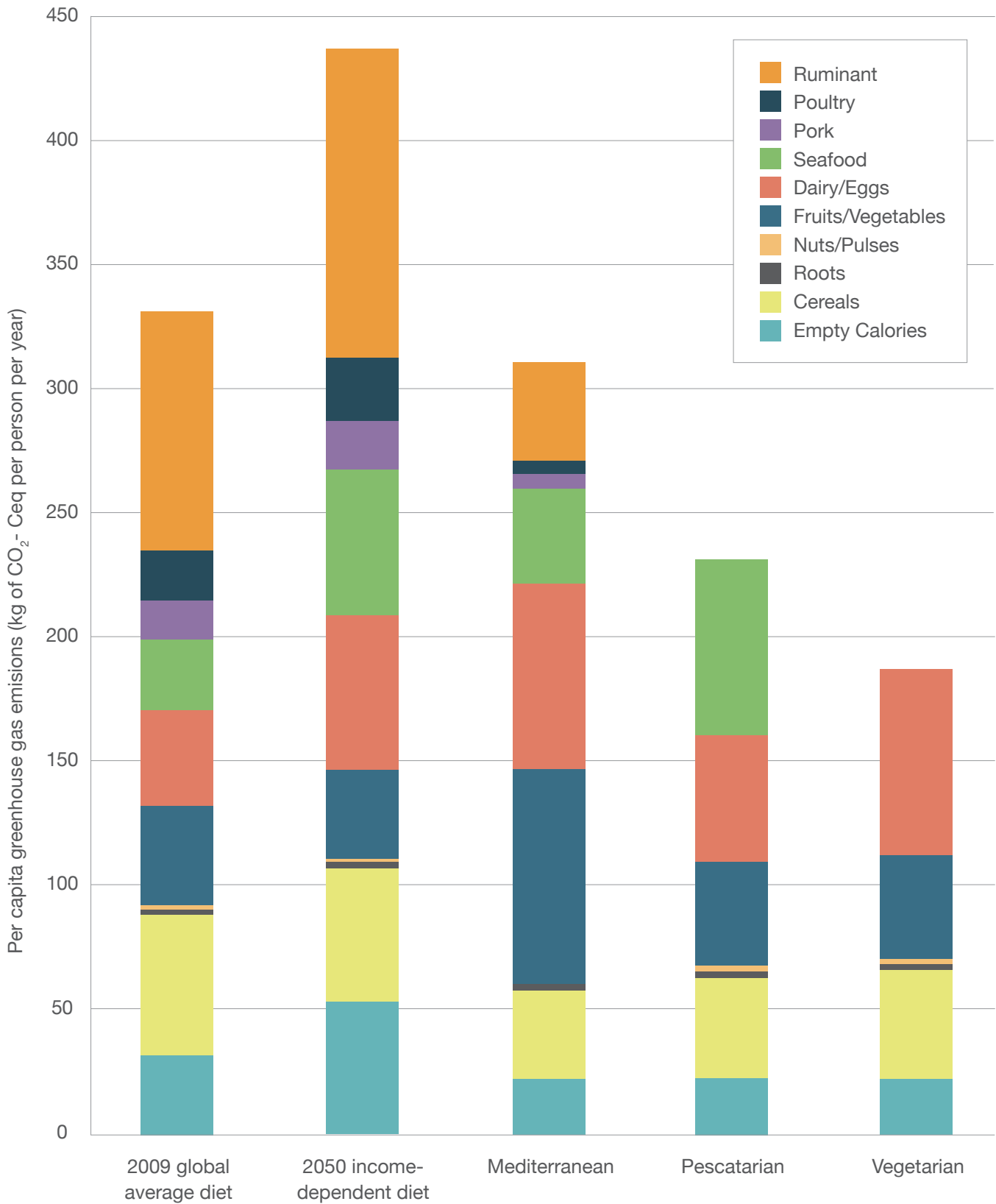
Figure 6: The EAT-Lancet planetary health diet plate



Source: Reproduced with kind permission of the EAT-Lancet Commission on Food, Planet, Health⁷¹

Studies consistently find that the Mediterranean and the DASH diet (Dietary Approaches to Stop Hypertension) are environmentally sustainable, although not always considered environmentally superior to other dietary patterns such as a healthy vegetarian diet.⁷² The EAT-Lancet reference diet consistently reduces the dietary water footprint compared to the standard western diet, while the Mediterranean and DASH diets reduce water footprint to a smaller extent or even increase it due to their increased fruit and vegetable intakes. While the Mediterranean diet is routinely rated as healthiest, from an emissions standpoint the reductions compared to a standard reference diet are meagre, as demonstrated in Figure 7.⁷³ Various models to reduce the water footprint of daily living have found dietary composition to be a major amenable component of water footprint.^{74,75,76,77}

Figure 7: Effects of diet type on GHG emissions



Source: Reproduced from Tilman & Clark with kind permission of the authors⁷³

However, despite increasingly polarised views on the most appropriate dietary approaches for sustainable diets, the general recommendations made in these diets, although varying in detail, are not new concepts for public health. They promote increased fruit, vegetable, legume and wholegrain intake, reduced intake of ultra-processed foods high in fat, sugar and salt, and reduced prevalence of excessive meat intakes to make space for a more diverse range of predominantly plant sources of protein.

Throughout Section 4, we will explore the different components of the typical Irish dietary pattern – from ultra-processed foods high in fat, sugar and salt, as well as meat, poultry, fish, dairy, fruit and vegetables to beverages and breastfeeding. We will discuss how they contribute to or undermine a healthy sustainable diet and healthy sustainable food system. Following this discussion, in Section 6 the Climate and Health Alliance will describe the characteristics of and recommendations for a healthy sustainable diet in an Irish context.

04

Six priority action areas
to create a healthier, more
sustainable Irish food
system



At this point in the paper, we have discussed the serious issues with our current food system, as well as the ideal healthy sustainable diet and food system we want to create. In this section, we explore how to achieve this by focusing on the **six priority action areas** introduced in Section 2:



Area 1

Ending the **junk food cycle**



Area 2

Promoting transition to a more **plant-based diet**



Area 3

Harnessing the power of **international and national guidelines**



Area 4

Reducing **food waste**



Area 5

Improving **agricultural practices and land use**



Area 6

Using a policy approach to affect **behaviour change**



Area 1

Ending the junk food cycle

Ending the junk food cycle

Who really controls our food choices?

The theory that education about good food choices or that promoting ‘responsible consumer choices’ will make people change their food behaviours, has dominated the food policy narrative for many years.⁷⁸ As a result of this, many people believe that obesity and diet-related chronic diseases can be tackled with education and individual willpower. The underlying assumption of this theory is that ‘we are gaining too much weight because we are too lazy to exercise, and too ignorant to eat healthily, or if we do know how to eat healthily but still resort to ultra-processed foods, we deserve to be miserable and sick’.⁵⁹ This makes the ‘consumer responsibility’ model morally questionable. Firstly, it markets itself as giving ‘freedom of choice’, and then blames individuals when they make the ‘wrong’ choice.^{79,80} This can be seen in the stigma attached to obesity and the choices many low-income households are forced to make.⁸¹ Secondly, the ‘consumer responsibility’ model largely absolves food industries and regulators of the responsibility to support people to make food choices that benefit their health and the health of the environment.

Food choices are not simply made of our own volition. Numerous studies demonstrate that most people know what makes a healthy diet. The problem is, from a biological perspective, we have been conditioned to seek out calorie-dense food because it was so rare and important throughout evolution to ensure our survival. It is very difficult to resist the taste of sugary, salty or fatty foods because our appetite hormones are generally more powerful than our cognitive reasoning or ‘willpower’. Furthermore, when we eat ultra-processed foods that are high in fat, sugar or salt, it takes our hormones longer to send satiety signals to let us know we are satiated.^{82,83}

Outside of our own biology, powerful, physical, economic, political and socio-cultural forces shape our food environment, which is often described as the interface between people and food systems.^{ii,84} These forces, called the commercial determinants of health, include factors like affordability, availability, convenience and marketing, and most of them are beyond our own control.^{85,86} It begs the question, are we really free to make our own food choices?

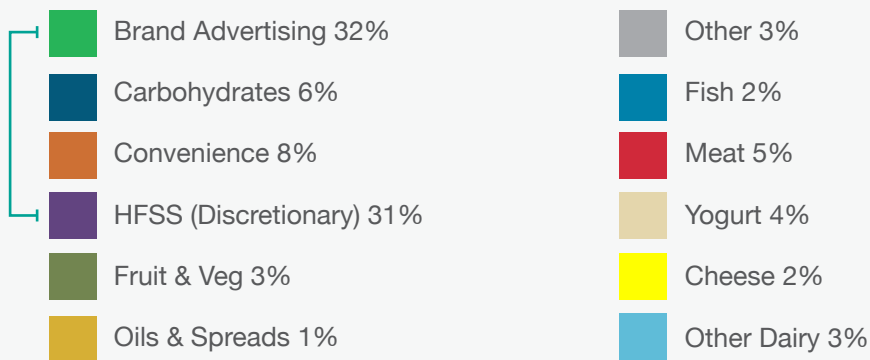
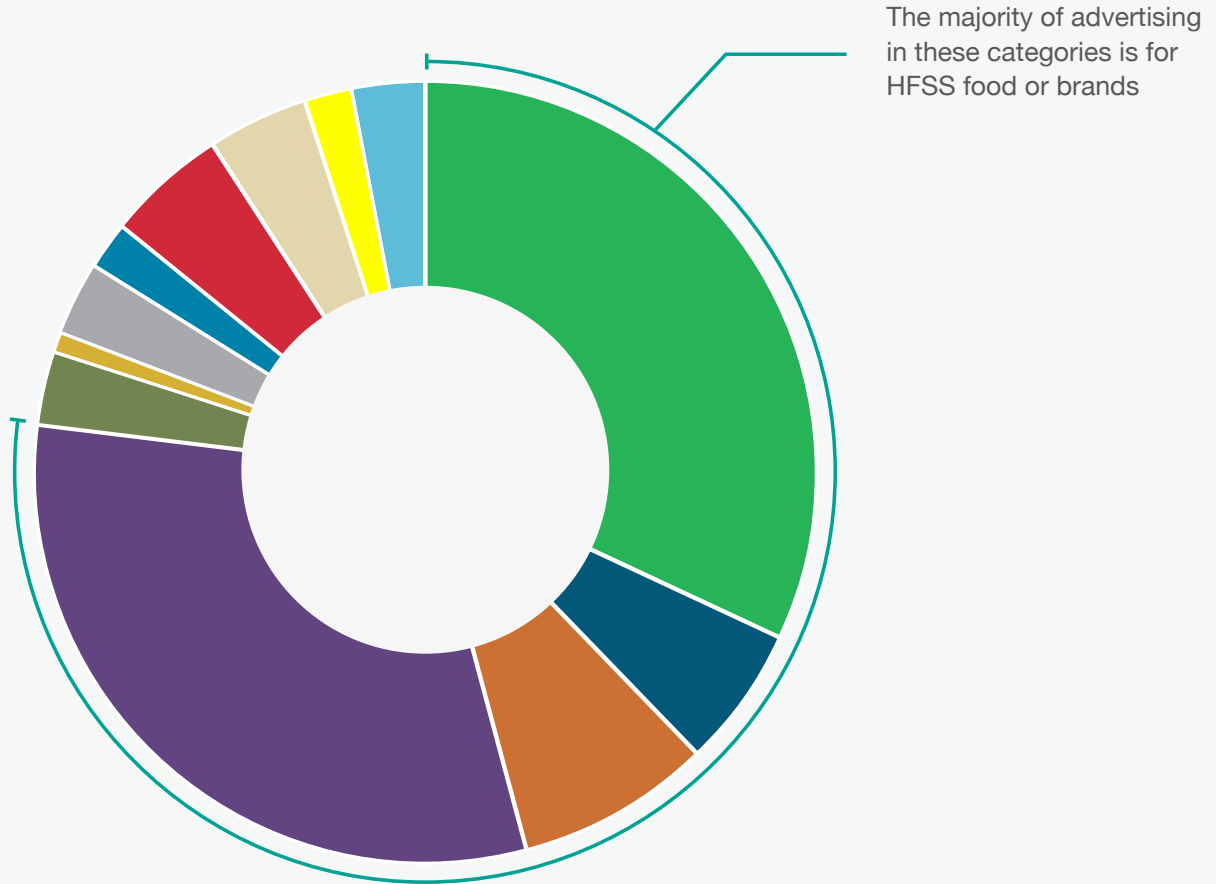
ii A food environment is the ‘physical, economic, political and socio-cultural context in which consumers engage with the food system to make their decisions about acquiring, preparing and consuming food’

Examples of negative food environments

A significant amount of our food environment is commercially determined by actors such as food service companies (e.g., take-away restaurants), agri-food corporations, advertisers and economic operators (e.g., delivery services). These actors can exploit people’s biological, psychological, social and economic vulnerabilities^{87,88} through, for example, increasingly sophisticated and manipulative marketing of ‘junk food’, i.e., ultra-processed foods high in fat, sugar and salt (HFSS). This can be done through multiple channels, such as food packaging, television and in-store environments. For example, promotion of junk food at checkouts aims to increase impulse buying, and buy-one-get-one-free (BOGOF) offers are explicitly designed to persuade shoppers to buy and take home more than they actually need. Findings from the UK’s National Food Strategy suggest that an alarming proportion of marketing money is spent promoting unhealthy products, as depicted in Figure 8.⁵⁹



Figure 8: Most marketing money in the UK is spent on promoting unhealthy products



Note

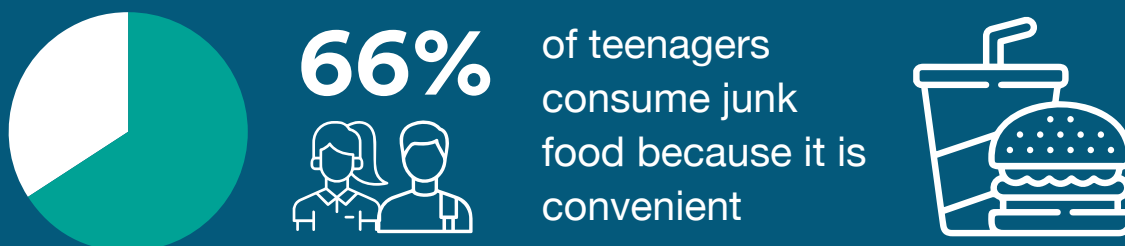
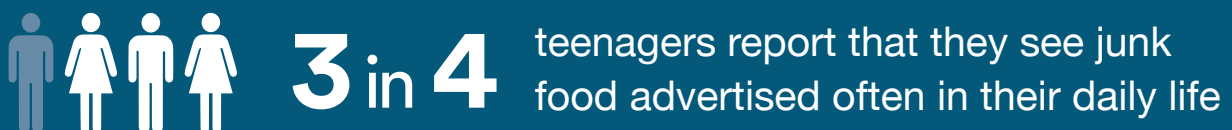
0% - Eggs

0% - Plant-based protein

Source: National Food Strategy (UK)⁵⁹

Of particular concern are the ever-more tailored and persuasive approaches employed by digital marketing campaigns fuelled by personal tracked data. For example, food brands engage young people through immersive experiences and encourage peer-to-peer sharing of their campaigns, creating greater demand for nutritionally poor food.^{79,89} This type of manipulative food marketing is part of a global food system that prioritises the wealth of brands over the health of children and young people. Research suggests that watching just one extra junk food advertisement per week is associated with an average increase of 18,000 calories per year in a child’s diet.⁹⁰ Furthermore, for every 10 minutes they spend online, children see three food and drink promotions, the majority of which would not be permitted based on nutrient profiling criteria.⁹¹ Findings from Empathy Research for the Irish Heart Foundation identified that three in four teenagers report that they see junk food advertised often in their daily life. And it’s working. In the same research, two in three teenagers (66%) report that they consume junk food because it is convenient, easy to get and is ‘everywhere’.⁹²

Research shows



Since the ‘Green Revolution’ described in Section 1, high-calorie ultra-processed food has become much more accessible and affordable over the past few decades. Correspondingly, worldwide obesity has more than doubled since 1980. In Ireland, obesity has increased across all age groups and everyone, even the naturally slender, has put on weight. The prevalence of obesity amongst men increased from 8% in 1990 to 26% in 2011, and among women it increased from 13% to 21% over the same timeframe.⁸

The supply and demand of ultra-processed food is a feedback loop that both consumer and manufacturer are locked into. Our evolution-driven desire for fatty, sugary, salty foods means that food companies invest more in creating and marketing these foods, which only makes us want them more, which leads to further investment by the company. It is also difficult for companies to break this vicious cycle because, if they stop producing HFSS foods in a competitive market, their competitors will gladly take their market share. This is one of the reasons that voluntary codes of practice don’t work, as will be discussed later. Mandatory regulations create an even playing field where companies can implement healthy changes without fear of being undercut.

In Ireland the prevalence of obesity has increased



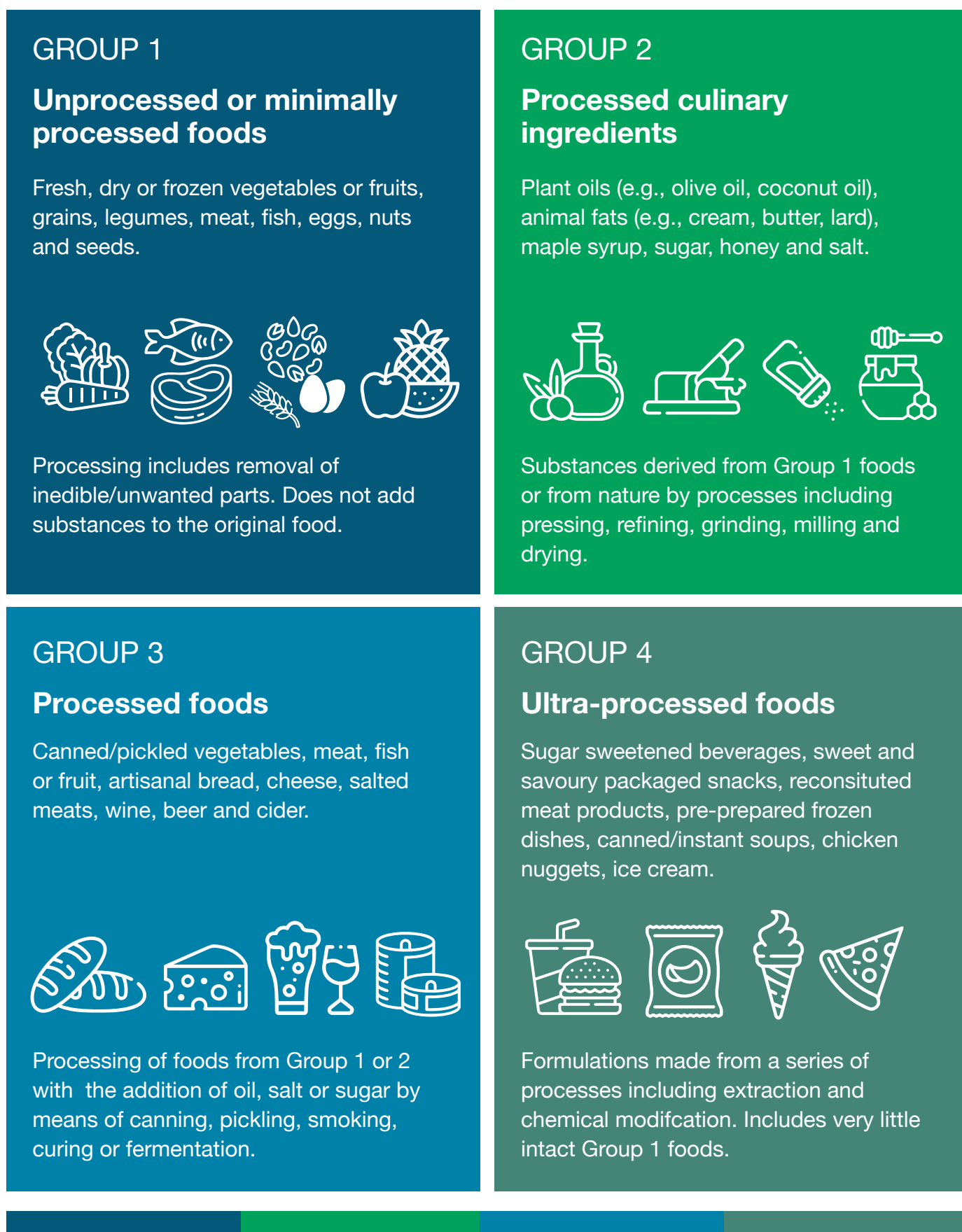
There are other subtle ways some food and beverage industry groups endeavour to influence important actors within our food environment, like the government, the educational system, media and healthcare professionals and organisations. Lobbying, corporate sponsorship, framing scientific data in misleading ways and biased industry-funded research all help to delay and weaken public health policies and promote confusion.^{93,94,95,96,97}

The contents and consequences of junk food

We have mentioned the colloquial term ‘junk food’ several times throughout this paper, to refer to ultra-processed foods and drinks, so it is important that we define what we mean. We used the NOVA⁹⁸ system of categorisation, summarised in Figure 9. Foods and drinks in Group 4, or ‘ultra-processed foods’ are typically high in sugar, fat, salt and refined starches, and these ingredients often make up the bulk of the product. They often use ingredients unfamiliar to domestic kitchens, like soy protein isolates or dextrose. They may contain colourings, emulsifiers, flavourings and other additives to make the products better-looking, tastier, more stable and longer lasting. Examples include:

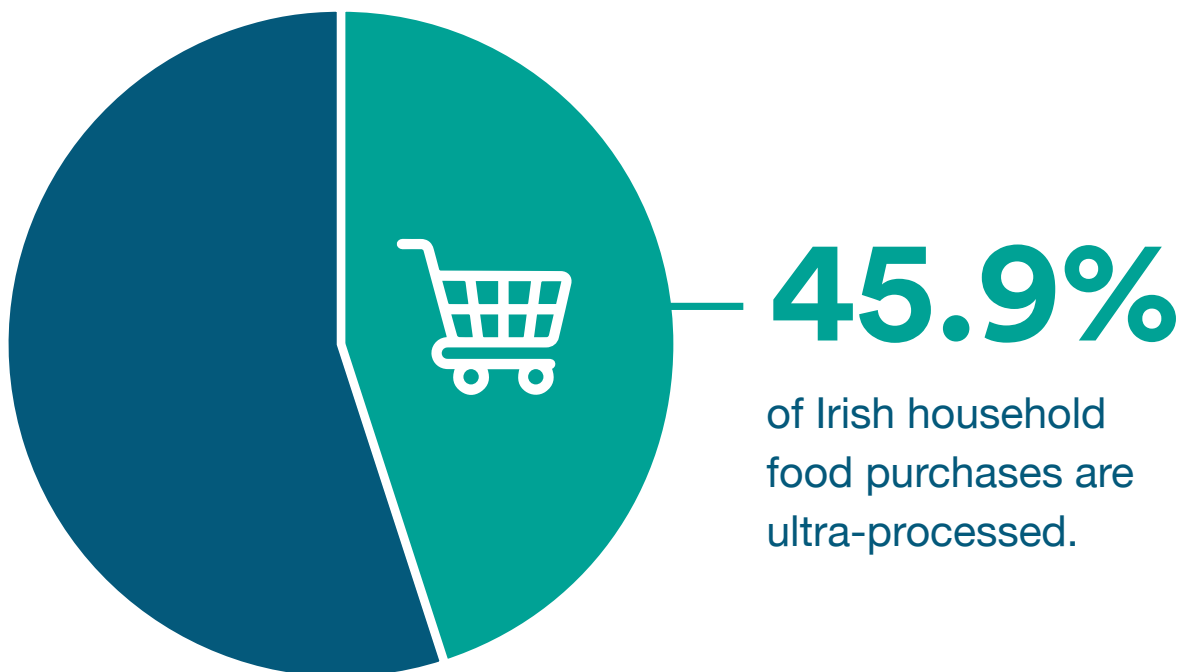
- sugar-sweetened beverages such as cola
- confectionary (sweets and chocolate)
- sweet and savoury snack products, such as crisps and shop-bought biscuits
- sugary breakfast cereals, such as frosted flakes
- fast food, such as burgers and chips

Figure 9: Spectrum of processing of foods based on the NOVA⁹⁸ classification



Source: Adapted from Crimarco et al.⁹⁹

One of the most concerning changes in Irish dietary patterns in recent years has been the fundamental shift in the production of food. Ultra-processing is now dominant in the food chain. Ingredient bulks and industrial processes are used to create food that is specifically designed to be hyper-palatable, thus stimulating repeat purchasing. In Ireland, it is now estimated that almost half (45.9%) of Irish household food purchases are ultra-processed.¹⁰⁰ This is a major cause for concern because there is accumulating evidence that strongly links the regular consumption of ultra-processed foods with an increased risk of many chronic diseases such as heart disease, obesity and cancer.^{101,102,103} It is still unclear whether the risk profile for disease is raised by the nutritional composition of the final product, the lack of fibre and micronutrients from whole foods, other additives or newly-formed contaminants.



From a sustainability viewpoint there is now also increasing recognition that the environmental footprint of these ultra-processed foods must be considered. Let's take beverages as an example. Tap water is the most sustainable and healthiest source of hydration. In contrast, sugar-sweetened beverages (SSB) are leading contributors to our dietary GHG emissions, largely due to their multiple ingredients and production practices, higher transport costs and single-use plastic packaging.

Breaking the junk food cycle

Because ultra-processed foods are not associated with good health, **it is possible** to reduce their consumption without affecting the nutritional adequacy of people's diets.

Findings from the National Adult Nutrition Survey indicate that a large proportion of the Irish population exceeds their daily energy (calorie) needs.⁸ McCarthy et al. estimated that reducing total energy intakes to meet individual energy needs, guidance that is in line with our national food-based dietary guidelines, could lead to a more than 11% reduction in GHG emissions and support the maintenance of a healthy body weight.¹⁰⁴ Combined with other recommendations from the food-based dietary guidelines, reducing dietary intake of these ultra-processed foods would facilitate a nutritious and balanced diet while having minimal impacts on the cultural acceptability and economic viability of the new diet. The authors warn that simply reducing our intake of animal products is unlikely to have a major effect on energy intake or GHG emissions as it depends on what we replace these foods with. In this instance, reducing our intake of discretionary ultra-processed foods may be one of the most important and impactful changes we can make as a nation.

Strong action is needed to reshape our food environment to enable healthy, sustainable food choices. According to the 2021 Food Environments and EU Food Policy report,¹⁰⁵ enabling food environments ensure that foods, beverages and meals that contribute to healthy sustainable diets are the most available, accessible, affordable, pleasurable and widely promoted. They help make the healthy and sustainable choice the default and most desirable choice, while limiting the availability and promotional opportunities for foods associated with unhealthy and unsustainable diets. Enabling food environments are particularly important for vulnerable groups like children, young people and those who are socioeconomically disadvantaged, whose right to a healthy food environment requires special protection. We must take a children's rights approach to food policy, as outlined by UNICEF,^{106,107} and a 'food environment' approach to address the wider determinants that drive food choice to enable and empower people to shift towards a healthier and more sustainable diet.

Sugar sweetened drinks tax

In 2018, the Irish government introduced a regulatory measure to incentivise the manufacturers of sugar sweetened drinks to reformulate their products to reduce their sugar content. The Sugar Sweetened Drinks Tax taxes water- and juice-based beverages that have added sugar or a total sugar content of five grams or more per 100 millilitres. Findings from countries like Mexico that have implemented a similar tax demonstrate that it reduces purchases of taxed beverages, with the greatest benefits for households at the lowest socioeconomic level.¹⁰⁸ A systematic review and meta-analysis of this fiscal measure demonstrated that it helped to reshape the food environment by incentivising reformulation and reducing demand, and therefore consumption, through higher prices.¹⁰⁹ The tax also likely drove reformulation in the sugar-sweetened drinks industry as a pre-emptive strategy to develop products that were not liable for the tax. However, its impact is yet to be evaluated in Ireland since its introduction five years ago.



The sugar sweetened drinks tax can incentivise manufacturers to make their products healthier and can reduce the consumption of sugar sweetened drinks.

Food Reformulation Taskforce

A Food Reformulation Taskforce was set up by the Department of Health with the aim of reducing calories, saturated fat, industrially-produced trans fats, sugar and salt in the Irish diet by asking food and drink companies, including sugar-sweetened beverage manufacturers, to use less of these target nutrients in their products. The Taskforce, which was set up in response to the Food Reformulation Roadmap, is currently running from 2021 to 2025, being led by the Food Safety Authority of Ireland, with funding, including additional staff, from the Department of Health. The expert committee tasked with developing the Food Reformulation Roadmap considered and addressed the issue of a voluntary versus a mandatory approach to food reformulation frameworks. Given the scale of the obesity epidemic in children and adults, the burden of diet-related disease and the available evidence on dietary intakes in Ireland, it was argued in the roadmap report that there is a clear and urgent need to achieve substantial reductions in the salt, sugar, saturated and trans fat content, calorie density and/or single serving portion size across a wide range of major food and drink products in Ireland.

The need to ensure that sectors of the food and drinks industry that embrace reformulation and calorie reductions are not at a competitive disadvantage relative to other sectors who have not engaged with the process was also highlighted in the report and it was acknowledged that the scientific and public health case for a mandatory as opposed to a voluntary food reformulation framework is compelling. The principle of voluntary reformulation cannot achieve the necessary targets and is inadequate if we wish to ensure that the food and drinks industry undertakes a meaningful reformulation process for the benefit of public health. In that regard, mandatory reformulation strategies should be imposed, i.e., backed by regulation. With that in mind, the Climate and Health Alliance recommends the expansion of the Sugar Sweetened Drinks Tax to incentivise reformulation of ultra-processed foods and drinks high in sugar, salt, saturated fat and industrial-produced trans fat. Revenue generated from this tax can be used to improve access to healthier, more sustainable foods, particularly for low-income groups.

The need for alternative strategies to reformulation

While food reformulation is an important mitigation measure to make foods and beverages high in calories, saturated fat, trans fats, sugar and salt somewhat less unhealthy, it is important to see this tool for what it is - a harm-reduction measure, and certainly not a sign of a thriving food environment. Reformulating makes ultra-processed foods only somewhat less and sometimes trivially less unhealthy, and can endow reformulation efforts with dangerous health-halos that can be used to promote greater consumption. As concluded by Campbell et al., industry-led reformulation does not make products nutritious or healthy, e.g., removal of trans fats makes products relatively safe but does not make them healthy.¹¹⁰ The authors also recommend introducing a second approach to reformulation - a progressive 'wholefood formulation' strategy, which would aim to shift national reliance on the ultra-processed food category to processed and unprocessed categories. Further entry points for breaking the junk food cycle by creating a healthier and more sustainable food environment are discussed later, including restrictions on junk food marketing.

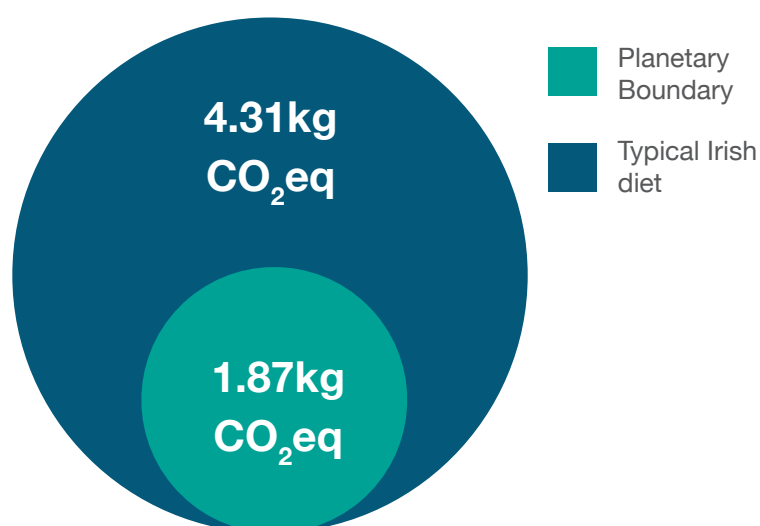


Area 2

**Promoting transition to
a more plant-based diet**

Promoting transition to a more plant-based diet

Aside from ultra-processed foods, other food groups in our diets have positive or negative impacts on our health and the health of the planet. These include red and processed meat, poultry, fish, pulses and other protein foods, dairy products, cereals, fats and oils, fruit, vegetables and drinks. Significant alterations to the way we eat are inevitable and can mitigate the climate crisis while having positive health co-benefits. In this section, we explore the health and climate impact of key food groups and outline the need for a transition towards a more plant-based diet - not necessarily vegetarian or vegan, but a dietary pattern based mainly on foods from plant sources.



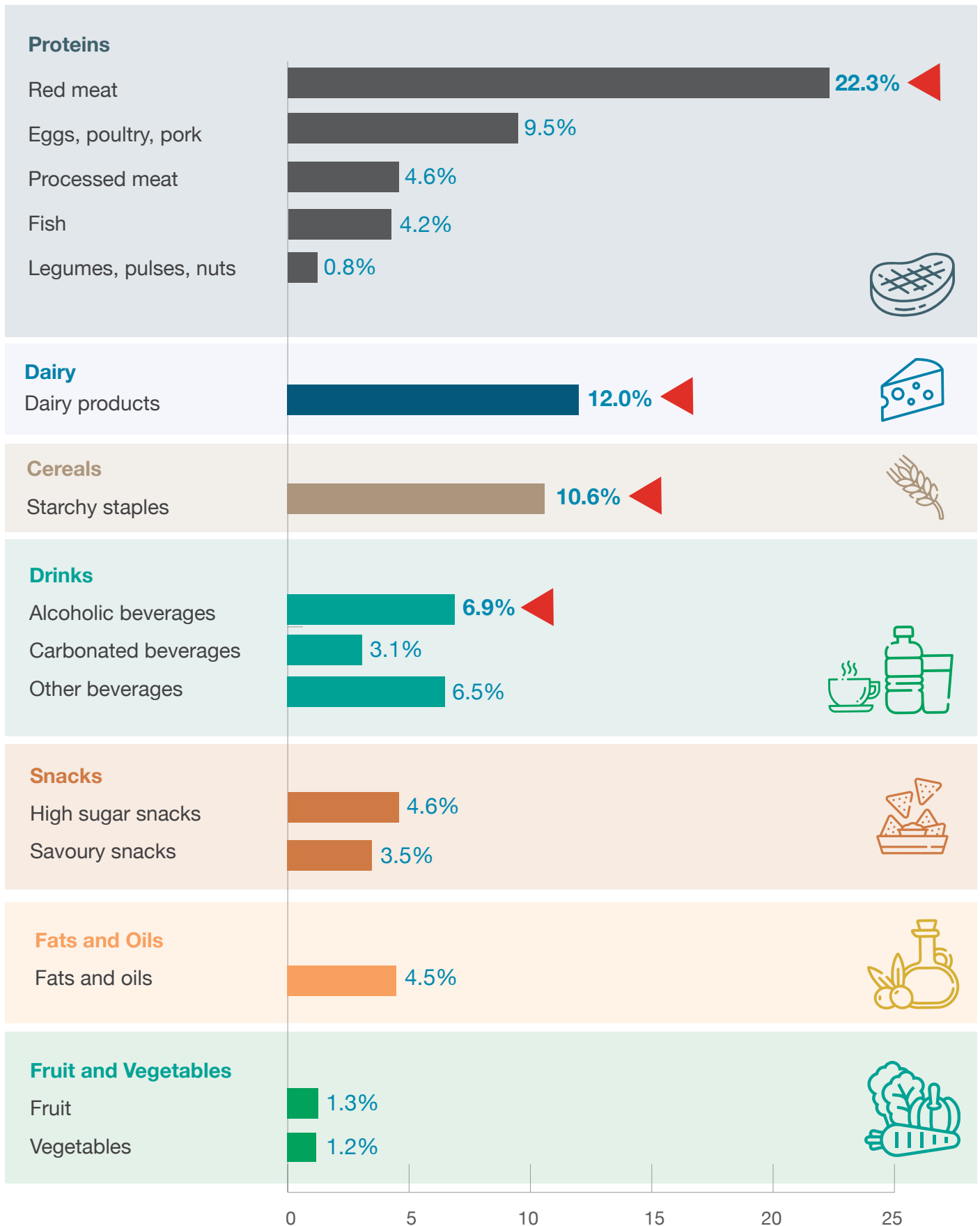
The GHG emissions from a typical Irish adult's diet exceed planetary boundaries by a staggering

226%.

The EAT-Lancet Commission proposed absolute boundaries for six Earth system processes, including GHG emissions, within which the global food system should operate to be environmentally sustainable.⁷¹ This planetary boundaries approach facilitates a comparison of the environmental impact of diets internationally. The planetary boundary of 1.87kg of CO₂ equivalents (CO₂eq) for GHG emissions was sourced from published literature.^{111,112,113} The most recent estimates of Irish dietary habits, based on the National Adult Nutrition Survey 2008-2010, are estimated to contribute on average 4.31kg CO₂eq per person per day.^{iii,111} To put this into context, the GHG emissions caused by the average Irish adult's diet (4.31kg CO₂eq) exceed the planetary boundary by a staggering 226%. Therefore, this will require more than halving GHG emissions from current diets and a swift shift to food production, supply and consumption patterns that support this reduction. Figure 10 shows foods that contribute the most to GHG emissions in the Irish diet.

iii Median for adult population

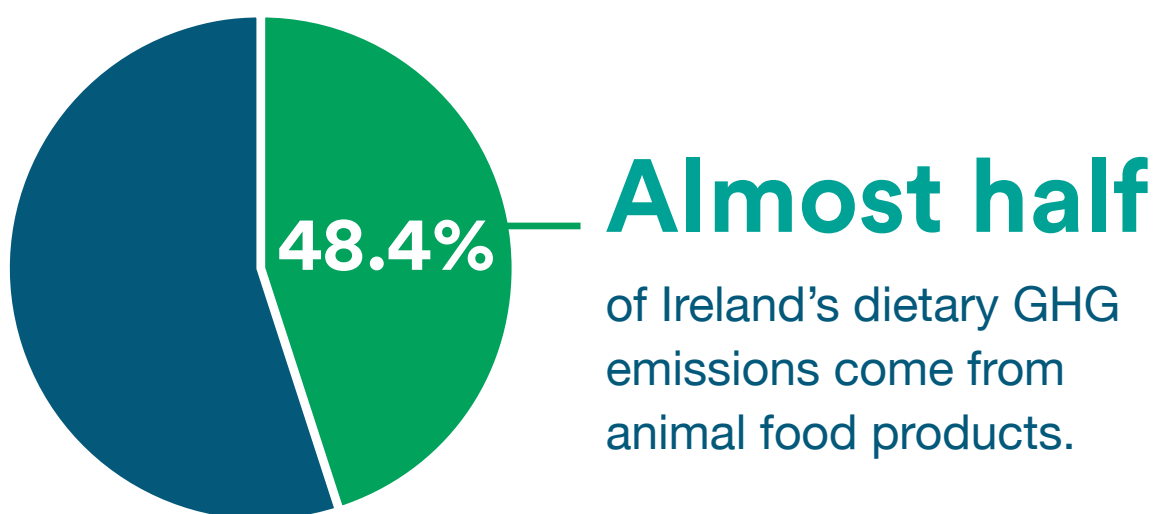
Figure 10: Foods that contribute the most to GHG emissions in the Irish diet¹⁴



% GHG emissions (CO₂e) of total dietary intake

Animal food products

The Irish livestock industry markets itself abroad as having a ‘sustainable model’ of agriculture that is, according to Bord Bia, ‘environmentally benign’.¹¹⁵ The rationale is that Ireland has one of the lowest carbon footprints of animal products in Europe. However, as demonstrated in Figure 10, food products from farmed animals have the single biggest environmental impact, contributing to almost half (48.4%) of our dietary GHG emissions.



Irish agriculture centres on livestock farming, so our GHG emissions from agriculture are disproportionately higher than the EU norm.¹¹⁶ As the livestock and dairy sector has continued to grow in recent years, there has been a concurrent decline in key environmental markers, such as water and air quality, and a similar increase in carbon dioxide and methane emissions. Overall, around two thirds of Irish land is used for livestock pastures and growing crops to feed animals, but this provides just a quarter of our calories. As we confront the challenge of feeding a population of 10 billion people on the planet by 2050, the wasteful practice of growing crops to feed to cattle for slaughter will not be sustainable in Ireland or elsewhere.

Recently, in the context of the war in Ukraine and its impact on agri-food markets, over 660 scientists called for accelerating the shift towards healthier diets with less animal products in Europe, as it would lead to a more sustainable and resilient food system while contributing to global food security.¹¹⁷ Our grass-based pasture systems for beef, lamb and dairy farming are not only high contributors to GHG emissions as outlined above, but also to pollution and biodiversity loss. Further, the area used for grazing (as discussed in Section 1) is land that would otherwise have been available for forests, wetlands, wild grasslands and wildlife habitats. Land use is discussed in further detail at the end of Section 4.



Red and processed meat

Red meat like beef and lamb, as well as processed meats^{iv,118} like ham and sausages, contribute to over 22% of our Irish dietary GHG emissions, as well as the other environmental and biodiversity effects outlined above. From a health perspective, considerable evidence from long-term prospective cohort studies has demonstrated that diets high in red and processed meats are associated with increased risk of type two diabetes, CVD, cancer (particularly colorectal cancer) and all-cause mortality.^{119, 120,121} Similarly, such evidence, along with the evidence from short-term intervention trials, strongly suggests that replacing red and processed meats with plant-based protein sources (such as legumes and nuts), poultry and seafood has the potential to reduce risk of chronic diseases and premature death.^{122,123,124,125,126} International and national recommendations for safe consumption ranges of red and processed meats are presented below.



Due to the association with colorectal cancer, in 2018 the **International Agency for Research on Cancer** (an agency of the World Health Organization) classified processed red meat as a Group 1 ‘carcinogen’ (cancer causing agent) to humans and has specifically recommended that processed meat should be avoided. They classified unprocessed red meat, as a Group 2A ‘probable carcinogen’ and recommend that, if consumed, it should be limited to no more than 350-500g per week (50-70g daily) cooked weight.¹²⁷



Similarly, the **European Society of Cardiology** clinical practice guidelines 2021 recommend that red meat should be reduced to a maximum of 350–500g a week (50-70g per day) cooked weight, and processed meat should be minimised.¹²⁸



The 2021 **American Heart Association Dietary Guidance to Improve Cardiovascular Health** recommends that if meat or poultry are desired, one should choose lean cuts and avoid processed forms.¹²⁹



The **Scientific Advisory Council on Nutrition** (UK) recommends that high consumers (>90g per day) of processed and unprocessed red meat should reduce intakes to no more than 70g per day, to reduce colorectal cancer risk without compromising iron intakes.¹³⁰



In 2019, the **Food Safety Authority of Ireland** (FSAI) recommended a palm-sized portion of lean red meat two to three times per week, and to limit processed meats.¹³¹

iv Processed meat is defined here using WHO criteria as meat, poultry or fish that has been transformed through salting, curing, smoking, or the addition of other chemical preservatives. Examples: Bacon, salami, sausages, smoked fish, reconstituted luncheon meats.

Figure 11: Visual representation of 70g of unprocessed red meat^v



70g = 5 dessert spoons of minced beef



70g = $\frac{3}{4}$ patty of a medium burger



70g = $\frac{1}{4}$ of a pork chop



70g = $\frac{1}{2}$ a small 5oz sirloin steak



Avoid or minimise processed meats, e.g., bacon, sausages, black pudding, salami, reconstituted lunch meats, etc.

In contrast to the majority of international recommendations, the Irish food-based dietary guidelines – the food pyramid – which was last updated in 2016, recommends limiting processed salty meats to not every day, a recommendation that is significantly more conservative than that of more recent international guidance outlined above. It does not make a specific recommendation about red meat intakes but recommends including two servings of protein-rich foods daily, which includes all types of meat and poultry.¹³²

^v 500 grams of cooked red meat is roughly equivalent to 700–750 grams of raw meat, but the exact conversion depends on the cut of meat, the proportions of lean meat and fat, and the method and degree of cooking.

Nutritionally, unprocessed red meat is a good source of protein and micronutrients like iron, zinc and vitamin B₁₂. This is particularly important for some low-income groups and certain population groups, for example, pregnant women, menstruating women, older adults and toddlers, for whom a lack of dietary diversity, food insecurity, or higher iron requirements increases the importance of these foods. However, context is important. Ireland is a high-income country with a high prevalence of obesity, type two diabetes, cardiovascular disease and cancer. A 2017 analysis of the National Adult Nutrition Survey 2008-2010 identified that reported dietary intakes of red and processed meat in Ireland are 134g per day for men and 89g per day for women, of which processed meat comprised 52g and 29g per day for men and women respectively. This level of intake is significantly higher than most international guidelines cut off of 50-70g per day.¹³³

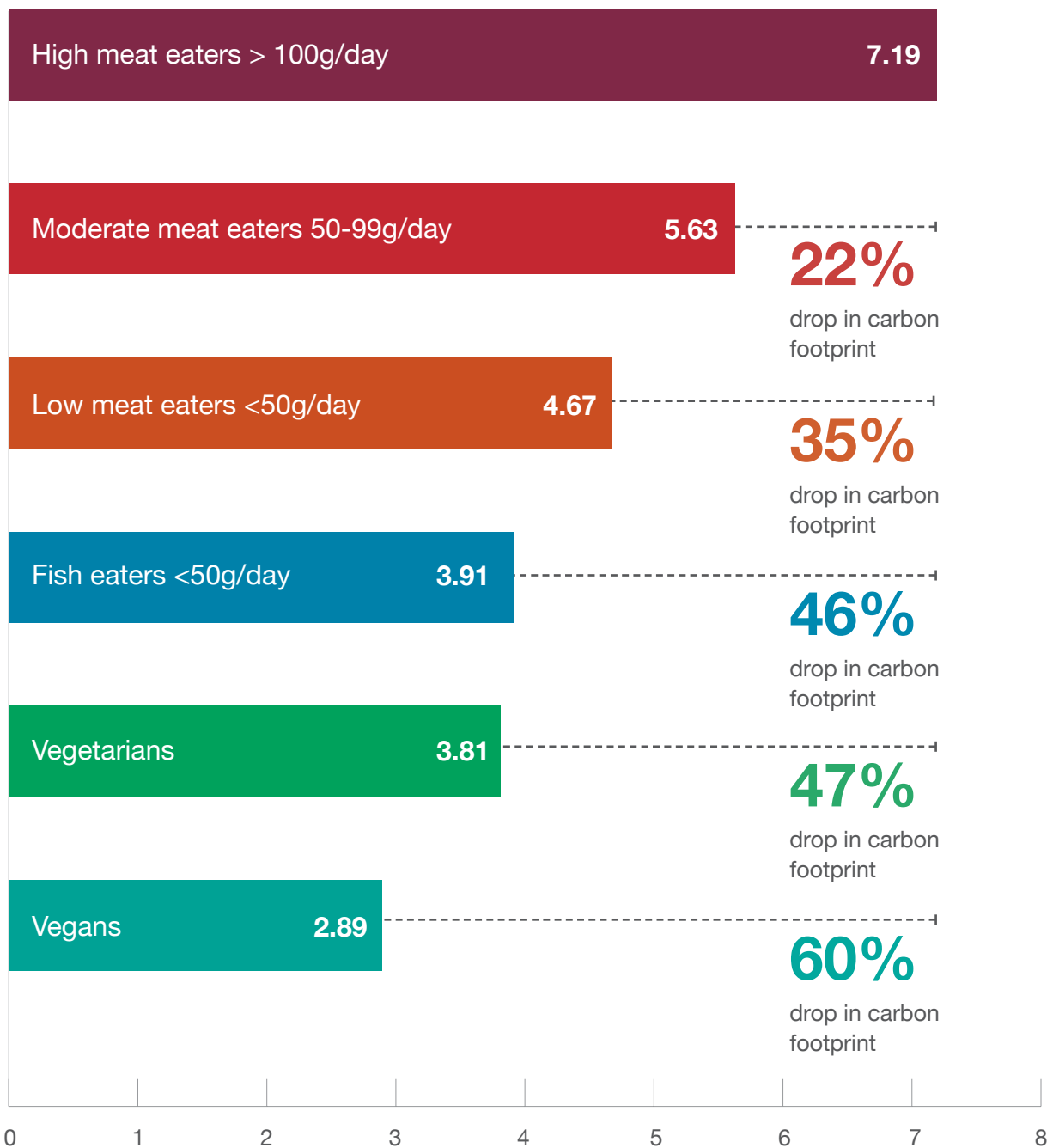


Therefore, there are public health and environmental benefits in reducing the amount of red and processed meat to 50-70g per day, and, in particular, consuming very little if any processed meat, particularly in higher consumers, who are more likely to be men. Crucially, data from UK national nutrition surveys and modelling on the UK's Eatwell Guide indicates that reductions in excessive red and processed meat intakes to 50-70g per day can safely be made without increasing the risk of deficiencies in nutrients such as protein, iron or vitamin B₁₂.^{134,135} Limiting excessive dietary intakes of red and processed meat in high consumers and shifting towards more whole plant proteins is an important public health message that can help slow the rates of diet-related chronic diseases in Ireland. These dietary modifications are associated with reduced incidence of obesity, cardiovascular disease, type two diabetes and some cancers.^{136,137,138,139}

Furthermore, as the world's population is expected to grow by almost a third (28%) to 10.4 billion by the end of the century, it is only just and equitable that richer countries like Ireland eat less meat so that poorer countries with a greater reliance on unprocessed red meat to avoid nutritional deficiencies have the space within our global climate limits to meet their nutritional needs.

Research by Scarborough et al. identified that a reduction in the UK consumption of meat for adults to below 50g per day would result in a 35% reduction in carbon footprint (see Figure 12) – note this includes white meats too.¹⁴¹

Figure 12: Daily mean greenhouse gas emissions (kg CO₂ eq) per person consuming a self-selected diet of 2000kcal¹⁴⁰



Source: Adapted from One Blue Dot²³



Poultry

It is not possible to identify the specific contribution of poultry to Ireland's GHG emissions, but 'poultry, eggs and pork' comprise a significant proportion (9.5%) of our dietary emissions (Figure 10). From a health perspective, it is important to note that the increased risks for processed meat outlined above also apply to processed white meats, such as processed poultry. However, the disease associations for unprocessed white meats are less clear.

In a comprehensive modelling study of the healthiness and sustainability of national and global food based dietary guidelines, Springmann et al. identified poultry as 'neutral'.¹⁴² Specifically, when compared to the baseline diet, there does not seem to be a significant increase in disease risk, but substituting other sources of protein with white meat could confer health benefits or detriments, depending on the source of protein that is substituted. The authors also concluded that the risk of heart disease, stroke, type two diabetes and total mortality could, in part, be reduced by replacing animal proteins, such as red and processed meat, dairy, poultry and fish with plant-based protein sources, such as nuts, legumes and whole grains. However, uncertainty intervals were large due to low consumption levels of some of foods.¹⁴⁰



Environmentally, our modern methods of poultry farming impact on planetary health. As discussed in Section 1, intensive poultry farming does exist in Ireland, with at least 106 poultry units having a capacity greater than 40,000 birds.³⁷ According to data from Teagasc, over 70 million chickens are produced annually in Ireland, four million turkeys and eggs from two million hens,¹⁴³ with the vast majority of these 70 million chickens reared in intensive factory facilities.¹⁴⁴

A 2021 report by Fehily Timoney on behalf of Monaghan County Council indicated that there has been a significant increase in the number of poultry farming facilities in the Border region of Ireland, especially county Monaghan, since 2003.¹⁴⁵ The report warns that this intensification has the potential to cause serious negative impacts on air quality and protected nature areas. In particular, ammonia emissions from chicken manure can cause soil and water contamination, thereby impacting biodiversity, and is a key cause of air pollution in Ireland. The continued intensification of poultry farming is especially concerning given that Ireland's ammonia emissions have been non-compliant with EU limits for seven out of the last nine years.²⁷ Other associated environmental impacts include traffic movements to and from farms, the landscape impact of the chicken houses, odour from manure and avian disease.¹⁴⁵



Dairy and dairy alternatives

Nutritionally, dairy products like milk, yogurt and cheese are an important and accessible contributor to a healthy, balanced diet in Ireland, particularly for nutrients like calcium, protein, iodine, B vitamins and vitamin A. The natural potassium, magnesium and riboflavin content may also be important for blood pressure control, which is why low-fat milk is a core component of the DASH diet. Despite this, some groups in our society do not consume the recommended intake of dairy or calcium every day, particularly children, adolescents, women and older adults. However, dairy products are also one of the highest contributors to our saturated fat intake and a source of sodium (salt).⁸

Dairy products vary greatly in both their nutrient content and bioactive ingredients, and research increasingly highlights the importance of focusing on the whole ‘food matrix’ as opposed to single nutrients, such as saturated fat. The food matrix of dairy products describes the physical structure of the food, the nutrients and other compounds it contains and how these interact together. Evidence from recent large and well-controlled studies, systematic reviews and meta-analyses of both observational studies and randomised controlled trials suggests that full-fat dairy products like milk, yogurt and cheese (but not cream, butter, ice cream or dairy-based desserts) do not exert the detrimental effects on insulin sensitivity, blood lipid profile and blood pressure that were previously predicted on the basis of their sodium and saturated fat contents.¹⁴⁶ Therefore, for the general population, full-fat dairy products may not increase cardiometabolic disease risk and may in fact protect against cardiovascular disease and type two diabetes.¹⁴¹ However, low-fat dairy has also been associated with reduced risk of cardiometabolic diseases, and data on *total* dairy intake does not tell us whether reducing dairy *fat* is better or worse for health.



‘Research shows that for the general population, full-fat dairy products may not increase cardiometabolic disease risk and may in fact protect against cardiovascular disease and type two diabetes.’

This may depend on the calorie sources that replace the dairy fat. For example, compared to sugar or fatty meat, full-fat dairy may be less harmful but may be less beneficial compared to unsaturated fats from nuts, seeds, plant oils or oily fish.^{147,148} For weight loss, the evidence does not suggest any benefit of reduced-fat dairy over full-fat.¹⁴¹ Another important consideration is the fact that the majority of the fortified cow's milk brands available on the Irish market are reduced-fat milks that are potentially significant contributors of nutrients that are consumed in low amounts (like calcium, vitamin D, folate and vitamin B₁₂), particularly by some population groups such as older adults and pregnant or lactating women. Emerging evidence suggests potential cardiometabolic benefits of consuming fermented dairy such as yogurt, but the evidence remains inconclusive.^{149,150}

It is important to consider the quantity of dairy products eaten in the context of overall dietary patterns. For example, replacing a sugar-sweetened drink for a glass of milk will improve diet quality, while consuming cheese as part of a garlic-cheese fries takeaway meal will package the benefits of dairy products with additional salt, calories and saturated fat.



Replacing a sugar-sweetened drink for a glass of milk will improve diet quality.



Adding cheese to garlic fries will package the benefits of dairy products with additional salt, calories and saturated fat.

Furthermore, while some sustainable dietary patterns like EAT-Lancet and the Mediterranean Diet recommend very little dairy intake, in Ireland dairy intake has been reducing and rates of iodine deficiency have been increasing. Dairy products are an important source of iodine and without a national food fortification programme adding iodine into foods, e.g., salt, to address low iodine intakes nationally, recommending a reduction in dairy intake could increase the risk of iodine deficiency. The 'full-fat versus low-fat' debate continues, and despite the volume of research conducted, there is inconsistency in study findings.¹⁵¹ The evidence on the current risks and benefits of full-fat and reduced-fat dairy products is complex, but some recommendations may be made for the general population as well as for subgroups requiring special dietary advice.

Based on the evidence outlined above, for the general population, the Climate and Health Alliance recommends three portions of unsweetened dairy products daily, such as unsweetened milk, yoghurt or cheese, while minimising intake from butter, cream, ice cream, sweetened milk and dairy-based desserts, most of which contain higher levels of fat and sugar and lower levels of protein, vitamins and minerals. The Climate and Health Alliance also recommends that future updates to the national food-based dietary guidelines ensure that all evidence is reviewed rigorously to provide guidance for the general population on consumption of low-fat or full-fat dairy foods as well as the recommended number of dairy portions. This guidance should also bear in mind the advice from the European Food Safety Authority (EFSA) that food-based dietary guidelines be ‘...appropriate for the region or country, culturally acceptable and practical to implement... consistent, easily understood and memorable’.¹⁵²

Future public health nutrition strategies should focus in particular on increasing adoption of any intake of either dairy milk or fortified plant-based milk in vulnerable groups such as low SES constituencies and those at critical stages in the lifecycle to meet their associated nutritional needs. For people with raised ‘bad’ (LDL) cholesterol there is a bigger increase in LDL after consuming fat from dairy products, and therefore for people at higher cardiometabolic risk, e.g., living with high cholesterol or type two diabetes, the Climate and Health Alliance recommends choosing reduced-fat dairy products.



For the general population, the Climate and Health Alliance recommends three portions of unsweetened dairy products daily.

Plant-based dairy alternatives

It is also important to consider the nutritional needs of people who, for a variety of reasons, choose to avoid some or all dairy products. For example, in our increasingly multicultural society, people of Asian and African descent are more likely to experience lactose intolerance than those of European descent, and an increasing proportion of the population is choosing plant-based dairy alternatives for ethical (animal welfare) and environmental reasons too. Therefore, it is important that future updates to the national food-based dietary guidelines ensure that all people living in Ireland are informed about the variety of ways they can include the nutrients commonly sourced from dairy products, in particular calcium and vitamin D, at all ages and in ways that are physiologically, culturally and ethically acceptable to people, as has been implemented in the US, UK and many European countries.

Plant-based alternatives to dairy products are not nutritionally comparable. For example, plant-based milk alternatives tend to be lower in saturated fat than full-fat dairy products, but products like coconut yogurt have significant levels of saturated fats. According to research by *safe food*, the plant-based alternatives to milk, cheese and yogurt that are available in Ireland vary in nutritional quality. The report advises people to check the nutrition labels and look for dairy alternatives that contain a source of protein, are unsweetened and are fortified with calcium.¹⁵³ Fortification with other micronutrients is highly variable. For example, the natural potassium, magnesium and riboflavin content in cow's milk that can also be important for blood pressure control are often not present in the same quantities in the plant-based alternatives. There is also a lack of information available on the micronutrient content, e.g., calcium, iodine, B vitamins, etc., of these products, and independent (non-industry-funded) studies on the bioavailability of these nutrients, and the health benefits or impacts of these products over the long-term. Therefore, the Climate and Health Alliance recommends reading the label and choosing a plant-based dairy alternative that is a source of protein, unsweetened and fortified with calcium and ideally iodine and other nutrients typically found in dairy products.



Environmentally, consumption of dairy products in Ireland is associated with significantly less GHG emissions compared to red and processed meats mentioned above – 12% versus 22% of GHG emissions from dietary intake (Figure 10). Within the dairy group, environmental impact differs significantly, with milk producing less GHG emissions than cheese. Overall, however, dairy products are the second highest contributor to dietary GHG emissions, and have higher land and water use than plant-based alternatives like soya milk or tofu.^{154,155} The limited data available suggests that the overall environmental impact of plant-based milk alternatives is lower than that of cows' milk.^{156,157} Therefore, in order to work toward international climate obligations while maintaining the nutritional needs of the Irish population, we must consider a significant scaling back of Ireland's dairy production exports. A 2016 Teagasc report concluded that to meet 2030 climate obligations beef and dairy production would both need to be curtailed in addition to abatement measures and added forestry.¹⁵⁸ A 2019 Teagasc report suggested that without mitigation measures emissions would continue to rise, however with a maximum of abatement measures emissions could be reduced by 15%.¹⁵⁹ Finally, a 2022 study modelled which land use scenarios could lead to Irish carbon neutrality by 2100 and found that a significant increase in forestry and, in the absence of a new technology to dramatically reduce bovine emissions, a reduction in dairy and beef output would be required.¹⁶⁰ This is discussed in detail in Area 5 'Improving agricultural practices and land use'.



‘In order to work toward international climate obligations while maintaining the nutritional needs of the Irish population, we must consider a significant scaling back of Ireland's dairy and meat exports’.



Plant proteins

A key part of a more sustainable diet is to consume more plant sources of protein in place of animal proteins. Foods rich in plant proteins like beans, peas, lentils, nuts and seeds overall produce less GHG emissions and most require less water and land to produce the same quantity of food from plants than animals. Lesser known but equally important plant sources of protein are cereals like wheat and rice, and starchy root vegetables like potatoes. It has been demonstrated that diets based predominantly on plants that meet national dietary guidelines have a lower environmental impact than high-meat diets.^{67,161,162,163,164,165,166} From an environmental perspective, it is important that plant proteins grown in organic and regenerative farms are prioritised over, for example, monocrops that are grown in intensive farming systems that harm soil quality, intensively use artificial fertilisers and pesticides and clear natural woodlands for the purposes of increased crop lands. The Irish climate is well-suited to growing many types of plant protein, for example, broad beans and quinoa, an increasingly popular grain.

In terms of protein content and quality, all plant-sourced proteins contain all essential amino acids. While the adequacy of some key amino acids like lysine, tryptophan, and the sulphur amino acids vary, many plant-sourced proteins can be considered as alternatives to animal-sourced proteins. We also often combine sources at meals, e.g., beans with rice, or potato with vegetables, throughout the day. As a result, currently available food sources make it relatively easy to construct nutritionally adequate vegetarian or vegan diets in Ireland.



Foods rich in plant proteins like beans, peas, lentils, nuts and seeds overall produce less GHG emissions and most require less water and land to produce the same quantity of food from plants than animals.

In terms of protein digestibility, true digestibility of amino acids measured via the terminal ileum is difficult to achieve in practice and our research is limited as a result. While some plant proteins have poorer digestibility scores than animal-sourced proteins because of fibre, complex cell structures, etc., we typically eat plant proteins in larger volumes meaning that protein deficiency in Ireland, provided one is consuming adequate energy (calories), is rare.^{vi} The ‘protein package’ is also important. For example, processed red meat like bacon is a source of protein but also saturated fat, salt and chemical compounds that are harmful to human health. In contrast, the protein in many plant foods like chickpeas or beans comes packaged with fibre and micronutrients. Legumes are usually low in salt and fat, and if they do contain fat, it is heart-healthy unsaturated fat.¹⁶⁷ In essence, this should not be framed as one type of diet versus another but rather a shift towards a varied diet that contains more plant-based proteins, while reducing but not excluding other forms of proteins, for the benefit of individual human and collective environmental health. By moving and adhering to a diet that is predominantly plant-based with low-to-moderate consumption of meat, if desired, we can lower our risk of numerous chronic illnesses,^{168,169} including heart disease, stroke, diverticular disease and bowel cancer and reduce our environmental footprint.

On a cautionary note, plant-based protein convenience products are growing in popularity but can be high in saturated fat and salt. Research¹⁷⁰ by *safefood* found that one in four manufactured meat substitutes do not contain enough protein to be considered a source of protein, so people should aim to avoid too much reliance on ‘mock meats’ and choose whole-food, less processed plant protein sources like beans, lentils, nuts and seeds for better environmental and health gains.¹⁷¹

The ‘protein package’ is important...



Protein in **bacon** comes with saturated fat, salt and harmful chemicals compounds.



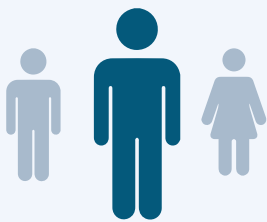
Protein in **legumes** comes with fibre, healthy plant compounds and little salt or saturated fat.

vi Average protein requirement for adults is 0.75g protein per kg body weight per day. Average daily protein intake for adults, based on the National Adult Nutrition Survey 2008-2010, is over 85g per person.



Fruit and vegetables

There are clear health benefits to eating fruit and vegetables, but only one in three people in Ireland meet the minimum target of at least five portions of fruit and vegetables per day.¹⁰ That being said, fruit and vegetables do come with certain environmental trade-offs depending on how and where they are produced. For example, perishable fruit and vegetables often incur water and pesticide use and can impact soil quality. They also make up the majority of household waste.¹⁷² Some produce is associated with greater GHG emissions; air freighted produce like asparagus from Peru; products like tomatoes and strawberries grown unseasonably in heated greenhouses; pre-prepared produce like salad bags and fruit salads, and fragile or highly perishable fruit and vegetables like fresh berries. Similar to plant proteins, it is important that fruit and vegetables grown in organic and regenerative farms are prioritised over, for example, monocrops that are grown in intensive farming systems that harm soil quality, intensively use artificial fertilisers and pesticides and clear natural woodlands for the purposes of increased crop lands.



1 in 3

people in Ireland meet the **minimum target** of at least **5 portions** of fruit and vegetables per day.

People should be encouraged to reach five to seven portions of fruit and vegetables per day and aim to choose more sustainable options where possible. Seasonal, locally produced fresh fruit and vegetables that don't require refrigeration are best. Tinned and frozen options can sometimes be a surprisingly better option than highly perishable fresh fruits and vegetables and help in reducing food waste.¹⁷³ However, while Ireland understandably imports tropical fruits like bananas and oranges from countries with hotter climates, data from the Central Statistics Office shows that we import large volumes of fruit and vegetables that can be grown in Ireland. In 2020 Ireland imported 75,000 tonnes of potatoes, over 65,000 tonnes of apples, 38,500 tonnes of onions, 25,000 tonnes of cabbage and 20,000 tonnes of carrots.¹⁷⁴ Rather than placing the burden on individual agency, it is far more effective and appropriate to shape the food environment through public health policy, agri-food policy levers and structural changes that can promote more locally grown fruit and vegetables, create a greater demand for fruit and vegetables, create greater access to fruit and vegetables, particularly for low-income groups, and disincentivise reliance on the more environmentally onerous options mentioned above.



Fish and seafood

The most commonly eaten fish in Ireland are cod, salmon, haddock, tuna and prawns. Nutritionally, fish and seafood are important sources of long-chain omega-3 fatty acids, protein and minerals like iodine. National dietary guidelines recommend eating two portions of fish, one of which should be oily, per week.

To increase sustainability, we should aim to increase the variety of fish consumed. People should look for fish and seafood from certified fisheries that promote sustainable fish stocks and minimise environmental impacts, especially bottom trawling. For wild fish, look for the Marine Stewardship Council (MSC) logo, and for farmed fish, the Aquaculture Stewardship Council (ASC) logo, as seen in Figure 13.^{175,176} More sustainable fish species should be promoted, for example, trout over salmon, mackerel over tuna, hake over cod, and small/mid-chain species like mussels or sardines over larger fish.

Figure 13: Logos of the Aquaculture Stewardship Council and Marine Stewardship Council



Source: Reproduced with kind permission of MSC and ASC^{169,170}

People who cannot or choose not to consume oily fish weekly should be encouraged to consume omega-3 essential fatty acids from plant-based sources such as flaxseed, walnuts, hempseed, rapeseed, chia seed, soybean, wheat germ and their oil derivatives, leafy green vegetables like kale and spinach or microalgae supplements. Apart from microalgae, plant-based sources of omega-3 are poorly converted in the body into the effective form of omega-3. Therefore, future updates to the food-based dietary guidelines should consider how best to support people who cannot or choose not to consume oily fish to meet their omega-3 requirements.

Please see the appendix for practical examples of healthy sustainable meal swaps discussed throughout Area 2.



Area 3

Harnessing the power of international and national guidelines

Harnessing the power of international and national guidelines

International and national policies and guidelines

In 2018, the IPCC recommended a safe limit for global warming of no more than 1.5°C above pre-industrial levels by 2050 if we are to prevent the most catastrophic consequences of climate change.¹⁷⁷ This recommendation was adapted into the legally binding international **Paris Agreement**, the **European Green Deal** and the EU's **Roadmap for Moving to a Competitive Low Carbon Economy in 2050** which frames Europe's response to these challenges. As an EU member state, the Irish government has legally committed to achieving a 51% reduction in Ireland's overall GHG emissions from 2021 to 2030, and to achieving net-zero emissions no later than 2050. This is outlined in Ireland's:

-
- ✓ **Climate Action Plan 2021**

 - ✓ **'Our Shared Future' Programme for Government 2020**

 - ✓ **Climate Action and Low Carbon Development (Amendment) Act 2021**


 - ✓ **Climate Action and Low Carbon Development Bill 2015**
-


However, despite a commitment to reducing GHG emissions, there has been a long-standing failure to align the agricultural sector with Ireland's obligations under environmental law. According to the EPA, agricultural emissions have increased over 19% in the last 10 years and are projected to continue to increase.¹⁷⁸ This is mainly due to significantly increased use of nitrogen fertiliser and the growing population of cattle, particularly dairy cows.


Between 2014 and 2019 dairy cow numbers rose by almost a quarter and milk production rose by 41%, owing to the removal of dairy quotas in 2014.


These numbers have risen every consecutive year since, mainly due to Ireland's ever-expanding exports. As a result, emissions of methane, a potent GHG, have significantly increased.

Regarding diet, the IPCC's report recommends that we:⁷

-
-  reduce calories produced and optimise calories consumed, through keeping calories in line with daily needs and health guidelines

 -  reduce waste in the supply chain and after purchase

 -  add more variety to the food plate and at the same time reduce emissions through dietary shifts from ruminant meat and dairy to other protein sources while maintaining nutritional quality

 -  improve agricultural practices and energy efficiency of food processing

These recommendations complement the **UN Agenda 2030 Sustainable Development Goals** and the EU's **Farm to Fork strategy**.

Between 2018 and 2020, Ireland's implementation progress for policies for tackling obesity and creating a healthy food environment was reviewed. This resulted in Ireland's first ever **Healthy Food Environment Policy Index (Food-EPI)**. The Food-EPI highlighted two further policies that hold great potential for creating a healthier food environment across Ireland: **A Healthy Weight for Ireland: Obesity Policy and Action Plan 2016-2025**, and the **Healthy Ireland Framework 2019-2025**. It is concerning however that in November 2022, an expert panel review of the Obesity Policy and Action Plan identified that only 10% (6/60) of actions were rated as having high levels of implementation.¹⁷⁹ Similar to the UK, after 30 years of obesity policies, obesity prevalence and health inequities still have not been successfully reduced. A review of British obesity policy made a number of findings: governments rarely commissioned evaluations of previous government strategies or learned from policy failures; governments tended to adopt less interventionist policy approaches, e.g., voluntary rather than mandatory food product reformulation; and rather than shaping external influences, policies largely made high demands on individual agency, meaning they relied on individuals to make behaviour changes and were thus less likely to be effective or equitable.¹⁸⁰ While this research was conducted on British obesity policy, addressing these issues in Ireland, particularly in a coordinated Public Health (Obesity) Bill that adequately focuses on structural and statutory changes rather than individual agency, could tackle population obesity more successfully.

Another major national strategy is **Food Vision 2030**. Published in 2021, Food Vision 2030 is a new 10 year strategy for the Irish agri-food sector. Food Vision 2030 places a higher value on environmental sustainability than its predecessors. It champions GHG emissions mitigation strategies such as better pasture management, reductions in chemical fertiliser, an increase in clover cover, more sustainable slurry spread,

use of protected urea, better use of genetics and feed additives and newer yet-to-be-proven technologies. These strategies are important and discussed further in Section 3, but at a foundational level, the major structural driver of increased GHG emissions remains relatively unchallenged, i.e., livestock numbers.^{181,182} According to the EPA, measures must go beyond improving efficiencies and focus on reducing total emissions by breaking the link between farmed animal numbers, fertiliser use and deteriorating water, air and climate markers.²⁶ A recent 2023 land use review by the EPA identified that only by implementing effective abatement of livestock emissions (an emissions decoupling of approximately 30%) plus ruminant livestock number reduction (up to 30% considered), along with other climate change mitigation measures, can we expect to be able to achieve net zero by 2050.¹⁸³

The expert opinion of the EPA indicates that it is unlikely that we will meet our climate obligations through the implementation of novel agricultural technology strategies alone.

Therefore, the Climate and Health Alliance recommends Food Vision 2030 implements strategies to support farmers to transition into farming sectors outside of ruminant livestock farming in order to reduce the national herd.

One of the actions of Food Vision 2030 is to produce detailed plans to manage the sustainable environmental footprint of the dairy and beef sectors. The Food Vision Dairy Group was set up in January 2022 and tasked with drawing up a plan for sustainable management of the dairy sector that would initially stabilise greenhouse gas emissions and then reduce them. The group's draft interim report published in April 2022 contains 17 recommendations, including a voluntary retirement scheme for dairy farmers and an emissions cap and trade scheme, both of which will likely reduce herd numbers. The Food Vision Beef and Sheep Group was set up in June 2022 and was set a similar task for this sector.

With increasing global demand for dairy and beef, there is concern from some farming and agri-food businesses that Ireland's reductions will be more than offset through increased meat and dairy production from more emission-intensive regions of the world, that it is inappropriate to put such targets in place considering current worldwide food insecurities and that these targets may harm the livelihoods of rural Ireland, particularly farm families. However, this argument does not consider the fact that, even though there is a global rising demand for dairy and beef products, a diet high in meat and animal products is not a sustainable diet that is consistent

with international climate goals under the Paris Agreement and given the narrow window of opportunity we have to avert catastrophic climate breakdown, as one of the world's wealthiest nations, Ireland should aim to be a global leader in healthy and sustainable diets.

Finally, in July 2022, the government agreed a landmark 25% reduction in Ireland's agriculture emissions by 2030, with mitigation measures asked of farmers to be voluntary and incentivised. This has been criticised by farming communities for going too far, and by environmental and business groups for not going far enough. Indeed, research indicates that the total of all sectors' emission cuts will not achieve the legally binding 51% reduction by 2030.¹⁸⁴ The IPCC report indicates that we have run out of time for making small changes, and we are left with no other choice than to make hard decisions urgently. According to the government, mitigation measures asked of farmers will be voluntary and incentivised, but senior government sources have said that the size of the national dairy herd will inevitably be reduced.¹⁸⁵

Implementing sustainability into national food-based dietary guidelines

Irish research by McCarthy et al.⁹⁴ suggests that greater adherence to our national food pyramid is a potentially meaningful way to reduce Ireland's GHG emissions. This is exemplified by UK research by the Carbon Trust, which estimated that greater adherence to the UK national dietary guidelines could result in a 31% reduction in GHG emissions.¹⁸⁶ Eating a varied diet from a wide range of sources as the food pyramid recommends also ensures we don't miss out on essential nutrients, particularly those that some of the Irish population are at higher risk for deficiency in, for example, iron, calcium and folate.

But what about the sustainability of our national food pyramid itself? The FAO recommends giving due consideration to climatic impacts when developing dietary guidelines and policies.¹⁸⁷ To this end, many countries have adopted sustainability considerations into their national dietary guidelines, for example, Sweden, Germany, Brazil, Canada, Belgium, the Netherlands, Qatar, Denmark and France. In Ireland, the 2021-2030 National Development Plan (NDP) has been designed to ensure that it supports the government's climate ambitions. For the first time in Ireland, climate and environmental assessment of the NDP measures has been undertaken, along with an assessment of the alignment of the NDP with the principle of a green recovery. The government has shown that it can add new parameters of assessment and we call for the same to be done with dietary and food policies. Work is currently underway by University College Cork and *saferfood* to review the international practice on building sustainability into national healthy eating guidelines.¹⁸⁸ The Climate and Health Alliance recommends that environmental sustainability is included as a core parameter in the next update of the Irish food-based dietary guidelines.

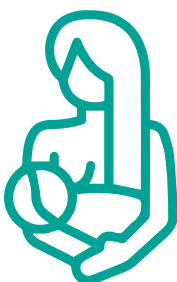
Breastfeeding action plan and policies

The Department of Health and Children and the WHO recommend exclusive breastfeeding of infants for the first six months, in combination with complementary, safe and nutrient-dense food until two years or older.¹⁸⁹ Studies have suggested significant cost savings to the health service would be achieved through even gradual increases in breastfeeding rates.^{190,191} Globally, rates of exclusive breastfeeding are well below 50% at six months.¹⁹² In Ireland, only 57% of mothers report any breastfeeding on discharge from maternity services, with only 46.3% exclusively breastfeeding.¹⁹³ Breastfeeding rates in Ireland are among the lowest rates in the world, and are significantly lower than initiation rates of 81% in the UK.¹⁸⁶ Socio-economic factors influence infant feeding practices in Ireland, with mothers who are younger, have less education and are from lower socio-economic groups at higher risk of never initiating or prematurely discontinuing breastfeeding. Breastfeeding is a significant protective factor against obesity in children, and the protective effect extends to some chronic diseases in adulthood, including diabetes.^{185,194}



Breastfeeding rates in **Ireland** are among the **lowest rates** in the world.

Breastfeeding also has significant environmental co-benefits as it requires no advertising, packaging or transport and results in no wastage or depletion of natural resources. The disproportionate carbon footprint of infant formula compared to breastfeeding arises primarily from the production and processing of dairy. Given the current 'halo' effect enjoyed by sustainable food options, it is important to note potential risks associated with infant formula companies making modest reductions in overall GHG emissions and marketing breastmilk substitutes as 'green' or 'sustainable' choices, which may mislead the consumer. This is an example of 'greenwashing'. Breastfeeding will always have a substantially lower environmental impact. To illustrate this point, a 2019 study estimated that 'breastfeeding for six months saves an estimated 95-153kg CO₂ equivalent per baby compared with formula feeding'.¹⁹⁵ This is the equivalent of driving a car 620 kilometres from Mizen to Malin Head.¹⁹⁶



Breastfeeding for six months saves an estimated **95-153kg CO₂** equivalent per baby compared with formula feeding - the equivalent of driving a car 620km from Mizen to Malin Head.

It is essential that we have fit-for-purpose policies in place to promote breastfeeding in Ireland. The Department of Health’s breastfeeding action plan 2016-2021 is now expired, so a new action plan must be published imminently. Furthermore, the WHO Code of Practice on the Marketing of Breastmilk Substitutes (WHO, 1981) was developed for the analogue environment, in other words, prior to the advent of digital marketing. We need robust measures in place to protect the human rights of mother and child against the risk of digital marketing of breastmilk substitutes. This protection should include a ban on the promotion of breastmilk substitutes to parents or healthcare staff within hospitals or community healthcare settings, and to sponsorship or advertising of breastmilk substitutes at healthcare professional meetings and conferences and in healthcare professional magazines.

Ireland has a substantial share in the global market for breast-milk substitutes, producing 13% of the global supply. However, economic interests should not interfere with the implementation of the International Code of Marketing. The widespread marketing of ‘follow on’ or ‘toddler’ milks in particular can be misleading for parents. According to the HSE, switching to ‘follow on’ formula after 6 months of age has no benefits for formula-fed babies, and formula-fed babies can continue on their first infant formula until they are one year old, at which point other milks like full-fat cow’s milk can be safely introduced.¹⁹⁷



The American Academy of Paediatrics describes the use of ‘toddler’ formula for age 1-3 years, as ‘unnecessary and potentially harmful to young children’ due to its higher sugar content and lower protein content compared to cow’s milk.¹⁹⁸

These products are promoted as breastmilk substitutes and their continued marketing implies a need where there is none, at an additional cost to families.

Full implementation and compliance with the WHO code will require investment in whole-time equivalents across acute and primary care settings in addition to enhanced training, provision of supports to mothers and social marketing.



Area 4

Reducing food waste and single-use plastics

Food waste

Food waste not only generates 8-10%¹⁹⁹ of global GHG emissions through its decomposition in landfill but also wastes all the unnecessary land, pesticides, fertiliser, water and energy used to produce the food.²⁰⁰ Approximately one million tonnes of food waste is produced in Ireland annually. Irish households produce a quarter of this (250,000 tonnes), at a cost of up to €700 per household.¹⁷¹ Bread, fruit, vegetables, salad and leftover mixed meals are consistently the most wasted food products in the home.²⁰¹

People in higher socioeconomic demographics have the most food waste as they tend to buy more fresh fruit and vegetables, while lower socioeconomic counterparts have a greater reliance on ready-made meals. About 60% of food waste is avoidable. Food waste monitoring is part of the EU's 'Farm to Fork' strategy, and legally binding EU food waste targets are expected in 2023. The Government's Climate Action Plan and Waste Action Plan for a Circular Economy are in line with these targets, aiming to reduce food waste by 50% by 2030. This is supported by the EPA's National Waste Prevention Programme and Stop Food Waste campaign for households.

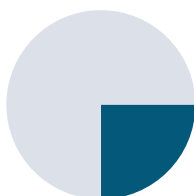


Approximately

1 million tonnes



of food waste is produced in Ireland annually.



Irish households produce a quarter of this at a cost of

€700



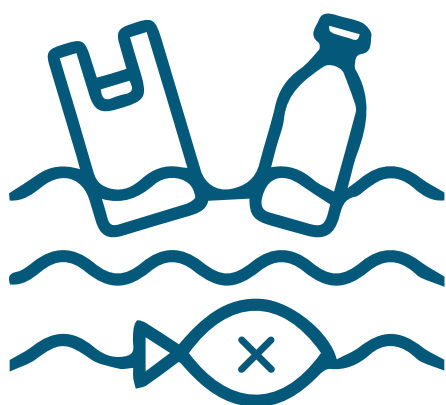
per household

60% of food waste is avoidable

Single-use plastics

Single-use plastics (SUP) take a very long time to break down and are harmful to the environment. In fact, SUPs account for 70% of the litter in European oceans.²⁰² Foods and beverages packaged in single-use plastic packaging contribute a significant amount of needless waste, for example, single-use coffee cups, single-use plastic water bottles, all other packaged beverages, and packaged whole fruit or vegetables. Since July 2021, certain SUPs are banned from the Irish market. Simple steps, when made by many people, can cause a significant reduction in food-related plastic waste, for example, using refillable water bottles or avoiding food products with unnecessary packaging. The plastic in these bottles, polyethylene terephthalate (PET), is highly recyclable, and there is high potential to recycle PET provided the right policies and incentives are put in place. As well as recycling, the EU's somewhat controversial upcoming packaging directive aims to significantly increase reusable packaging due to the favourable environmental footprint of a reusable container compared to SUPs or indeed recycled packaging.²⁰³

The food and beverage companies who use SUPs as part of their business model often externalise the environmental costs onto the consumer directly, for example, by placing the onus on people to recycle packaging, or indirectly, for example, through the health consequences of endocrine disruptors from plastics entering the food chain. Going forward more must be done at a policy, regulatory and fiscal level to insulate people from unnecessary SUPs and shift the responsibility back onto producers to either mitigate their use or to help pay for and facilitate their responsible disposal. Examples include the banning of BOGOF offers, increasing accessibility of potable water in public institutions like parks, schools and town squares, increasing funding for public awareness media campaigns to reduce food waste, and implementing the promised deposit-return scheme on plastic bottles.



Single use plastics
account for
70%
of litter in European
oceans.



Area 5

Improving agricultural practices and land use

How improved agricultural practices can protect the environment

The most recent IPCC report emphasises that current agricultural practices for both plant- and animal-sourced foods must be improved if the world is to succeed in halting climate change – net greenhouse emissions must reduce per calorie of food produced, or per 100 grams of protein. Figure 14 illustrates the huge influence agricultural production practices can have on rates of GHG emissions – production of 100g of protein from beef emits 25kg CO₂ equivalents on average, but this varies more than 10-fold, depending on how sustainable the agricultural practices are. This demonstrates that there is considerable opportunity to reduce GHG emissions caused by ruminant farming and increase carbon sequestration through improved agriculture production practices.

Producing 100 grams of protein from beef emits 25 kilograms of CO₂eq, on average. But this ranges more than 10-fold from 9kg (10th percentile) to 105kgCO₂eq (90th percentile).

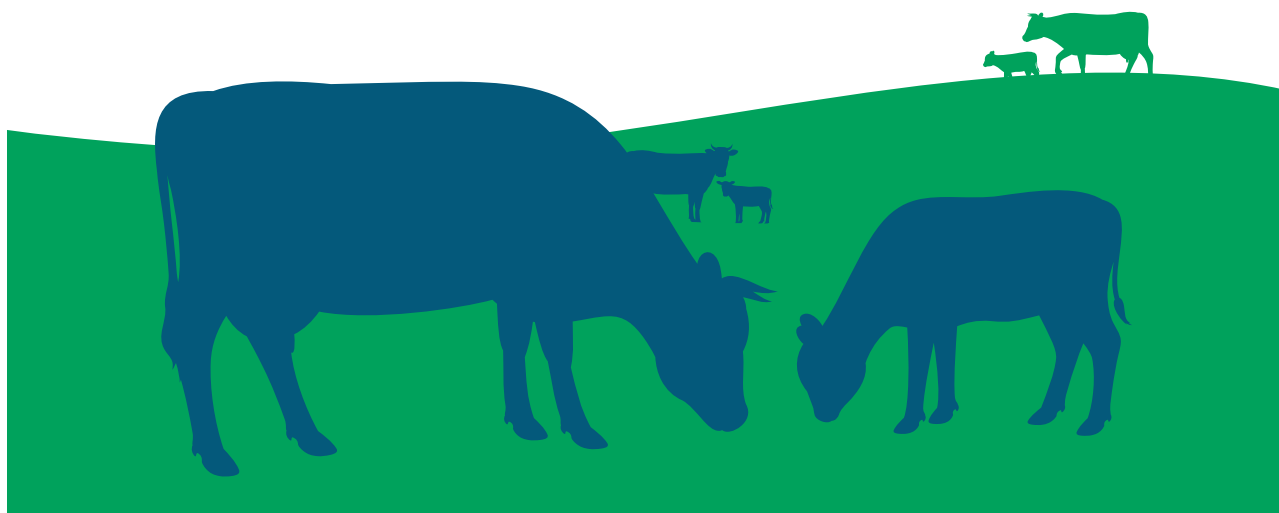
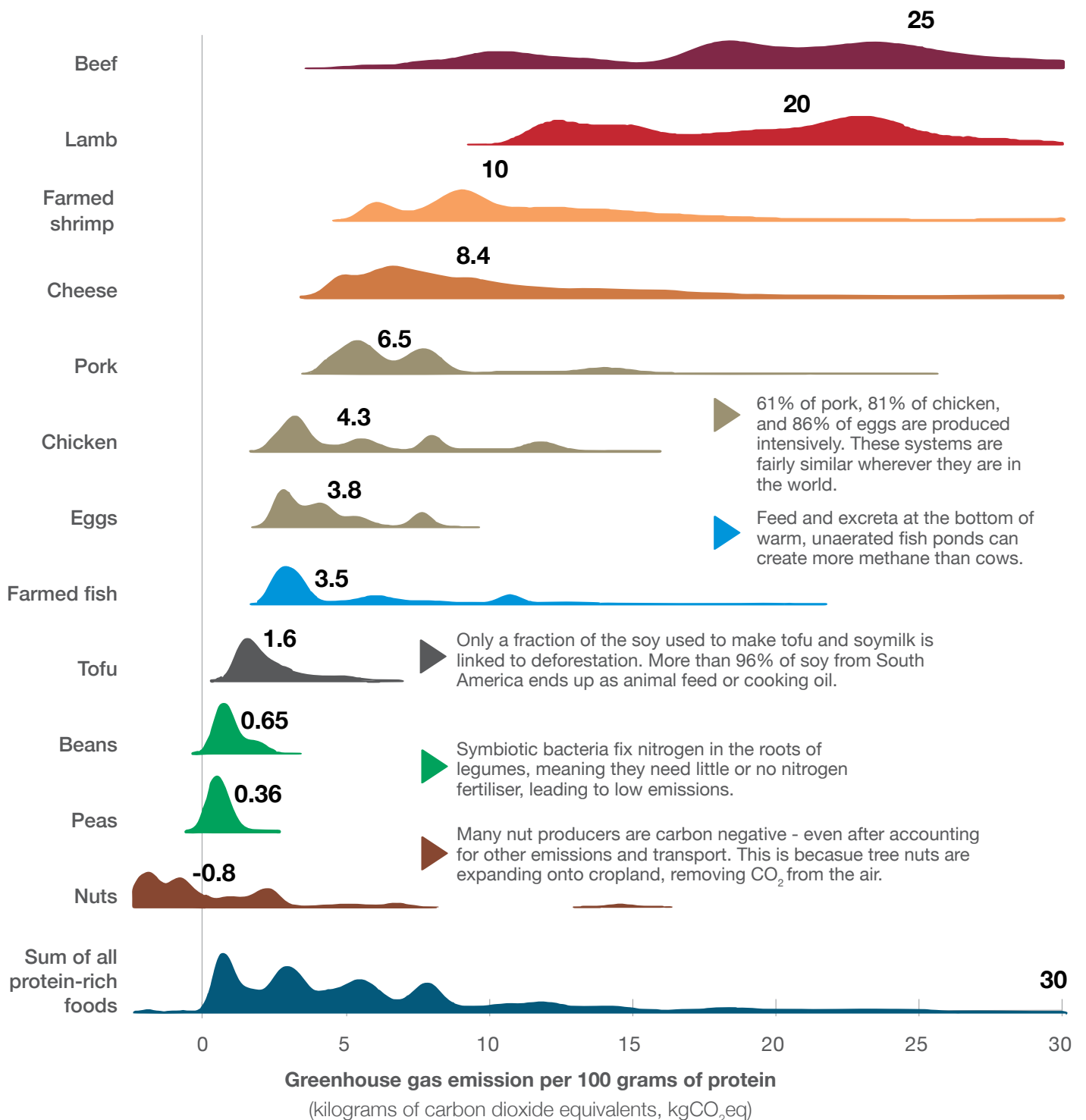


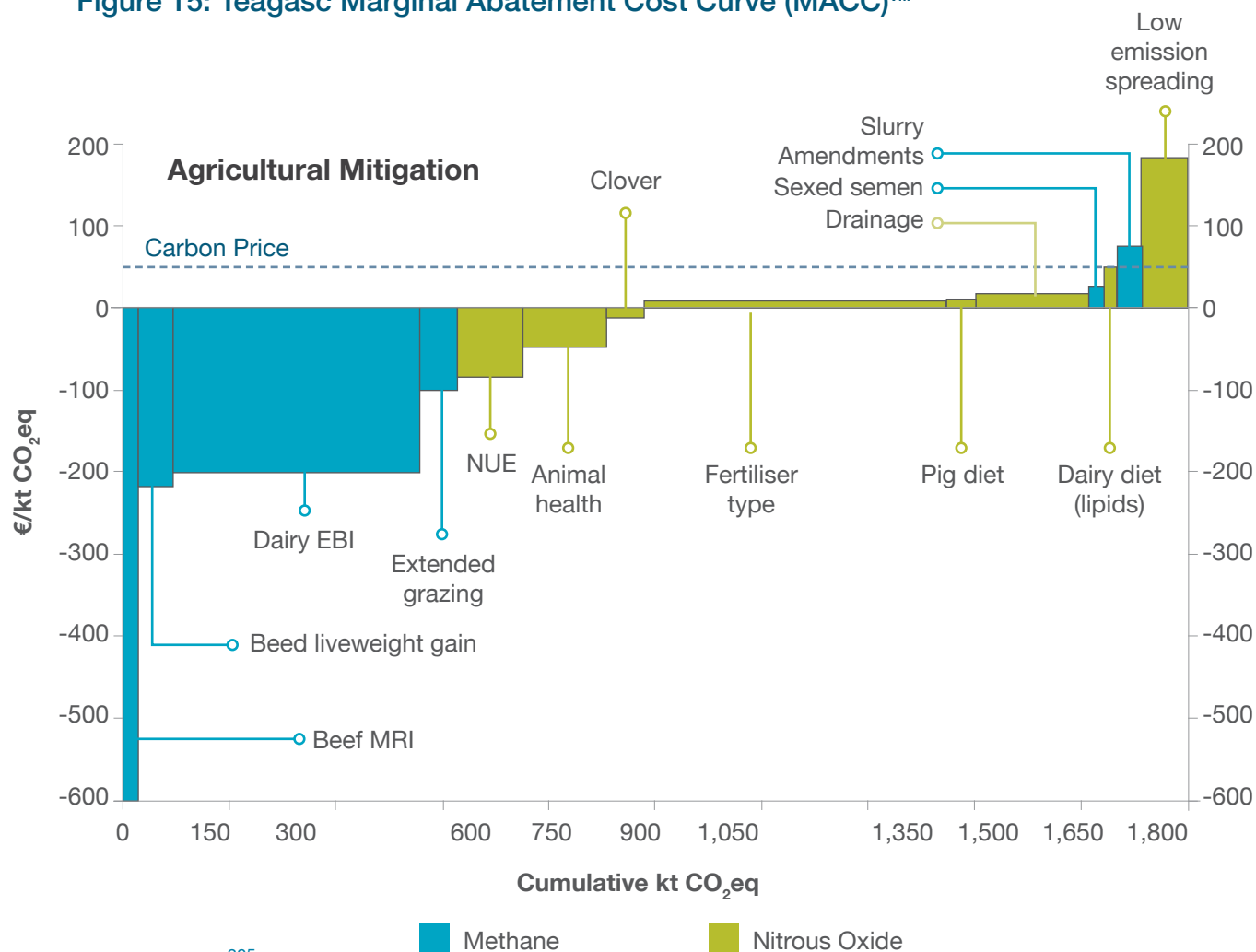
Figure 14: Plant-based proteins have low carbon footprints, while dairy and meat tend to have higher carbon footprints^{204,vii}



vii Data refers to the GHG emissions of food products across a global sample of 38,700 commercially viable farms in 119 countries. Emissions were measured across the full supply chain, from land use change through to the retailer and includes on-farm processing, transport, packaging and retail emissions.

The Teagasc Marginal Abatement Cost Curve (MACC) illustrated in Figure 15 summarises many of the currently available solutions for emissions reductions.

Figure 15: Teagasc Marginal Abatement Cost Curve (MACC)^{viii}



Source: Teagasc²⁰⁵

Glossary	
Beef MRI	Maternal replacement index. Estimation of how suitable an animal's daughters will be for calving ability, milk, fertility, and ultimately being low-maintenance suckler cows.
Beef liveweight gain	Increase or growth in live weight gain per unit of time.
Dairy EBI – dairy economic index	Single figure profit index aimed at helping farmers identify the most profitable cattle for breeding dairy herd replacements.

viii Data presented for methane and nitrous oxide abatement in agriculture. Values are based on linear uptake of measures from 2021 to 2030 and represent the mean yearly abatement over this period. Dashed line indicates carbon cost of €50 per tonne CO₂.

Extended grazing	Cattle grazing on pasture for an extended period of time with no, or infrequent rests to the plants from grazing.
NUE – nitrogen use efficiency	Quantity of nutrients recovered by a crop relative to the nutrients supplied from soil, applied fertilisers, manures and ultimately how much is recovered in the end product we are selling in terms of milk, meat or crops.
Sexed semen	Semen that contains sperm to produce more progenies of a desired sex (with about 80-90% accuracy).
Slurry amendments	Spreading as much slurry in the right weather conditions, using a low emissions way of spreading it, and use of slurry additives.
Low emission spreading	The spreading of low emission slurry which improves soil fertility and has a lower greenhouse gas emission output than that of conventional slurry spreading.

This tool gives an estimate of the volume and the costs of the various actions. The magnitude of the abatement potential of each measure is indicated by the width of each bar. Actions on the left of the MACC graph reduce emissions and save money at the same time; items on the right also reduce emissions but there is a cost involved. The identified solutions include:

- **Animal breeding** - continued good, efficient farming, improving economic breeding index (EBI) and beef genetic merit and the use of sexed semen.
- **Fertiliser choices** - switching to protected urea significantly cuts emissions of nitrous oxide compared to calcium ammonium nitrate.
- **Slurry management** - spreading as much slurry in the right weather conditions, using a low emissions way of spreading it, and use of slurry additives.
- **Animal nutrition** - grazed grass has lower emissions than total mixed ration diets like indoor systems. Removing excess protein is also important to reduce nitrogen-based losses.
- **Grassland management** - better grassland utilisation, in other words, measuring and managing grass accurately, and the incorporation of clover into grassland, extending the grazing season and getting soil pH and soil fertility right.

The EPA has recently assessed the impact of full implementation of Ireland’s Climate Action Plan, including the measures in the Teagasc MACC. Total emissions from agriculture are projected to decrease to approximately 17.2Mt CO₂ eq by 2030, which is a 19.8% reduction over the period 2020 to 2030.¹⁷⁷ Hence, additional solutions and actions will be required to meet the 2030, 2040 and 2050 targets.

The EU's 'Farm to Fork' strategy calls for carbon sequestration by farmers and foresters, stating that:

'Farming practices that remove CO₂ from the atmosphere contribute to the climate neutrality objective and should be rewarded, either via the common agricultural policy (CAP) or other public or private initiatives (carbon market)'. ...the Commission will develop a regulatory framework for certifying carbon removals based on robust and transparent carbon accounting to monitor and verify the authenticity of carbon removals.'

Ireland's Food Vision 2030 Strategy Mission 1, Goal 1, Action 4 (Roll out Carbon Farming) is very much aligned with this policy.

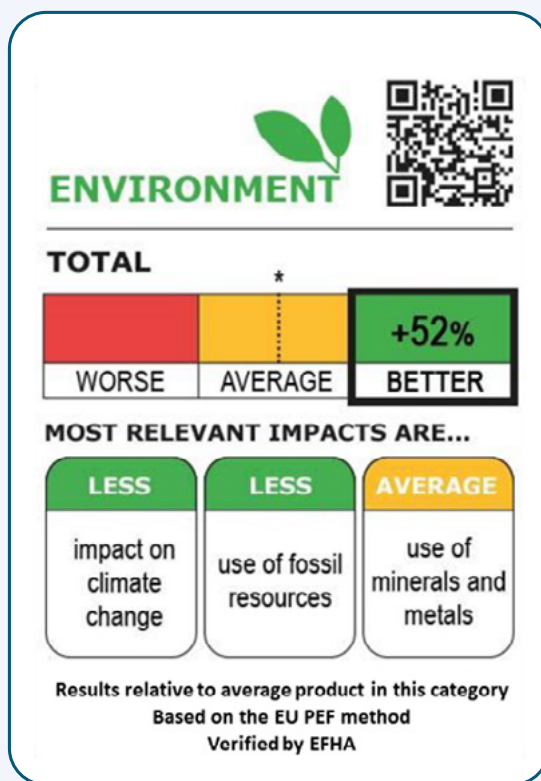
The 'Carbon Farming' initiative, proposed by the European Environmental Bureau (EEB), does provide much needed additional solutions not only for climate, but also for biodiversity, farm profitability and resilience.²⁰⁶ The EEB defines carbon farming as land management practices that reduce GHG emissions, and increase the sequestration and storage of carbon in soils and vegetation. Key strategies include rewetting and restoring drained organic soils (peatlands); managing grasslands in nature-inclusive ways; massively re-integrating trees in agricultural landscapes; and adopting agroecological, or regenerative, farming practices on arable land. The EEB notes that 'deploying these win-win-win solutions could turn agricultural land into a large carbon sink by 2050, while also restoring biodiversity and helping farmers adapt to climate change'. Yet, according to the EEB, carbon farming is being introduced in a patchy EU policy context. The lack of an overarching regulatory framework on soils means the EU has no level playing field for soil protection nor clear and binding targets for improvements. In this vacuum, policy actions are focused on voluntary incentives, with limited impact. Moving forward, the EU must put in place a policy and regulatory framework that will maximise the benefits from action on soil carbon and avoid undesirable trade-offs. Hence the EEB has called upon the EU to:

1. Ensure carbon farming delivers nature-based solutions, benefitting climate, biodiversity and rural communities
2. Set legally binding targets on climate, nature and soils
3. Establish mandatory baselines, monitoring systems and safeguards
4. Develop a coherent policy mix of effective incentives, mobilising private and public funding strategically
5. Invest in the enabling factors for behavioural change: knowledge, culture and infrastructure.

Interestingly, Northern Ireland has just launched its Soil Nutrient Health Scheme (SNHS)²⁰⁷ which provides a template for addressing EEB’s call 3 above. This scheme will provide farmers with detailed information on soil nutrient levels for every field on their farm, along with an estimate of the amount of carbon stored in their soils, hedgerows and trees.

The EU’s ‘Farm to Fork’ strategy’s proposal for a sustainable food labelling framework, and the resultant Product Environmental Footprint (PEF) methods and labelling initiatives²⁰⁸ may well contribute to EEB’s calls 4 and 5. While the primary purpose of communicating environmental footprint information to people is to promote the purchase of environmentally friendly products, it is well recognised that increased consumer demand will provide a strong incentive to farming, processing and retail organisations to produce and make available environmentally friendly food products. In addition, farmers that already produce environmentally friendly foods will be rewarded. An example of the proposed EU Product Environmental Footprint (PEF) label is shown in Figure 16. Given the current urgency of addressing climate change, we propose that people could be advised to preferentially purchase food products that carry both an overall green or better PEF label, and a green or less impact on climate change label.

Figure 16: Proposed EU Product Environmental Footprint Label



Source: Eisen et al.¹⁷⁹

Land use

Irish grassland on drained peaty soil is a significant source of carbon dioxide, and the huge land requirement to produce protein with cattle prevents carbon removal through reforestation and restoring Ireland's main native ecosystem, temperate rainforest. What's more, now the agricultural sector is being tasked with changing the way it uses land so that it does more than just produce food. We need to ensure that our farmers, who play a pivotal role in this transition, are adequately supported to help sequester carbon and restore biodiversity and nature. Our two greatest challenges in land use are how we use Irish land and how we pay Irish farmers.



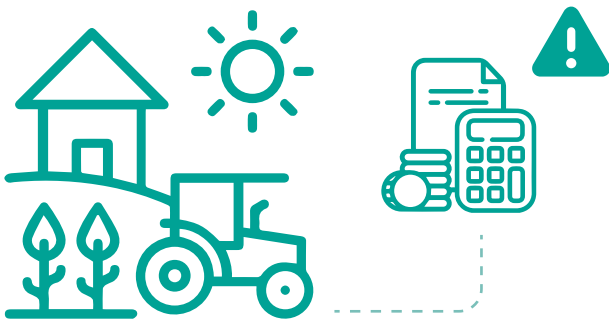
Overall, around **two thirds of Irish land** is used for livestock pastures and growing crops to feed the farmed animals, but it provides just a quarter of our calories.

How we use Irish land

Land quality in Ireland is very unevenly distributed. It is unrealistic to expect every region to produce food, restore nature and sequester carbon equally. We are lacking research that maps out land quality in Ireland, but research²⁰⁹ by Green Alliance in the UK mapped out areas that were efficient and inefficient at food production. The authors identified that giving a fifth of the least productive farmland to nature would mean they produce only three per cent less calories. In other words, they identified a way to make more space for nature without materially affecting food production. The report concluded that the least productive land is best given entirely to nature, most land would combine food production and nature, and some land is best given primarily to food production, while limiting environmental harms. It is likely that a similar mapping exercise of Irish land use could inform the development of a land use framework that can guide farm investment spatially. This will enable policy makers to account for those differences rather than driving farmers to maximise food production irrespective of whether their land is naturally good at it or not.

How we pay farmers

According to Teagasc’s ‘The Changing Structure of Irish Farming’ report, only approximately a third of Irish farms are viable/solvent, and most Irish farms rely on the basic payment scheme (BPS). These are often farms in regions that produce the least amount of food. Unprofitable farms tend to be more environmentally risky because they have less resources to keep up with improvements to regulations and best practice, for example, slurry storage or integrated pest management.



As the saying goes, **‘It’s hard to be green when you’re farming in the red.’**

In general, it is mainly larger dairy farms that benefit from the current productionist farming model, and therefore Irish farmers are incentivised to enter this sector over, for example, horticulture. This model makes it very difficult for small farms to be viable. There is an opportunity for farmers who are not highly profitable in food production to participate in effective landscape recovery and local nature recovery, for example, by increasing funding for climate-positive agricultural extension programmes. Ireland is in a uniquely favourable position in this regard, as we have some of the most educated and innovative farmers in the EU to take advantage of this opportunity. We have the talent, we just need to make farming, particularly horticulture, a more attractive career prospect for new entrants to the sector. This can be done by tackling the very real barriers to pursuing this career, for example, accessing credit and land, and by enhanced marketing of this career route.

Importance of a just transition

Reports from international expert panels say that we are neither going far enough nor fast enough in our transition towards net zero by 2050. However, we also have other groups in society, particularly those worst impacted economically and socially by climate change mitigation measures, who argue that we are going too far, too fast. These measures disproportionately affect Irish farmers, many of whom fear for their livelihoods, and have had to shoulder the enormous financial challenge of implementing these mitigation measures to sequester and store carbon - and that is a huge ask. Research by Stapleton *et al.* on suicide prevention for farmers identified the top three stressors for poor mental health in farmers as:

1 government policies designed to reduce climate change,

2 outsiders not understanding the nature of farming, and

3 concern over the future of the farm.²¹⁰

It is essential that farmers are supported to make this essential system change to produce food in a way that protects, conserves and restores nature. An encouraging development is the Agri-Climate Rural Environment Scheme (ACRES). This is a €1.5 billion scheme proposed as part of Ireland's draft CAP Strategic Plan (CSP). If approved, it will support 50,000 Irish farmers to deliver measurable climate, biodiversity and water quality gains. In Section 5 we will discuss further recommendations to ensure a socially equitable and just transition.

The Climate and Health Alliance is highly cognisant that for many, particularly smaller and poorer farmers, reducing their herd numbers or shifting entirely from dairy and cattle farming to other forms of agriculture will be a difficult, financially onerous undertaking. It is imperative that the government allocate the necessary financial and technical resources to support a just transition for those who do undertake this adjustment. Doing otherwise would be an abandonment of the most vulnerable and financially perilous farmers.



Area 6

Using a policy approach to affect behaviour change

Using a policy approach to affect behaviour change

We can discuss all the technical challenges of changing a food system, but we won't get very far if we don't understand where people are at, meet them there and put in place tangible behaviour change strategies to support them towards healthier and more sustainable practices.

As previously discussed in Area 3, population-wide behaviour change is best achieved when overarching policies, strategies and structures move in tandem, and don't actively stop people living healthier lives. This once again highlights the importance of shaping external influences rather than relying on individual agency.

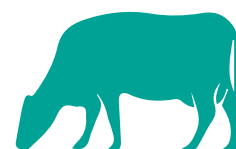
Challenges to promoting a sustainable healthy diet

Support for tackling climate change can be seen clearly in a 2022 survey by the Economic and Social Research Institute (ESRI) on a large representative sample of the Irish population. Findings illustrated that there is a near consensus on the need for concerted and urgent action to reduce Ireland's GHG emissions and to make Ireland resilient to future climate impacts.²¹¹ Climate change ranked third, after housing and healthcare, among the most pressing issues facing people in Ireland.

- However, the report also found that people's understanding of the relative contributors to climate change is low. For example, one in three do not recognise the agriculture sector as a main contributor of greenhouse gases in Ireland.
- People's understanding of the relative mitigating impact of different individual actions is also poor. For example, most people underestimate the impact of eating less meat and overestimate the impact of buying local, organic or unpackaged food.²⁰⁴

1 in 3

people do not recognise the **agriculture sector** as a main contributor of greenhouse gases in Ireland.



A similar study also by the ESRI on youth knowledge and perceptions of climate change mitigation indicated that there is a large appetite for change among young people in Ireland, particularly for the government to act, although young people demonstrated relatively low knowledge regarding which individual level actions are most impactful for climate change mitigation.²¹² Both surveys tell us that without understanding the key drivers and impact of mitigation measures, it's difficult to translate concern about climate change into real behaviour change. A 2021 Irish Times/Ipsos MRBI poll found a high degree of public resistance to many potential climate action measures, particularly measures that would entail increased costs.¹⁸² This highlights the clear need for widespread and public awareness and educational campaigns to help the public understand the urgent need for changes to our national food culture. It is also clear that people do not fully understand the link between climate and health.



It is vitally important that **the triple benefits** of an environmentally sustainable and healthy diet - **for people, their pockets, and the planet** - are communicated to people to change public opinion. This can be done through empowerment, creating supportive environments, strengthening community action, developing and implementing effective public policies and commissioning mass media campaigns to educate and promote awareness.

Additionally, as discussed previously, in our current food environment the sustainable food choice is not usually the easy choice. A European consumer survey²¹³ attests to the willingness of many people to change to more sustainable eating habits but that they are finding it hard to do so in current circumstances:



Less than **one in five (19%)** of Europeans have changed their diets to incorporate more sustainable food. Challenges such as price, lack of information, the issue of identifying sustainable foods and their limited availability were the main perceived barriers to sustainable eating.²¹⁴

Therefore, it is important that we foster an enabling food environment where foods that contribute to sustainable healthy diets are the most available, accessible, affordable, attractive and widely promoted.

A healthy and sustainable diet is also less accessible and desirable for many cohorts of our society;

- Fresh food is generally **more expensive**, and a healthy food basket can cost a low-income family over a third (35%) of their weekly income.⁴⁷
- Sustainable diets are often at odds with wider environmental determinants of health with, for example, people from more **deprived communities** being more exposed to the marketing and promotion of foods high in fat, sugar and salt.
- Many people may **never have tasted more diverse protein sources** like beans, lentils or soya products and may not know how to use them, and this makes them less desirable than familiar foods.

All these considerations have the potential to deepen health inequalities and create a less just society.

Individual changes to adopt a more sustainable diet can be effective but are unlikely to be scalable. A recent Institute of Grocery Distribution report indicated that while 66% of people say they are making changes to make their diets healthier, there is clearly confusion about what this means, with people tending to overestimate how balanced their diet is.²¹⁵ All of this tells us that we cannot place the burden of changing behaviours mainly on individuals. Rather, we need upstream policies and health promotion and educational campaigns to create supportive environments that make the sustainable choice the more convenient choice.

There is a whole arsenal of solutions available to us.

- **Zoning laws** can help bring healthier food outlets to under-served communities.
- **Financial incentives** can fund greater access to healthy foods for low-income families.
- Sustainability measures can be embedded into nutritional standards and meal provision for **public institutions** like schools and hospitals.
- **Education** to targeted professions and community groups can build capacity for leadership and grassroots initiatives.

Taking a life course perspective is also important. For example, in childhood, how can our educational system foreground food in a practical, authentic, mandatory way so that all children have access to it? Can sustainability criteria be embedded in the nutritional standards for the Free School Meals Scheme? Can additional funding be made available to fund staff to deliver free school meals; ironically, these staff are often funded through the revenue generated by confectionery sales in schools. As adults, how can society build time into working people's lives so that they can spend time cooking, learning about food and preparing meals on a daily basis?

Lastly, to comprehensively understand our current behaviours as well as progress (or lack thereof) towards a healthier, more sustainable food system, we must implement fit-for-purpose surveillance systems to collect data on this progress. For example, regular and adequately funded national nutrition surveys will allow us to track changes in national dietary patterns over time, and collecting data on farming practices will allow farmers to identify how sustainable their farms are and track their progress towards greater sustainability. These measures, and more, will be discussed further in Section 5.

05

Recommendations

In this section, the Climate and Health Alliance describes the characteristics of, and its recommendations for, a healthy and sustainable diet in an Irish context. The purpose of this is to inform individuals who wish to make individual-level dietary changes towards a healthier, more sustainable diet, and also to inform future updates to the Irish food-based dietary guidelines.

However, as mentioned throughout this paper, targeted policies and structural changes are significantly more effective than individual actions in achieving wider system changes. Therefore, in this section we also present recommended policies and actions to orientate the Irish food system towards a healthier and more sustainable diet for all.



Climate and Health Alliance characteristics of and recommendations for a healthy, sustainable diet

The Climate and Health Alliance describes a healthy sustainable Irish diet as having the following characteristics:



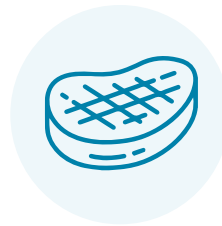
It includes a wide variety of foods in the right amounts to achieve **dietary balance** and **promote good health**.



It contains small amounts of **unsaturated plant oils** like olive or rapeseed oils.



It contains moderate amounts of sustainably sourced **fish and seafood**, **dairy products**, **eggs** and **poultry**.



Red meat, if eaten, is limited to small-moderate amounts. Processed meats are minimised.














It is based around a wide variety of **unprocessed or minimally processed** vegetables, fruit, wholegrains and other high-fibre starchy carbohydrate foods, pulses/legumes and unsalted nuts and seeds.











It is as low as possible in ultra-processed and discretionary foods and drinks that are high in **saturated fats, trans fats, salt, sugar, and/or multiple cosmetic additives**.

In Figure 1 below, the Climate and Health Alliance presents our recommendations for a healthy sustainable Irish diet compared to current dietary patterns in Ireland.

Figure 1: Climate and Health Alliance’s recommendations for a healthy, sustainable diet for the general population

 Avoid  Reduce  Moderate  Increase		
Breastfeeding	 If possible, exclusively breastfeed for at least six months. Continue breastfeeding until two years and beyond, combined with appropriate complementary feeding.	
Energy balance	 Adjust energy intake and expenditure to achieve dietary and energy balance and promote good health.	
Foods high in saturated/trans fat, sugar and salt	 Minimise consumption of ultra-processed foods and drinks high in saturated and trans fats, sugar or salt. Minimise the addition of saturated and trans fats, sugar or salt to meals.	
Plant proteins	 Diversify protein intake by choosing more beans, peas, lentils, soya products, mycoprotein, unsalted nuts and seeds, and less meat and poultry overall.	
Red meat and processed meat	 <p>Red Meat Reduce red and processed meat, if eaten, to 350-500g cooked weight per person per week, especially high consumers (>90g per day). If there is a tendency towards normally consuming large portion sizes, i.e., more than 50-70g cooked weight per person per day, include red and processed meat fewer times per week.</p>	 <p>Processed Meat Minimise processed meat.</p>
Fish	 Consume a wide variety of fish and seafood from sustainable sources only. Include a 140g portion twice a week, one of which should be oily fish.	















Dairy		<p>Moderate dairy consumption to consume three portions of milk, yogurt or cheese every day, choosing unsweetened options. Minimise higher-fat, higher-sugar options like butter, cream, ice-cream and flavoured milks. If choosing dairy alternatives, read the label and choose unsweetened, calcium-fortified options that are a source of protein.</p>	
Starchy carbohydrate foods		<p>Choose wholegrain, minimally processed potatoes and other unrefined grains.</p>	
Fruit and vegetables		<p>Eat 5-7 80g portions of a variety of fruit and vegetables daily. If possible, choose seasonal, locally produced options with minimal packaging.</p>	 <p>Minimise air freighted, pre-packed and ready-prepared options, except where their use helps to reduce food waste from perishable fruit and vegetables, such as frozen or tinned options.</p>
Hydration		<p>Choose tap water or unsweetened tea or coffee over sugar-sweetened beverages.</p>	
Food waste		<p>Choose tap water, tea or coffee over sugar-sweetened beverages.</p>	
Food waste		<p>Reduce food waste, especially from perishable foods.</p>	 <p>Recycle as much food waste as possible.</p>



Climate and Health Alliance recommended policies and actions

Our food system is vast and complex, but targeted policies and actions can be used as ‘control knobs’ to effectively achieve system changes. The seven action areas include recommendations that can directly shift food systems towards increasing the availability, affordability, appeal and acceptability of high quality, safe, nutritious foods, and away from producing and promoting nutrient-poor refined foods and products high in sugars, saturated and trans fats, and/or salt.

Recommendations

1.		National guidelines	
2.		Regulations and laws	
3.		Research, processing and technology actions	
4.		Financial actions	
5.		Agricultural actions	
6.		Public institution actions	
7.		Public awareness actions	



Recommendation 1:

National Guidelines

No.	Action
1.1	<p>Update the Irish food-based dietary guidelines, integrating environmental sustainability as a core parameter to promote both human and planetary health. This should be guided by:</p> <ul style="list-style-type: none"> ● the soon-to-be published findings of an extensive review of international practice on building sustainability into national food-based dietary guidelines which is being conducted by University College Cork and safefood, and ● the Climate and Health Alliance’s healthy and environmentally sustainable diet recommendations for Ireland (see Figure 1).
1.2	Adequately fund the update to the food-based dietary guidelines, including contributions of independent experts, training and national roll out.
1.3	Create, implement and monitor a new breastfeeding action plan as the 2016-2021 action plan is expired. The action plan should include investment in adequate staffing across acute and primary care settings to promote breastfeeding, in addition to enhanced training, provision of supports to mothers and social marketing.
1.4	Implement robust measures to fully comply with the WHO Code of Practice on the Marketing of Breastmilk Substitutes (WHO, 1981), particularly to protect the human rights of mother and child against the risk of digital marketing of breastmilk substitutes, including follow-on or toddler milks, by industry actors.
1.5	In line with the commitment of Food Vision 2030 to adjust targets to meet international climate obligations, and considering the expert guidance from the EPA regarding the need for ruminant livestock number reductions, the Climate and Health Alliance recommends a review of Food Vision 2030 with a view to implementing strategies to reduce herd numbers.
1.6	In future updates to the Climate Action Plan, as well as all future agricultural policies and funding, broaden the scope of the food system components discussed to include those outside of agriculture, food waste and packaging. For example, national nutrition guidelines, food and nutrition security, sustainable food procurement, public awareness campaigns for healthy and sustainable diets, and other examples included in the Climate and Health Alliance’s sustainable diet recommendations. In line with the UN’s Sustainable Development Goals, the foundation of our food, climate and agricultural policies and funding must prioritise human and planetary health over unsustainable economic growth and trade, e.g., export subsidies of high-value food products.



Recommendation 2:

Regulation and laws

No.	Action
2.1	Prioritise Irish action at EU level to secure simplified front-of-pack nutrition labelling in line with WHO guidance and the European Commission's proposed Food Information for Consumers (FIC) regulation. This should include a ban on nutrition and health claims on packs or promotion of products that are high in fat, sugar or salt.
2.2	<p>Protect the public, especially children, by publishing the Public Health (Obesity) Bill promised in the Programme for Government, with the following provisions:</p> <ul style="list-style-type: none"> ● An online ban on the marketing of unhealthy foods and beverages ● An extension of the 6pm watershed on television to 9pm for all unhealthy food and beverage advertising, and removing the current watershed loopholes ● A ban on unhealthy food and beverage advertising on state-owned transport, buildings and other public infrastructure such as bus stops ● National regulations providing for no fry zones for all new fast food outlets sited within one kilometre of schools and youth facilities ● The prohibition of adverts for unhealthy food and beverage products from being displayed within 200 metres of school playgrounds and early years services
2.3	Develop legislation for the mandatory removal of HFSS foods and drinks from end of aisles and checkout counters.
2.4	Develop legislation to ban buy-one-get-one-free (BOGOF) offers on HFSS foods and drinks to discourage overconsumption, and on perishable goods to reduce food waste.
2.5	Adopt the World Health Organisation's (WHO) profiling model for the regulation of nutrition and health claims on food products. While multiple evidence-based models exist, the WHO model helpfully allows for comparability with other countries.
2.6	Limit opportunities for greenwashing through implementation of the upcoming suite of European regulations, including the European Commission's Green Claims Directive, which is aimed at controlling this increasing trend.

No.	Action
2.7	Use zoning and planning laws to restrict numbers of ‘fast food’ outlets and vendors in select geographic areas to reduce availability of and access to HFSS foods and drinks, and promote access to shops and vendors where fresh, healthy produce is available. This should include the development of guidelines and support materials for local authorities and others working in developing the built environment.
2.8	To reduce unnecessary food packaging and in some cases food waste, prioritise Ireland’s support for the European Commission’s proposal for the revision of the EU legislation on packaging and packaging waste. This legislation should also include the promotion of loose, uncut fruit and vegetables over packaged alternatives in the processing of fruit and vegetables for retail environments.



Recommendation 3:

Research, processing and technology actions

No.	Action
3.1	<p>To be able to monitor and evaluate food and nutrition policies we need fit-for-purpose surveillance systems that are open-access, comparable with EU surveillance systems, and protected from vested interests. Of particularly high priority is the need to adequately fund:</p> <ul style="list-style-type: none"> ● routine National Nutrition Surveys which will allow monitoring of consumption patterns over time and tracking of the transition, or lack thereof, to more sustainable dietary patterns ● the creation of an open-access, independent, publicly funded National Food System data programme to provide the necessary nutritional data for Ireland’s Food Reformulation taskforce
3.2	<p>To accurately measure farmers’ and primary producers’ sustainability start-point and transition towards sustainability, increase investment in research that supports the identification of a framework to implement Food Vision 2030.</p>
3.3	<p>To increase availability and affordability of alternative micronutrient-rich protein sources and reduce appeal of red and processed meat to high consumers, continue to invest in research to develop alternative protein sources and share the research in the public domain.</p>
3.4	<p>Commission research to establish the most effective form of food labelling to implement to support people - particularly those living in lower socioeconomic circumstances - to make healthier, more sustainable food choices. This should include front of pack nutrition labelling, carbon labelling and origin labelling.</p>
3.5	<p>Commission a detailed behavioural analysis focusing on identifying the most effective strategies to promote fruit and vegetable access, acceptability and consumption in low-income groups and develop a plan to address systemic, structural issues related to fruit and vegetable consumption in Ireland.</p>



Recommendation 4:

Financial actions

No.	Action
4.1	Prioritise the completion and publication of the Department of Health evaluation of the impact of the 2018 Sugar Sweetened Drinks Tax, as the impact of this tax has not been evaluated since its implementation in 2018.
4.2	Expand the sugar sweetened drinks tax to incentivise reformulation of ultra-processed foods and drinks high in sugar, salt, saturated fat and industrial-produced trans fat. Use the proceeds to to improve access to healthier, more sustainable foods.
4.3	Introduce a much more progressive ‘wholefood formulation’ strategy which aims to reduce the processing of food, i.e., shifting national reliance on ultra-processed food category to processed and unprocessed categories.
4.4	Fully implement Deposit Return Scheme for single use plastic bottles.
4.5	Focus voucher and food delivery programmes on increasing the availability, affordability and appeal of nutritious foods, especially for low-income groups, e.g., vouchers for 25% off the retail price of fruit and vegetable for low-income groups, or incentivising food banks that favour more healthy and sustainable foods.
4.6	Carry out extensive scoping work on other taxes to incentivise reformulation of HFSS foods and drinks.
4.7	Use financial incentives and planning regulations to drive the establishment of new supermarkets, fresh food markets, healthier shops and healthier street vendors in underserved communities.



Recommendation 5:

Agricultural actions

No.	Action
5.1	Under the new Agri-Climate Rural Environment Scheme ('ACRES'), provide governmental subsidies and access to credit for farmers transitioning or diversifying from ruminant farming to horticulture, woodland, biomass or other regenerative farming practices.
5.2	Ambitiously incentivise and support farmers to increase proportion of land to be farmed organically from currently less than 2% to at least 7.5%, the target outlined in the Food Strategy 2030. Note this is still significantly below the EU's 'Farm to Fork' strategy's and Biodiversity strategy's target of 25%.
5.3	Provide adequate support and funding to agricultural extension programmes, infrastructure and education to support farmers to grow and market nutritious foods, particularly pulses.
5.4	Support the production and consumption of nutritious indigenous crops through agro-biodiverse cropping systems, agricultural extension, breeding programmes, subsidies, land tenure rights, regulatory protection, market development and public awareness.
5.5	Increase marketing of farming as a viable and attractive career choice to increase the number of educated young farmers entering the sector, and ensure adequate generational renewal to implement the necessary agricultural changes that our climate obligations require.
5.6	Tackle key barriers to young people pursuing a farming career, particularly horticulture (rather than dairy or dry cattle), specifically through access to credit and access to land.
5.7	Commission research to map Irish land quality and use findings to inform the development of a land use framework that can guide farm investment spatially.



Recommendation 6:

Public institution actions

No.	Action
6.1	Following the integration of sustainability into the national food-based dietary guidelines, integrate minimum sustainability criteria into current and future nutritional standards for public food procurement in public institutions like schools and the Health Service Executive (HSE), prioritising purchasing from smallholders, local, family and/or sustainable food producers.
6.2	Implement regular cost reviews of the Free School Meals Scheme to ensure that enough support is available to schools - particularly DEIS schools - to fully implement the Nutrition Standards for School Meals.
6.3	Expand the Nutrition Standards for School Meals to all school food provision, regardless of whether a school is receiving partial or full funding for free school meals or not.
6.4	With the planned phased expansion of hot meals under the Free School Meals Scheme, ensure that there is adequate funding available to employ staff to serve the hot meals, without relying on revenue generation from confectionery sales to fund this, as is the case in many schools currently.
6.5	Implement a mandatory Healthy Food Policy for all schools.
6.6	Integrate environmental sustainability into the Obesity Policy and Action Plan’s proposed ‘whole of school’ healthy lifestyle programme, which should include food and meals, nutrition standards, nutrition education, school gardens, food personnel training, food skills and literacy.
6.7	Scale up funding for health promotion programmes that support the implementation of nutrition and environmental standards for public institutions.
6.8	Provide free potable water in schools, workplaces, public spaces and all places that serve the public. Commission research to identify if this is taking place and identify the barriers and potential solutions for creating better access to potable water.

**Recommendation 7:****Education and public awareness actions**

No.	Action
7.1	Launch engaging and compelling mass media communication campaigns aimed at creating behaviour change in people to protect their health and the health of the planet by eating a more sustainable diet. This should focus especially on increasing consumption of pulses/legumes, fruit and vegetables, and on decreasing consumption of HFSS foods and drinks.
7.2	Promote traditional Irish foods and food cultures that are both healthy and sustainable by providing information about traditional dishes and public awareness campaigns.
7.3	Increase funding for public awareness campaigns that educate the public on practical ways to reduce food waste.
7.4	Integrate planetary health into the training of all healthcare professionals. Update relevant curricula to include planetary health training, which would allow all healthcare providers in turn to educate and raise awareness with their patients.
7.5	Support healthcare professionals with the independent, evidence-based information they need to deliver, and direct patients to, clear and accessible advice about food and health that supports a transition to a climate-friendly diet. This could be, for example, an information portal, educational modules on environmental health, etc. This should not be industry-led or funded.
7.6	Develop greater capacity for leadership in healthy and environmentally sustainable diets by developing and integrating relevant training into nutrition and dietetic degree programmes and continuing professional development for these professions.
7.7	Scale up effective school-based and community-based programmes with a focus on disadvantaged areas to enhance knowledge and skills for healthy eating. These programmes should increase their focus on environmental sustainability, including practical skills and methods for reducing food waste, and consider the perspective of people who experience poverty and deprivation. Environmental sustainability should also be incorporated into any future developments to relevant school curricula.
7.8	Provide continued professional development (education, upskilling) opportunities to relevant professions, especially farmers and other food producers, caterers and teachers, on environmentally sustainable diets. This should not be industry-led or funded.

Conclusion

As a group of healthcare organisations, the Climate and Health Alliance calls for a food system that offers sustainable nutrition for all, with security and resilience to future economic and climate events. We propose that continued transformation of the existing system take place in tandem with Ireland's transition to net zero and development towards a climate neutral economy by no later than 2050. We recognise that the food system is global, complex and driven by political and economic realities that may seem distant. We propose that a shift in values must also take place where the environmental impact of our policies, actions and organisations are central and protected from siloed agendas or four-to-five yearly election cycles.

A post-COVID-19 world would ideally look smaller with regional independence for food systems, not only to reduce food related carbon costs, e.g., travel or packaging, but to bolster the health and resilience of communities and encourage ownership of our micro-environments. The aim of sustainable food production in Ireland should be centred on reducing carbon and other warming gas emissions in line with our carbon budget.

Governments play a leading role in protecting the health of the public and planet, and going forward they should be emboldened to embark upon policies that would be deemed impossible before the COVID-19 pandemic. The public have shown a willingness to be led by a sound evidence base in an emergency and that healthcare professionals and healthcare organisations remain highly trusted sources of information. It is not lost on healthcare professionals that advocating on these subjects is a departure from our own areas of expertise and day-to-day duties, but given the gathering storm of climate breakdown and avalanche of chronic diseases, we now feel obliged to use our trusted voice to speak up. If not now, then when? If not us, then who?

Appendix 1

Healthy sustainable meal swaps



Breakfast

Classic Irish cooked breakfast

Swap:

2 fried pork sausages, 2 fried bacon rashers, 2 fried eggs and a serving of baked beans served with 2 white toast and butter.

For:

1 grilled pork sausage, 1 poached egg, increase the beans, add mushrooms, served with 2 wholegrain toast with spread made from plant oils.



Dinner

Spaghetti Bolognese

Swap:

Bolognese made with minced beef, with a large pasta serving.

For:

Halve the meat of the recipe and replace with tinned lentils or beans and other vegetables. Serve with a moderate portion of wholewheat spaghetti and a side of seasonal vegetables.



Cereal

Swap:

Frosted cereal flakes with milk.

For:

Irish porridge oats with milk or fortified unsweetened plant-based drink (soya/oat/nut), topped with fruit (fresh/frozen/dried) and a sprinkle of toasted seeds.



Traditional Irish dinner

Swap:

Baked ham, boiled cabbage, potatoes mashed with butter and milk.

For:

Baked darne of Irish trout and seasonal vegetables served with boiled baby potatoes.

Abbreviations

ACRES	Agri-Climate Rural Environment Scheme
BDA	British Dietetic Association
BOGOF	Buy one get one free
CAP	Common agricultural policy
CH ₄	Methane
CHA	Climate and Health Alliance
CO ₂	Carbon dioxide
CSP	CAP Strategic Plan
CVD	Cardiovascular disease
EAT-Lancet	Commission on Healthy Diets from Sustainable Food Systems
EBI	Economic breeding index
EEB	European Environmental Bureau
EPA	Environmental Protection Agency
ESRI	Economic and Social Research Institute
FAO	Food and Agricultural Organization of the UN
FIC	Food information to consumers
Food-EPI	Healthy Food Environment Policy Index
FSAI	Food Safety Authority of Ireland
GAIN	Global Alliance for Improved Nutrition
GHG	Greenhouse gas emissions
HFSS	Ultra-processed foods high in fat, sugar and salt
HSE	Health Service Executive [Ireland]
IGD	Institute of Grocery Distribution
IPCC	Intergovernmental Panel on Climate Change
MACC	Marginal abatement cost curve
MESL	Minimum essential standard of living
MRI	Maternal replacement index
N ₂ O	Nitrous oxide
NUE	Nitrogen use efficiency
PEF	Product environmental footprint
SDGs	Sustainable Development Goals
SLÁN	Surveys of Lifestyle and Attitudes on Nutrition
SNHS	Soil Nutrient Health Scheme
SSB	Sugar-sweetened beverages
SUP	Single-use plastics
UCC	University College Cork
UCD	University College Dublin
UN	United Nations
UNICEF	United Nations Children’s Fund
WHO	World Health Organisation

Glossary

Agrobiodiverse	The variety and variability of animals, plants and micro-organisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries
Ambient particulate matter	Population-weighted average mass concentration of particles with an aerodynamic diameter less than 2.5 micrometres in a cubic metre of air
Anthropogenic	Environmental change (such as increases in greenhouse gas emissions) that results from human activity
Antimicrobials	Medicines used to prevent and treat infections in humans, animals and plants
Beef liveweight gain	Increase or growth in live weight gain per unit of time
Beef maternal replacement index	Estimation of how suitable an animal's daughters will be for calving ability, milk, fertility and ultimately being low-maintenance suckler cows
Biodiversity	The variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable
Carbon farming	Land management practices that reduce GHG emissions, and increase the sequestration and storage of carbon in soils and vegetation
Carbon footprint	Total amount of greenhouse gases (including carbon dioxide and methane) that are generated by a set of actions
Carbon sequestration	Process of capturing and storing atmospheric carbon dioxide
Carbon sink	Anything that absorbs more carbon from the atmosphere than it releases – for example, plants, the ocean and soil
Clover cover	The planting of clovers to cover the soil for nitrogen fixing
Dairy economic breeding index	Single figure profit index aimed at helping farmers identify the most profitable cattle for breeding dairy herd replacements
Deforestation	Removal of a forest or stand of trees from land that is then converted to non-forest use
Ecosystems	Geographic area where plants, animals, and other organisms, as well as weather and landscapes, work together to form a bubble of life
Extended grazing	Cattle grazing on pasture for an extended period of time with no, or infrequent rests to the plants from grazing

Fertiliser	Any material of natural or synthetic origin that is applied to soil or to plant tissues to supply plant nutrients
Food reformulation	Improving the nutritional content of commonly consumed processed foods and drinks by reducing calories and target nutrients (such as saturated fat, salt and sugar)
Food system	Interconnected system of everything and everybody that influences, and is influenced by, the activities involved in bringing food from farm to fork and beyond
Greenhouse gas emissions	Gases that trap heat in the atmosphere
Herd or flock numbers	The number of both cattle herds and sheep flocks
Horticulture farming	The farming of vegetables, fruits, ornamentals, flower bulbs, trees, mushrooms and protected crops
Livestock	Domesticated animals raised in an agricultural setting to provide labour and produce diversified products for consumption such as meat, eggs, or milk
Low emission spreading	The spreading of low emission slurry which improves soil fertility and has a lower greenhouse gas emission output than that of the conventional spreading method
Nitrogen use efficiency	Quantity of nutrient recovered by a crop relative to the nutrients supplied from soil, applied fertilisers, manures and ultimately how much is recovered in the end product we are selling in terms of milk, meat or crops
NOVA	Food processing classification system
Nutrition	The taking in and use of food and other nourishing material by the body
Pasture system	How the pasture areas (farmland grazed by domesticated farm animals) is arranged and the general plan for handling the animals
Pesticides	Substances commonly used in agricultural practices to control pests
Peatlands	Terrestrial wetland ecosystems in which waterlogged conditions prevent plant material from fully decomposing, e.g., lands consisting of peat or peat bogs
Plant-based diet	A diet consisting mostly or entirely of plant-based foods
Planetary boundary	The environmental limits within which humanity can safely operate

Processed foods	Agricultural commodities that have been washed, cleaned, milled, cut, chopped, heated, pasteurized, blanched, cooked, canned, frozen, dried, dehydrated, mixed or packaged — anything done to them that alters their natural state
Protected urea	Urea that is treated with an active ingredient called a urease inhibitor
Rewetting	Restoring natural water flow and saturating peatland to reduce greenhouse gas emissions, slow subsidence and reduce the risk of wildfire
Ruminant farming	Farming of animals such as cattle, sheep and goats
Sexed semen	Semen that contains sperm to produce more progenies of a desired sex (with about 80-90% accuracy)
Single-use plastics	Plastics that are used once, or for a short period of time, before being thrown away
Slurry	A mixture of manure and water, it is used by farmers as a natural fertiliser for their crops
Slurry amendments	Spreading as much slurry in the right weather conditions, using a low emissions way of spreading it, and using slurry additives
Soil pH	A measure of the acidity or alkalinity of soil, which plays a key role in soil fertility
Tipping points	Critical thresholds in a system that, when exceeded, can lead to a significant change in the state of the system, often with an understanding that the change is irreversible
Unprocessed foods	Any foods that are nearest their whole, raw, and natural state, and contain no artificial flavours or colour, synthetic ingredients, chemical preservatives, or dyes
Urea	An organic compound that is widely used in fertilisers as a source of nitrogen and is an important raw material for the chemical industry

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