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Dietary guidance for healthy and climate-friendly diets: a review of international evidence

Angela Tregear[1], Andrew Moxey[2] and Mary Brennan[1]
[1]University of Edinburgh Business School, [2]Pareto Consulting
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Executive Summary

Background

The UK Climate Change Committee states that adjustments to dietary patterns are necessary to meet greenhouse gas (GHG) reduction targets for Scotland. Food-based dietary guidelines (FBDGs) have a policy role to play in supporting such adjustments.

Drawing on international evidence including three case studies, this report presents findings on whether and how greenhouse gas emission criteria could be included in Scottish FBDGs.

Main findings

- Out of 33 jurisdictions reviewed, only seven have FBDGs with extensive climate focus. However, this number is increasing over time.
- Emissions-focused FBGDs advise reducing meat, in particular ruminant meat; moderating dairy; increasing vegetables, fruits and plant proteins; sourcing sustainably; avoiding highly processed foods and reducing food waste.
- FBDGs for Flanders, the Netherlands and Sweden offer good examples of how dietary linkages between human and planetary health can be explained with clear recommendations for food consumers.
- Development of climate-focused FBDGs suits a 'science first' approach, involving cross-disciplinary expert panels and reviews. Stakeholder inputs are restricted to the final steps of messaging and implementation.
- Policy implementation for climate-friendly diets requires coordinated effort and strategic packages of measures, to tackle the food system holistically.

- In Flanders, the Netherlands and Sweden, policy coordination has been lacking. Measures to date are largely limited to information campaigns and voluntary actions in public catering.
- More recently, Flanders and the Netherlands have launched more integrative food strategies. They are starting to combine policy measures across the food chain to encourage more sustainable diets.

Implications for Scotland:

- Adopting climate-focused FBDGs would require time and effort, but would be a generally low-regret action, aligning with dietary goals and the net zero agenda.
- Some micronutrient deficiency risks are possible for certain population groups, depending on which foods are substituted. Other potential risks include displacement of GHG emissions from import/export activities.
- To address such issues, a coordinated cross-departmental policy approach would be needed, deploying a mix of supply-side and demand-side measures.
- In particular, households at risk of micronutrient deficiencies due to constrained access to healthy foods would need targeted support, including improvements to their food environments.

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Glossary / Abbreviations table

BMI	Body Mass Index: a weight to height ratio used to indicate whether an individual is underweight, normal weight, overweight or obese.
CAP	Common Agricultural Policy: the overarching framework for supporting agricultural production across the EU.
CCC	Climate Change Committee: the statutory advisory body to the UK government and Devolved Administrations in relation to climate mitigation and adaptation.
Demand-side	Used to describe policy measures seeking to influence the demand for (in this case) different foods. For example, raising or lowering consumer prices through taxation or subsidies.
Eatwell Guide	A policy tool used to define government recommendations on eating healthily and achieving a balanced diet within the UK.
Eco-labelled	Voluntary certification of products to indicate their environmental impact.
FBDG	Food Based Dietary Guidelines offer advice on foods, food groups and dietary patterns to provide the required nutrients to the general public to promote overall health and prevent chronic diseases. Some now also include environmental considerations.
Food Environment	The physical, economic, political and socio-cultural contexts in which people engage with the food system to make their decisions about acquiring, preparing and consuming food. Can significantly affect consumers' access to different foods.
GHG	Greenhouse Gases: gases in the atmosphere that contribute to climate change. Notably carbon dioxide and methane.
HFSS	Food and drink high in fat, sugar or salt.
Micronutrient decencies	A lack of certain dietary elements required in low concentrations. For example, various vitamins and minerals.
NNR	Nordic Nutritional Requirements: these constitute the scientific basis for national dietary guidelines and nutrient recommendations across the Nordic and Baltic countries.
Nutrient dense	Nutrient-dense foods contain relatively high levels of vitamins, minerals, complex carbohydrates, lean protein, and healthy fats for a given weight of food.

Protein Strategy	A stated EU-wide and domestic approach to encourage greater production and consumption of plant proteins.
Science first	The approach adopted in some countries for developing FBDG, basing recommendations on scientific evidence first before only later considering stakeholder views on implementation.
Scottish Dietary Goals	The Scottish Dietary Goals describe the diet that will improve the health of people in Scotland by reducing the number of people who are overweight and obese, and the number of people getting diet related diseases.
Supply-side	Used to describe policy measures seeking to influence the supply of (in this case) different foods. For example, production subsidies or regulatory controls.
UPF	Ultra Processed Foods. Food items at the extreme end of the NOVA food classification system, characterised by a very high degree of processing and often including artificial ingredients.

1 Introduction

1.1 Background

The food system is a significant emitter of greenhouse gases (GHGs), accounting for up to 30% of emissions globally and at least 20% within Scotland.[1] As other sectors of the economy (e.g. energy) decarbonise, food's share of total emissions will increase over time. Mitigation of this can be (and is being) attempted through changes to the production methods of the foods that currently comprise our diets (e.g. via improved plant and animal health and reductions in chemical inputs).

Yet meeting GHG emission targets will also require changes to diets themselves, towards those featuring greater proportions of climate-friendly foods. Dietary shifts for climate reasons must also, of course, promote human health, a dual imperative that is captured in concepts such as the Planetary Health Diet.[2]

Scottish Government commitments to a sustainable, healthy food system and associated emission reductions are expressed in the Programme for Government 2023/24 and underpinned by, for example, the Good Food Nation (Scotland) Act 2022, the Climate Change (Scotland) Act 2009 (and subsequent amendments) and Climate Change Plan Updates.[3] In the Scottish Dietary Goals, the aim to reduce red and red processed meat intake to no more than 70g/day, due to the links with colorectal cancer, is also broadly consistent with the UK Climate Change Committee's recommendation of a 20% reduction in meat by 2030 to reduce emissions.[4]

The current UK Food Based Dietary Guidance (FBDG) is the Eatwell Guide[5]. Studies indicate that a diet following the Eatwell Guide generates lower emissions than the current UK diet[6]. However, diets based on many FBDGs globally, including the Eatwell Guide, exceed emissions targets for 1.5 degrees global warming[7]. Hence this report was commissioned to gather international evidence on more climate-focused FBDGs, and explore how they may potentially apply in Scotland.

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[1] e.g. see Reay (2020), Crippa et al., (2021), Agriculture and climate change - Agriculture and the environment - gov.scot (www.gov.scot).
[2] e.g. see Planetary Health | UNFCCC and The Lancet Planetary Health Home Page
[3] equality-opportunity-community-programme-government.pdf (www.gov.scot), Good Food Nation - Food and drink - gov.scot (www.gov.scot), Climate change - gov.scot (www.gov.scot)
[4] See Comrie et al, 2024, Scottish Emission Targets & Progress in reducing emissions in Scotland – 2022 Report to Parliament - Climate Change Committee (theccc.org.uk) and 2. Response to CCC Recommendations - Climate Change Committee's (CCC) annual progress report 2022 recommendations: SG response - gov.scot (www.gov.scot)
[5] The Eatwell Guide | Food Standards Scotland
[6] The eatwell guide: A more sustainable diet | The Carbon Trust (2016); Scheelbeek et al., 2020.
[7] Springmann et al (2020) The healthiness and sustainability of national and global food based dietary guidelines: modelling study | The BMJ

The specific project objectives were to:

(i) explore dietary guidelines and recommendations in other jurisdictions;

(ii) explore the extent to which these have a climate focus;

(iii) identify what policies, strategies and actions have been taken to encourage progress to the guidelines;

(iv) discuss what could potentially apply in Scotland, drawing on Scottish data and evidence, and

(v) explore impacts on different groups in Scotland, e.g. gender, age, social class, vulnerable groups.

The findings are relevant to the UK Climate Change Committee's statement that meeting Scottish emission reduction targets will require changes to dietary patterns. The findings are also relevant to future revisions of the Scottish Dietary Goals.

1.2 Project Methods

The project was undertaken in five steps, from October 2023 to March 2024. The steps are shown in Figure 1.1 and described below.

Step 1: Guided by the Steering Group, and with reference to published studies, we selected the FBDGs of 33 international jurisdictions for inclusion in the study. The set comprised mainly European and anglophone jurisdictions.

Step 2: Using FAO resources and online documentation, we accessed the FBDGs in all 33 jurisdictions, and reviewed each one for reference to climate. We allocated each FBDG to one of three categories, according to the extent of climate focus: from 'red' (little to no reference to climate) to 'green' (extensive climate focus).

Step 3: Following discussion with the Steering Group, we selected three example 'green' FBDGs to examine in more detail. These were Flanders, the Netherlands and Sweden. In each case, we identified the main advice and how it is linked to climate. We also studied the development process for the FBDGs. Lastly, we reviewed key policies, strategies and actions taken to implement the FBDGs. The main data sources were online materials and grey literature. These were supported by semi-structured interviews with officials involved in the development of the guidance in each jurisdiction (see Appendix A).

Step 4: We compared the insights from the 3 jurisdictions with the current situation in Scotland, drawing from official data sources and recent studies. We then reflected on what could potentially apply in Scotland, in terms of more climate-focused FBDGs and supporting policies. These reflections drew from published studies and official statistics, and were also informed by semi-structured interviews with a range of Scottish stakeholder groups. Guided by the Steering Group, these groups were: ASSIST FM; the British Dietetics Association; Food and Drink Federation Scotland; National Farmers Union Scotland; Nesta; Soil Association Scotland.

Step 5: We explored the impacts of more climate-focused FBDGs on different sub-groups in Scotland. The key data sources were official dietary statistics and recent studies of potential impacts of climate focused diets in Scotland.

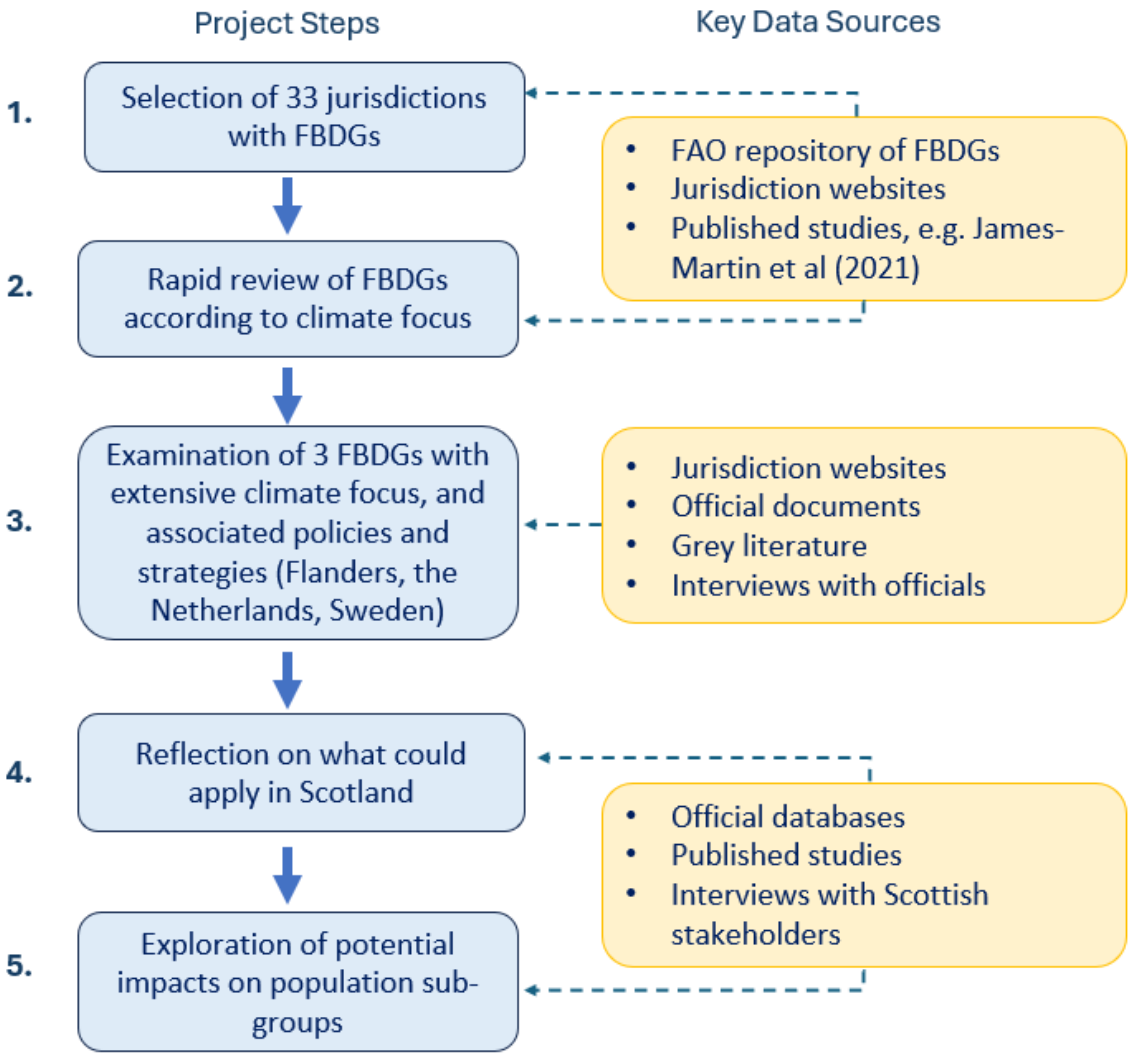

Figure 1.1. Flow chart of project steps

2 International review of FBDGs

2.1 Review of FBDGs in other jurisdictions, with reference to climate criteria

Appendix B provides a tabulated summary of information for all 33 FBDGs included in the review, on a country by country basis. Appendix C summarises the intakes for key food groups (all meat, red/processed meat, dairy, fruit and vegetables) as stated in the FBDGs for 22 of the 33 jurisdictions.

Of the 33 FBDGs studied, we found the majority (19) contained no or extremely limited reference to climate impact. Six contained moderate reference, while seven contained extensive reference (Table 2.1). It is worth noting that although the majority of countries have yet to explicitly include reference to climate in their FBDGs, or are still at the development phase, the number is increasing over time. For example, all the entries in the Extensive column have emerged in the past decade.

No reference, or very limited reference		Moderate reference	Extensive reference
Australia	Latvia	Belgium (national)	Denmark
Austria	Malta	Chile	Finland
Brazil	New Zealand	Estonia	Belgium (Flanders)
Canada	Norway	France	Germany
Croatia	Portugal	Italy	Netherlands
Cyprus	Romania	Poland	Spain
Greece	Slovenia		Sweden
Hungary	Switzerland		
Iceland	UK		
Ireland	USA		

Table 2.1: extent of reference to climate impacts in FBDG of other jurisdictions (n=33)

Jurisdictions in the red column: these have FBDGs which make no reference to climate impact, or only very limited reference, in either background or consumer-facing documents. 'Limited reference' denotes guidance which mentions sustainability, but only in an isolated way, and without any explanation or context. For example, the FBDGs of Austria and the UK (Eatwell Guide) both recommend choosing 'sustainably sourced' fish, by looking for MSC or similar labelling. However, this is the only reference to sustainability in the documents (i.e. no other food group has a similar recommendation), and there is no explanatory connection to the underlying sustainability issue with fishing.

Jurisdictions in the amber column: these FBDGs – in either consumer-facing or background documents – make more reference to climate than those in the red column. However, those references appear either in a circumscribed way, disconnected from the main guidance, or are individually brief or superficial within the body of the main guidance. An example of 'circumscribed reference' is the national guidance for Belgium. In the background document, there is a short stand-alone chapter dedicated to sustainability and climate, which explains the relevance to dietary issues. However, the contents are not connected to other chapters, and sustainability is not referred to in the consumer-facing guidance. An example of 'superficial reference' is the guidance for France. There are three individual references to climate and the environment in the consumer-facing guidance, however each one is very brief, without explanation of the underlying issues.

Jurisdictions in the green column: these FBDGs – in either the consumer-facing and/or background documents – make extensive reference to climate impact. The most advanced of these have climate impact as an integral component of the guidance, rather than an added feature, or set of ideas in development. Features that the 'green' FBDGs have in common include (i) introductory sections which make a clear connection between human health and planetary health, (ii) frequent references to climate impact throughout sections and applied to different food groups, (iii) effort (some more than others) to explain the reasons behind the climate-related guidance, and how consumers may navigate complexities and trade-offs between health and climate impacts.

2.2 Content of FBDGs with extensive climate focus

2.2.1. Overview of content

The jurisdictions found to have the most extensive reference to climate impact in their FBDGs were Denmark, Flanders, the Netherlands, Sweden and Finland. Germany and Spain are also included in this group, although their coverage is less extensive and integrated than the others[8].

These FBDGs make a clear link between human health and planetary health, by pointing out that what we eat affects not only our own well-being but also the environment. In terms of over-arching consumption advice, these FBDGs recommend:

- eating less meat and animal products;
- eating more plants, plant proteins and wholegrains;
- choosing nutrient dense foods over nutrient poor;
- drinking tap water;
- not overeating;

[8] German guidance was updated in spring 2024, shortly before publication of this report. The consumer-facing documents now contain less reference to climate than before. However, background documents do retain a climate focus, and the guidance itself is based on optimization modelling for health, GHG emissions and land use. Hence, we have retained the German FBDGs in the 'green' category.

- avoiding waste.

The following sections describe what these climate-focused FBDGs advise, by food group. Advice from the Eatwell Guide is also referenced, for comparison.

2.2.2. Advice relating to meat

All seven FBDGs advise reducing meat consumption, due to the high GHG emissions from meat production, in particular ruminant meat. Table 2.2 shows the maximum recommended intake levels for meat in the seven FBDGs, and the Eatwell Guide. Germany specifies the lowest maximum weekly intake for all meat (240g), while Finland and the Netherlands specify the highest (500g). The Eatwell Guide does not specify a maximum level for all meat. The Netherlands specifies the lowest maximum intake for red/processed meat (300g) while Sweden specifies the highest (500g). The Eatwell Guide specifies the second highest maximum intake for red/processed meat at 490g.

	All Meat (max g/wk)	Red/Processed (max g/wk)
Denmark	350	ns
Finland	500	ns
Flanders	ns	330
Germany	300	60
Netherlands	500	300
Spain	375	ns
Sweden	ns	500
Eatwell Guide	ns	490

ns: not specified. Germany: 'all meat' includes beef. Red/processed is processed only.

Table 2.2: Recommended intakes for meat, in jurisdictions with climate-focused FBDGs

Examples of qualitative advice on meat in these FBDGs:

- When choosing meat, select more sustainably produced options, e.g. organic or agroecological, following a ''less but better" approach (The Netherlands, Sweden).
- Diets based on small amounts of meat can support the positive effects of grazing livestock on landscape and biodiversity (The Netherlands, Sweden)
- Meat-free days per week are specifically recommended by Denmark, Finland (1) Flanders (up to 4), Netherlands (up to 6), Spain (up to 7) and Sweden (up to 3).

The Eatwell Guide advises eating less red and processed meat. It gives no advice on production systems, nor on meat-free days.

2.2.3. Advice relating to dairy

The seven climate-focused FBDGs advise moderation in dairy product consumption, due to the GHG emissions associated with dairy farming. Table 2.3 shows the recommended daily intake levels for selected dairy products in these FBDGs. For milk/yoghurt, Denmark and Germany recommend c.250ml, while most others recommend a range extending to 500ml at the upper boundary. For hard cheese, the lowest recommended intake is 20g (Denmark)

and the highest maximum is 60g (Spain). Four out of the six FBDGs do not specify a set intake level for cheese, although Germany offers guidance on how to allocate a total dairy amount between different product types. The Eatwell Guide does not specify intake levels for any dairy products.

	Milk, yoghurt (ml/d)	Hard Cheese (g/d)
Denmark	250	20
Finland	ns	ns
Flanders	250-500	ns
Germany	250	ns
Netherlands	300-450	40
Spain	250-500	40-60
Sweden	200-300	ns
Eatwell Guide	ns	ns

Table 2.3: Recommended intakes for dairy products, in jurisdictions with climate-focused FBDGs

Examples of qualitative advice for dairy consumption in these FBDGs:

- Take enough dairy to avoid chronic diseases and get enough nutrients, but not more than that, because dairy products come from cows, which have a high environmental impact (The Netherlands).
- Eating moderate amounts of dairy can support the positive effects of grazing livestock on landscape and biodiversity (Sweden).
- Where possible, choose eco-labels like organic for the more sustainably produced options (Sweden).
- Eat fewer processed dairy products, to get the nutritional benefits without the added climate burden from extra processing stages (Finland).

The Eatwell Guide advises eating 'some' milk and dairy food (or dairy alternatives). It gives no advice on production systems or levels of processing.

2.2.4. Advice relating to vegetables, fruit and plant proteins

All seven FBDGs give very clear recommendations to eat more vegetables, fruits and plant proteins for climate reasons. Table 2.4 shows the specified daily intake levels for these foods. For vegetables and fruit, recommended intakes range from 450g (Netherlands) to 690g (Spain). By comparison, the Eatwell Guide recommends the lowest minimum intake: at least 400g. In terms of legumes, only Denmark, Germany and Spain specify minimum intakes, from 100g (Denmark) to 200g (Spain) per week. For nuts, all jurisdictions except Sweden recommend intakes, from 15g to 30g per day. The Eatwell Guide does not recommend intake levels for legumes or nuts.

Examples of qualitative advice for vegetables, fruits and plant proteins in these FBDGs:

- Eat vegetables and fruit in season, for lower carbon footprint (Flanders, Sweden).
- Choose field grown rather than glasshouse grown (Flanders, Sweden), although glasshouses powered with renewable energy can have similar footprints (Finland).

- Locally grown is not necessarily lower carbon (Flanders).
- Choose ecolabelled and organic to reduce climate impact (Sweden).
- Legumes are nitrogen-fixing, which saves use of nitrogen fertilizer (Finland).

The Eatwell Guide does not advise on production methods or seasonality in this group.

	Vegetables and Fruit (min g/d)	Legumes (min g/wk)	Nuts (g/d)
Denmark	600	100	30
Finland	500	ns	30
Flanders	550	ns	15-25
Germany	550	125	30
Netherlands	450	ns	25
Spain	690	200	20-30
Sweden	500	ns	ns
Eatwell Guide	400	ns	ns

Table 2.4: Recommended intakes for vegetables, fruit and plant proteins, in climate-focused FBDGs

2.2.5. Advice relating to cereals, grains, fats and oils

All climate-focused FBDGs highlight that, in general, grains and cereals have relatively low carbon footprints. Recommended intakes range from 75g (Denmark) to 90g (Sweden) wholegrain foods per day. Rice is identified as a grain with a higher carbon footprint (Denmark, Sweden, Finland), hence, advice is to swap rice for other grains or potatoes.

In terms of fats and oils, plant-based oils are recommended over butter and spreads due to their lower carbon impact (Denmark, Finland, Sweden). Within plant oils, rapeseed oil is presented as a particularly sustainable option, with a low carbon footprint (Sweden).

The Eatwell Guide does not advise about types of grains or fats from a climate perspective. This means that rice is recommended equally alongside pasta and potatoes. It recommends oils from plant sources, such as rapeseed and olive oil, as these are unsaturated fats. The outcome is that the same oils are recommended by Eatwell and the climate-focused FBDGs.

2.2.6. Advice relating to high fat, salt and sugar (HFSS) foods [9]

The seven FBDGs, advise to consume as few foods as possible from this category. This benefits the environment because (i) many foods in this category are ultra-processed (UPF), containing ingredients/processes which are carbon intensive, and (ii) they are nutrient poor. As all food production has an environmental impact, it is best to consume foods that are nutrient dense, to make the environmental impact 'count'. All the FBDGs recommend tap water as the lowest carbon impact beverage, and that bottled drinks, including bottled water, should be avoided for the sake of the planet.

[9] For example, confectionery, sweet biscuits, savoury snacks, cakes, pastries, puddings and sugar containing soft drinks. See https://www.foodstandards.gov.scot/publications-and-research/publications/briefing-on-discretionary-foods

For HFSS foods, the Eatwell Guide's recommendations are to avoid or eat in small amounts. The outcome is therefore the same as climate-focused FBDGs. For beverages, unlike the climate-focused FBDGs, the Eatwell Guide does not distinguish between bottled and tap water, and includes milk and diet/sugar-free drinks as recommended drinks.

2.2.7. Advice relating to sustainability

All climate-focused FBDGs contain the strong common messages of (i) only eat as much as you need and (ii) avoid food waste. The latter is advised as important for the planet because every food item wasted has an environmental impact that could have been avoided. The Eatwell Guide advises to eat only as much food as you need. It does not include any advice about food waste.

2.2.8. Summary of similarities and differences between climate-focused FBDGs and the Eatwell Guide

Advice within climate-focused FBDGs which is in common with the Eatwell Guide:

- Limit intake of red and processed meat (although 5 out of 6 FBDGs set maximum intakes lower than the Eatwell Guide)
- Eat plenty of vegetables and fruit (although all 6 FBDGs recommend minimum intake levels higher than the Eatwell Guide)
- Choose vegetable oils, e.g. rapeseed or olive oil, over animal fats
- HFSS foods are non-essential to diet so only eat in small amounts
- Only eat as much as you need

Advice within climate-focused FBDGs, which is different from the Eatwell Guide:

- Eat less meat and animal products, while increasing intake of plants and plant proteins (includes advocating meat-free days)
- Moderate dairy intake
- Choose seasonal, field grown vegetables and fruits
- Choose foods from more sustainable production methods, e.g. organic
- Choose potatoes, pasta or other grains over rice
- Favour unprocessed or lightly processed foods, and avoid UPFs
- The only recommended drinks are tap water, tea and coffee
- Avoid food waste

2.2.9. Sub-national variation

Of the seven FBDGs reviewed in this section, several come from jurisdictions with a degree of sub-national devolution, with regional powers able to adopt different approaches to certain policy areas. However, although guidance may be presented with regional badging, most often we found the substantive content of FBDGs is the same in different parts of a given country. The Flanders region of Belgium was the only clear example of sub-national variation in FBDGs found by this study. Yet policies to encourage uptake of nationally

uniform FBDG do vary regionally in some jurisdictions. For example, across Dutch and Swedish municipalities and Australian States and Canadian Provinces.[10]

3 Case study: Flanders

This chapter provides an overview of the FBDGs in Flanders, how they were developed, and policy implementations to date. Appendix E provides more details.

3.1 FBDGs in Flanders: the Flanders Food Triangle

In Flanders, the FBDGs are captured in a 24-page consumer-facing document "Eating According to the Food Triangle: Good for Yourself and the Planet" (2021). It was developed by the Flemish Institute of Healthy Living ("Gezond Leven"), in cooperation with the Department of the Environment of the Flemish Government. The context of the guidance emphasises that the environmental impact of our food is currently greater than what our planet can bear, so dietary change is needed.

In terms of content, the Food Triangle (Figure 3.1) is offered as the basis for a healthy and environmentally responsible diet. It advises eating more vegetables, fruits, wholegrains and plant proteins, while eating less meat, butter and cheese. Discretionary foods (high in fat, salt and sugar) are separated from the triangle as non-essential to the diet, to be eaten 'as little as possible'. This category includes processed meat. The guidance also recommends up to three or four days per week of meat-free meals. It provides links to support materials developed by Gezond Leven, including recipes for vegetarian meals and a seasonal buying guide for fruit and vegetables.

[10] see Australia | Food Policy Index and FoodEPI_AB_Report_WEB-FINAL.pdf (utoronto.ca), Dawkins et al (2023)

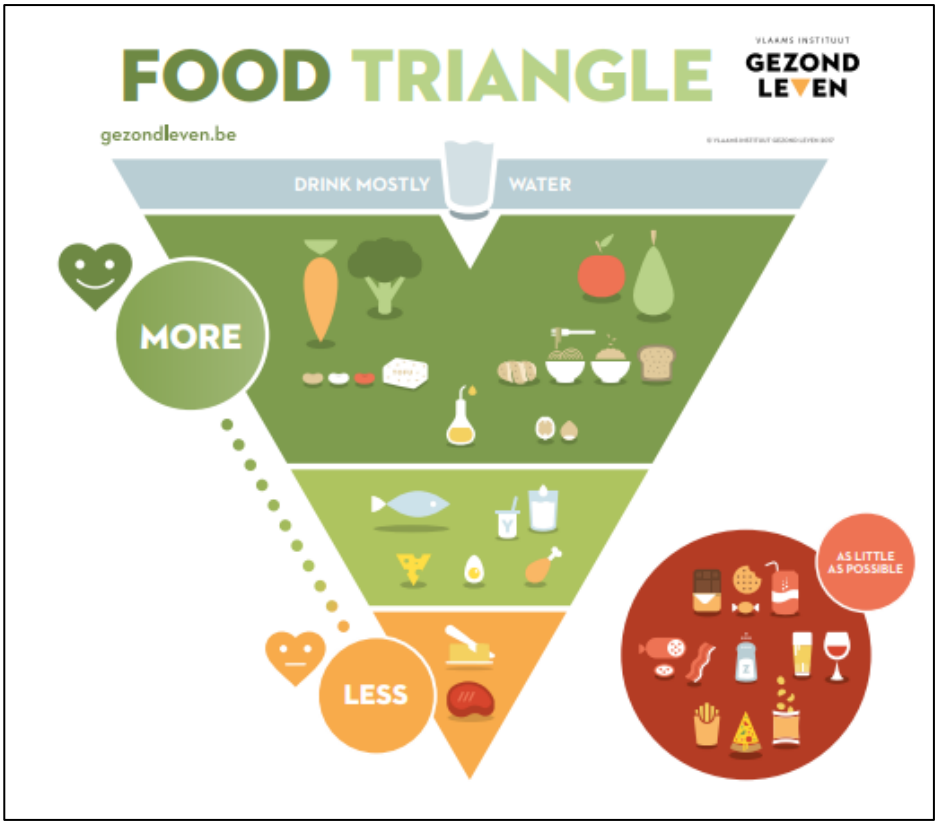

Figure 3.1: Flanders food triangle

3.2 How the FBDGs were developed

A 'science first' approach was taken to develop the guidance. First, Gezond Leven and the Department of the Environment commissioned a review of scientific literature on the health and environmental impacts of dietary choices. Next, they convened a cross-disciplinary academic expert panel to help analyse the evidence and determine the core content of the final guidance. After this, public-facing messaging was designed and tested amongst citizens, with the support of experts in behaviour and communication. Only after the guidance was finalized were stakeholders consulted. Importantly, these consultations related only to the coordination and implementation of the guidance: they did not influence or change its substance.

3.3 Policies, strategies and actions related to the FBDGs

Various policy documents in Flanders have content aligned with the goals of the FBDGs, although they do not refer specifically to the guidance. For example, the 'Strategic Plan: Flanders Lives Healthier in 2025' and the 'The Flemish Climate Policy Plan' both refer to the need for changes to food consumption habits in the jurisdiction, for reasons of health and climate impact.

Recent strategies have also been launched with the aim to encourage more holistic, systems-based action on food than has been achieved historically. (In the past, policies

for food have reflected departmental silos in government.) For example, the 2022 Flemish Food Strategy ("Go4Food"[11]) sets out 11 'Food Deal' themes, around which cross-cutting actions are encouraged to coalesce. Funding is intended for these, albeit not specified in the document.

Another cross-cutting example is the 'Flemish Protein Strategy 2021-2030'. This aims to increase the ratio of plant protein consumption vs animal protein consumption in Flanders to 60:40. Using CAP funding for domestic plant protein production as a catalyst, the strategy supports collaborations between food supply chain actors, research institutes and NGOs.

In practice, the Protein Strategy has led to increased domestic production of plant protein crops, research/innovation in processing, and promotion of plant proteins by food retailers. Overall, it represents an effort to fund coherent cross-sectoral work on sustainable food, by leveraging EU funding and private sector investment. CAP funding has similarly been used to encourage greater organic food production, albeit to a lesser degree than plant protein production.

Actions specifically to promote climate-friendly diets have been more limited in scope and scale. They have been largely focused on public communications campaigns and work with public catering (Table 3.1).

Policy type	What activities?
Public information campaigns	Gezond Leven has produced various materials and resources for use by public and professionals, including videos, recipe cards, seasonal buying guides, etc. It has also entered into partnership with food retailers to promote increased consumption of plant proteins.
Labelling	No introduction of new product labelling for climate impact.
Regulation	No introduction of new demand-side regulations for climate impact of food. On supply side, targets have been set for levels of sustainable soya used in animal feeds.
Taxes and Subsidies	The Belgian Government introduced a sugar tax in 2015. However no demand side taxes or subsidies on foods have been implemented for climate reasons. On the supply side, funding is available for plant protein production under the Protein Strategy.
Public Procurement and Catering	Gezond Leven works with frontline staff in public catering, supporting them to change menus and practices for health and sustainability. All activity is voluntary, there are no mandatory changes.

Table 3.1: Policies applied in Flanders to encourage take-up of climate-friendly FBDGs

3.4 Evaluations of effects of FBDGs and/or policies

The Flanders Government conducts a National Food Survey on a 10-year cycle, with the next round due in 2024. This will be the first opportunity to gauge any changes in public

[11] Voedseltop Synthese (vlaanderen.be)

dietary habits from the latest FBDGs. In the meantime, a recent small-scale survey on protein consumption showed trends in the desired direction (increases in plant consumption, decreases in meat consumption), but only to a very small extent. More formal evaluations of policy effectiveness are needed.

4 Case study: The Netherlands

This chapter provides an overview of the FBDGs in the Netherlands, how they were developed, and policy implementations to date. Appendix F provides more details.

4.1 FBDGs in the Netherlands: The Wheel of Five and Seven Steps to Sustainability

In the Netherlands, climate-focused dietary guidance is captured in the "Eating more sustainably: fact sheet" (2022), which accompanies the main "Wheel of Five" dietary model. The factsheet is a 10-page document targeted at professionals/policymakers. It sets out the case for environmentally sustainable diets, and explains how the Dutch diet should change to be in line with science-based planetary health recommendations.

The factsheet states that shifting from the current diet to the Wheel of Five is good for health and climate, but it also gives more specific advice about the most sustainable options to choose (Figure 4.1). The 7 ways are: (i) eat less meat (opt more often for pulses, nuts or eggs); (ii) waste as little as possible (buy and cook what you need); (iii) eat recommended amounts (moderate your snacks and sweets); (iv) drink mostly tap water; (v) eat enough dairy and cheese (but within bounds); (vi) buy seasonally (and check product origins); (vii) choose premium sustainability labels.

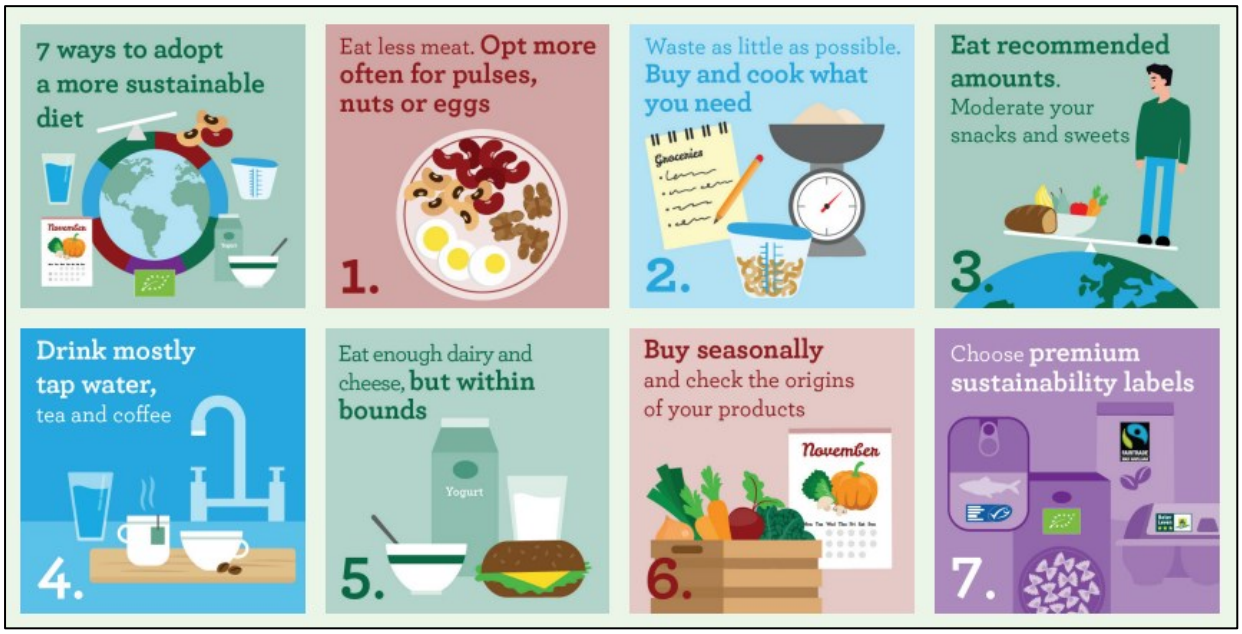

Figure 4.1: 'Seven ways to adopt a more sustainable diet' graphic, the Netherlands

4.2 How FBDGs were developed

Two agencies led the development of the Dutch FBDGs. These were the National Institute for Public Health and the Environment (NIPHE), a research centre which collects and analyses scientific evidence and conducts data modelling, and the Netherlands Nutrition Centre (NNC), a body which translates the science into practical FBDGs for consumers and health professionals. Both are independent bodies, funded solely by the Ministries of Health and Agriculture.

In 2015, the NIPHE reviewed the scientific evidence on health and climate impacts of diets, with input from academic subject experts. NIPHE used this intelligence to model dietary guidelines as close as possible to the existing Dutch diet, while meeting parameters of health, climate impact, feasibility and impact on different target groups.

The NNC used the modelled solutions to draft the public facing dietary guidance, including the graphics. A transparent consultation process followed with experts, to check for any errors/omissions in the science, and also with health professionals, to advise on practical implementation.

The food industry was specifically not involved in the consultation. Only after the final guidance was completed were meetings held with industry representatives. This approach was taken to maintain both the real and perceived independence of the NIPHE and NNC. In total, the development process took several years.

4.3 Policies, strategies and actions related to the FBDGs

Policies relevant to food in the Netherlands appear to reflect the traditional priorities of host ministries, with relatively little integration of health and climate goals. For example, the 2018 'National Prevention Agreement: Towards a Healthier Netherlands' makes no reference to climate or sustainability, while the 2019 'Climate Agreement' contains only one brief reference to the need for change in food consumption habits. The 2015 'National Food Policy' includes goals to increase consumption of fruits and vegetables, but these are justified for health not climate reasons.

However, the Dutch National Protein Strategy is more integrative. As in Flanders, CAP funding has been used to encourage plant protein production at farm level. This is being combined with further funding under economy-wide 'green growth' schemes, from both public and private sources, to encourage market growth along the supply chain.

Actions specifically to encourage take-up of the FBDGs are led by the NNC. They are centred on public communication tools and work with public caterers. In addition, one Dutch municipality (Haarlem city) is imposing a ban on outdoor advertising of meat. Table 4.1 provides more details.

Policy type	What activities?
Public information campaigns	The NNC has launched two apps, to help consumers make healthier, more sustainable food choices. One of these, "Mijn Eetmeter", allows users to record their eating habits and get tailored advice to improve their diet. This app has >2 million downloads and good ratings on GooglePlay and Apple Store.
Labelling	No new labelling regime introduced, instead the NNC advises consumers on a set of the most reliable existing labels/certification schemes for making sustainable product choices.
Regulation	At municipal level, the city of Haarlem will implement a ban on outdoor advertising of meat products in 2024. Climate impact is part of the motivation for the ban. There are no similar restrictions at national level.
Taxes and Subsidies	There are no demand-side taxes or subsidies on foods for climate reasons (a sugar tax was introduced in 2023). In 2018 the Dutch Government stated an intention to remove VAT from fruit and vegetables. However, this was not implemented due to concerns about feasibility and effectiveness. On the supply side, funding is available for plant protein production and processing under the Protein Strategy.
Public Procurement and Catering	The NNC works with public caterers to support and encourage them to develop more sustainable menus and practices. However, there are no mandatory measures imposed for climate impact.

Table 4.1: Policies applied in the Netherlands to encourage take-up of climate-friendly FBDGs

4.4 Evaluations of effects of the FBDGs and/or policies

The NNC undertakes consumer research and also administers the Dutch National Food Survey. Their data indicate that awareness of the Wheel of Five dietary model in the Dutch population is 71%, and trend analysis from the Dutch National Food Survey indicates small increases in fruit and vegetable consumption, and small decreases in meat consumption between 2007 and 2021. The changes are small, but in the right direction. However, policy effectiveness has not been evaluated formally.

5 Case Study: Sweden

This chapter provides an overview of the FBDGs in Sweden, how they were developed, and policy implementations to date. Appendix G provides more details.

5.1 FBDGs in Sweden: "Eat greener, not too much, and be active"

In Sweden, the FBDGs are captured in the 28-page consumer-facing document "Find your way to eat greener, not too much, and be active" (2015). It was developed by the Swedish National Food Agency (SNFA), in cooperation with the Swedish Public Health Agency, Board of Agriculture and Environmental Protection Agency. In terms of context, the guidance makes the argument for a holistic approach to eating, and for considering the environmental impact of food choices.

Advice is structured around 3 sections: 1. things to eat/do more of; 2. things to switch; and 3. things to eat less of (Figure 5.1). For each named food group (vegetables and fruits; seafood; wholegrains; healthy fats; low fat dairy products; red and processed meat; salt; sugar), there is a dedicated page which explains the advice in more detail, including the link to environmental impacts. These pages also offer specific ingredient and recipe suggestions to help make the change.

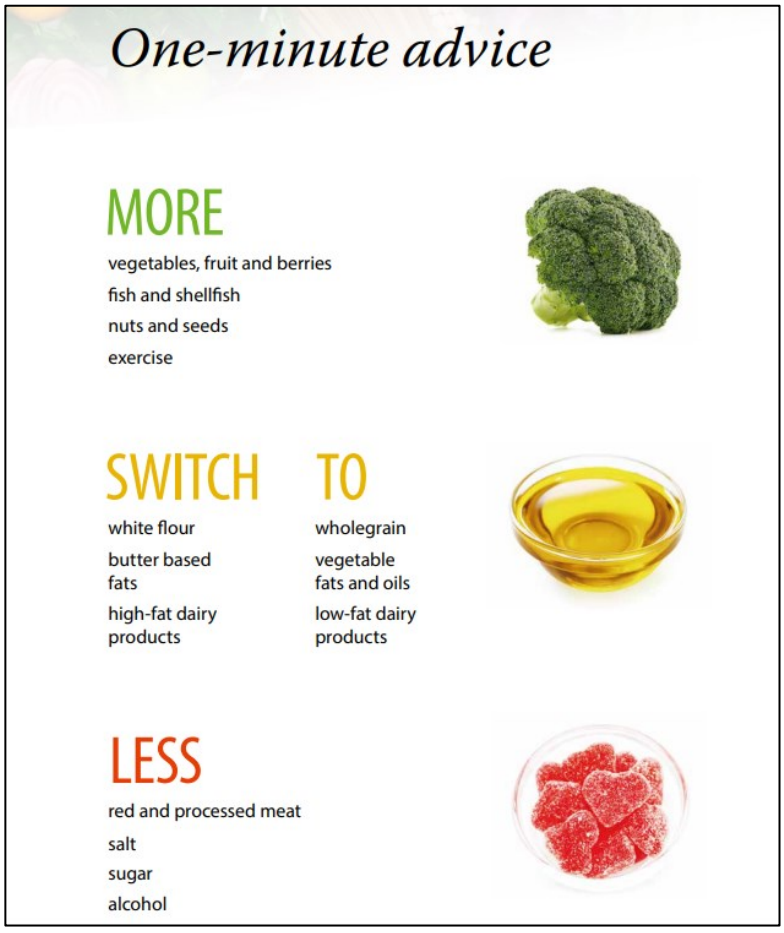

Figure 5.1: Headline recommendations in the Swedish FBDGs

5.2 How FBDGs were developed

The Swedish National Food Agency is an independent, government-funded body, which administers public diet and health activities. It is one of 25 government agencies with special responsibility for achieving the government's environmental objectives.

The FBDGs development process was science led, although stakeholder input happened earlier in the process than in Flanders and the Netherlands. From 2008-13, the Swedish Food Agency commissioned a series of reports on the environmental impacts of different foods, alongside evidence on the health effects of diet gathered from Nordic Nutrition Recommendations (NNR)[12]. The joint evidence was reviewed, with experts from the Swedish Public Health Agency, Board of Agriculture and Environmental Protection Agency. The review was supported by a stakeholder panel.

In 2014, a public consultation took place, including participants from industry, consumer and patient organisations, and public health professionals. Then the guidance was drafted and tested with consumers. The guidance was published in 2016/17. The whole process from initial discussions to publication took almost 10 years.

Since the development of this guidance, the latest revision of the Nordic Nutrition Recommendations (NNR), in 2023, has been published. It includes explicit reference to climate impact. It therefore provides a very high standard, scientifically informed evidence base on climate-friendly diets.

5.3 Policies, strategies and actions related to the FBDGs

In Sweden, the policy landscape for sustainable diets appears fragmented. For example, the 2016 "National Food Strategy for Sweden", and subsequent 2019 "Action Plan", focus almost exclusively on agricultural production. Meanwhile, the 2016 "Strategy for Sustainable Consumption" contains only a brief reference to food. The 2018 "Climate Framework Policy", which sets out the Swedish Government's net zero targets for the whole economy, also makes no reference to food consumption or dietary change.

In 2021, the Swedish Government tasked the Swedish Food Agency and Public Health Agency to propose areas of action needed for a more sustainable food system in Sweden, and indicators to measure progress[13]. The work was based on consultations with authorities, industry and civil society. The report, published 2024, emphasizes the need for joined-up policies to tackle health and climate problems. However, given recent shifts in politics in Sweden and hardening resistance from industry stakeholders to food system change, it may be challenging for officials to take forward many of the recommended Actions in the report.

[12] The NNR is a forum and programme funded by the Nordic countries, including Sweden, to gather the latest scientific evidence on diet and nutrition. The aim is to provide a robust evidence base that national governments in the Nordics can use to inform their dietary guidance.
[13] Government Offices Sweden 2021. Sweden's pathway for sustainable food systems.

Actions specifically to encourage take-up of the FBDGs are led by the Swedish Food Agency. To date, they have focused on public communications activities and work with public caterers, in particular schools. Table 5.1 provides more details.

Policy Type	What Activities?
Public information campaigns	The Swedish Food Agency provides online information and manages a citizen panel to discuss healthy and sustainable eating. The Consumer Agency promotes food waste reduction within a circular economy.
Labelling	No new product labelling introduced for climate-friendly food. Consumers are encouraged to refer to 'Keyhole' symbol (Swedish labelling scheme for healthy foods) and organic labels.
Regulation	No regulatory changes applied.
Taxes and Subsidies	No direct taxes or subsidies on the demand side to encourage shift to climate friendly diets. On supply side, there has been direct government investment in organic farming, to increase domestic land area under organic production.
Public Procurement and Catering	Post-launch of FBDGs, the Swedish Food Agency undertook engagement work in school catering, this included encouragement of vegetarian days (voluntary). In 2020, "A New Recipe for School Meals" was launched, a collaboration between the National Food Agency and Vinnova, the Government research and innovation agency. The latter funded 4 municipalities to trial different projects, including measurement of waste and selling leftover meals[14].

Table 5.1: Policies applied in Sweden to encourage take-up of climate-friendly FBDGs

5.4 Evaluations of effects of the FBDGs and/or policies

No formal evaluations have been conducted of the effect of the FBDGs on dietary habits. However, consumption trend data show that meat consumption peaked in 2016 and has subsequently declined whilst the proportion of Swedish meat within total meat consumed has increased. This suggests there has been some response to the "eat less but better" messaging, with 'better' meaning 'Swedish'.

[14] School meals will speed up the transition to a sustainable food system | Vinnova

6 Implications for the potential development and implementation of climate-friendly FBDGs in Scotland

Having assessed climate-friendly FBGDs in other jurisdictions, and explored their development and policy implementation in Flanders, the Netherlands and Sweden, this chapter considers the possible implications for Scotland. Throughout this chapter, the FBDGs of Flanders, the Netherlands and Sweden are used as climate-focused comparators.

6.1 Dietary profile of Scotland compared with jurisdictions having climate-focused FBDGs

Studies show repeatedly that the diet of the average Scottish adult is unhealthy. It comprises higher than recommended intakes of calories, fat, sugar and salt, and lower intakes of fibre and fruit and vegetables[15]. These are associated with a range of chronic health problems, including diabetes, cardiovascular disease (CVD), hypertension and certain cancers.

In addition, average diets for some groups of Scottish consumers are deficient in micronutrients such as selenium and iodine. These deficiencies are also associated with a range of health problems, including fatigue, mental impairments and weakened immune systems. However, intake rates of red and processed meats are within the Scottish Dietary Goals maximum recommended for almost three quarters of the population[16].

	Belgium (2014)	Netherlands (2021)	Sweden (2010/11)	Scotland (2021)
Fruit	115	134	128	134
Vegetables	155	174	176	131
Meat	104	92	110	80
Dairy	202	329	245	230
18 <= BMI <25	49%	50%	49%	32% (42%)*
25 <= BMI <30	35%	35%	35%	36% (35%)*
BMI >= 30	14%	13%	14%	31% (20%)*
Population	6.8m	18.0m	10.6m	5.4m

* Scottish-specific BMI figures with UK figures in brackets from same Eurostat source as other countries. Comparisons are indicative given differences in survey methods, definitions and timings. See also Appendices B and C.

Table 6.1: Estimated adults' mean consumption (g/day) of selected food types, and percentage of adults categorised as overweight or obese, in selected comparator jurisdictions[17]

[15] E.g. Barton et al, 2015; Barton et al, 2022; Food Standards Scotland, 2020; Comrie et al, 2024.
[16] Comrie et al, 2024.
[17] See also Appendix D.

Table 6.1 above shows intakes for different food groups in Scotland, compared with Flanders, the Netherlands and Sweden. Notwithstanding caveats regarding precise comparability, the figures suggest that Scottish fruit consumption is relatively high compared to the other jurisdictions, while meat and vegetable intakes are relatively low. Dairy consumption appears similar to Sweden but lower than the Netherlands. Body Mass Index (BMI) scores, as indicators of broader diet-related health, are also similar for the proportion of the population overweight, but Scotland (and the UK) have markedly higher obesity rates.

6.2 Potential impacts on the Scottish population from take-up of climate-focused FBDGs

	Potential Revisions to Eatwell Guide	Potential Risk to Population Health
Meat	• Clearer advice to reduce intake of all meat, in particular red meat • New maximum intake level for all meat • Lower maximum intake level for red/processed meat	Low, depending on substitution scenario
Dairy	• New advice to moderate dairy intake	Deficiency risks for iron and iodine, depending on substitution scenario
Vegetables, fruits and plant proteins	• Higher minimum intake levels for vegetables and fruit • New intake levels for plant proteins • Strengthened advice on choosing processed plant protein foods • Strengthened advice on choosing vegetarian and vegan diets	Low
Cereals and grains	• New advice to favour potatoes, pasta and other grains over rice	Low
HFSS foods	• Strengthened advice to favour less processed foods and avoid UPFs	Low
Beverages	• New advice to favour tap water	Low
Other	• New advice to choose foods from sustainable production sources, including organic, agroecological, seasonal, fieldgrown • New advice to avoid food waste	Low

Table 6.2. Examples of likely revisions needed to Eatwell Guide to align with more climate-focused FBDGs, and potential risks to Scottish population

The key features of climate-focused FBDGs were discussed in Chapter 2, summarizing similarities and differences between climate-focused guidance and the Eatwell Guide. Table 6.2 lists possible revisions for guidance in Scotland, to align with more climate-focused

FBDGs. It also indicates the potential risks of negative impacts on the Scottish population, should the revised guidance be taken up. The potential risks for meat, dairy and sustainable sourcing advice are further discussed below. Potential risks for population sub-groups are discussed in section 6.3.

Potential impacts of revised meat intake advice

For greater climate focus, revisions to the Eatwell guidance would likely specify a lower maximum intake for red/processed meat, a new maximum intake for all meat, and strengthened messaging on reducing meat generally in the diet.

Comrie et al (2024) modelled the effects on micronutrient intake and of chronic disease risks from a 20% reduction in meat intake in Scotland, i.e. to levels consistent with the recommendations of UK Climate Change Committee (CCC).

They found that a 16% reduction could be achieved by encouraging the 28% highest red/processed meat eaters to limit their intake, of those meats alone, to the current Eatwell/SDGs maximum of 70g per day. To achieve the CCC's 20% reduction target, the average intake of red/processed meat would need to reduce to 60g per day. This would impact the highest 32% of current red/processed meat consumers.

If meat intakes are substituted with alternative protein sources, e.g. fish, dairy or eggs, both scenarios above represent low risk options in terms of nutritional impacts. They would also bring health benefits associated with lowering red and red processed meat intakes. However, if meat intakes are substituted with refined grains or HFSS foods, then there are risks of diets becoming less rather than more healthy[18]. Therefore, revised dietary guidance needs to include advice about healthy and accessible substitutions for meat. Other policies need to make those substitutions affordable and accessible.

Non-GHG related environmental impacts are also possible from reduction in meat intakes, depending on which foods people switch to. Increases in demand for fish could exacerbate marine pollution/ecosystem problems. Also, switching from red ruminant meat (beef, lamb) to non-ruminant meat may lead to increases in intensive pig and poultry systems. Whilst these systems are more carbon efficient, they can increase air and water pollution problems[19]. To address these risks, a holistic perspective on environmental impact is needed during the scientific evidence gathering phase of the FBDG revisions. Other policies need to address environmental impacts of fish, pig and poultry systems.

[18] Matthews et al, 2023.
[19] e.g. Gladding et al., 2020; Andretta et al., 2021; Gržinić et al., 2023.

6.3 Potential impacts of revised dairy intake advice

For greater climate focus, revisions to dietary guidance would likely set new advice to moderate dairy intake[20].

Comrie et al (2024) modelled the nutritional and chronic disease impacts of reducing dairy intake across the population by 20%, alongside meat reduction. They find that unless substituting with eggs, there are deficiency risks in the general population for iron and iodine. They highlight that as dairy is consumed in greater quantities across the population than meat, there is more reliance on it for micronutrients. Dairy is also a source of protection against Type 2 diabetes. Therefore, some nutritional and disease risks are possible, at the population level, from moderation of dairy intake.

In principle, nutritional and disease risks could be addressed with plant-based substitutes. However, these could require considerable changes to current dietary habits for many, and substitutes may have cost and accessibility issues. These have implications for the structure of the food environment. New advice on such changes would be needed, as the current guidance gives limited explanation. The new advice would need to address the composition of processed plant-based meat and dairy substitutes, in terms of fat, salt and sugar, and potentially , the use of fortification to supply key micronutrients. As is the case with existing meat and dairy products, at present, there is high variability between products and brands in the market, in terms of composition.

6.4 Potential impacts of advice on sustainable sourcing

For greater climate focus, revisions to the Eatwell guidance would likely introduce new advice on sustainable sourcing, for example choosing organic or agroecological products. These products are typically more expensive than conventional alternatives. In periods of generally squeezed incomes and high food price inflation, this advice may be unobtainable for many. Careful messaging would be needed within the guidance to address risks of frustration/alienation. At the same time, policy measures are needed to make sustainably sourced food more affordable and accessible[21].

6.5 Potential impacts on sub-groups of Scottish population from take-up of climate-focused FBDGs

With reference the likely changes to Eatwell guidance presented in Table 6.2, potential impacts are as follows:

[20] This would be to recognise the target of the Climate Change Committee. However, how that target would apply to Scottish dietary guidance is unclear, as no intake range for dairy is currently recommended.

[21] E.g. Strid et al., 2019; Hendrie et al., 2021; Leme et al., 2021; Yin et al., 2023.

Advice to reduce meat intake and moderate dairy intake

The modelling work conducted by Comrie et al (2024), on the impacts of reducing meat and dairy intakes across the population by 20%, also considered sub-groups. Depending on the substitution scenario, the authors found risks of some micronutrient deficiencies. These included selenium and zinc intakes for women and calcium intakes for young adults. Revised guidance on meat and dairy intakes would therefore need to include careful messaging and tailored advice for sub-groups, such as these, who may be at greater risk of micronutrient deficiencies. These problems may be exacerbated for women and young adults in lower income groups, who may find it more difficult to afford or access suitable meat alternatives, such as fish, eggs or plant proteins. Ability and capacity to cook meals using alternatives may also disproportionately affect these groups.

Advice to increase vegetable, fruit and plant protein intakes

Some population sub-groups may find it more difficult than others to access the range of vegetables, fruits and plant proteins recommended by revised guidance. As a result, they could face nutritional and disease risks, disproportionate to the wider population. These sub-groups could include lower-income consumers, who may struggle to afford more expensive items and/or cook the recommended foods. They could also include people in rural areas, or in urban food deserts/swamps, who face more limited ranges of foods and food retail options.

Advice to choose sustainably sourced foods

Citizens in lower income groups may be disproportionately unable to follow this advice. This could be particularly alienating. Careful messaging would be needed within the guidance. Programmes and initiatives are also needed to make sustainably sourced food more accessible and affordable.

Advice to favour potatoes, pasta and other grains over rice

This advice could disproportionately impact sub-groups whose diets rely more heavily on rice than the wider population. Tailored messaging would be needed, as well as advice on how to make the most climate-friendly choices for rice.

Advice to avoid UPFs and avoid food waste

Reducing consumption of processed and ultra-processed foods (UPFs) requires access to alternatives and a capacity for more labour and/or energy intensive food preparation. Hence consumers with restricted access due to income and/or food environment constraints and/or lacking the necessary time or facilities for food preparation (e.g. kitchen equipment) will be less likely to be able to avoid processed and UPFs. For similar reasons, consumers with limited or no access to appliances such as fridges and freezers may find it more difficult to follow advice to avoid food waste.

7 Policies, strategies and actions to implement climate-focused diets

7.1 Policy coordination for climate-focused diets

Policies to encourage take-up of climate-focused diets should make sustainable choices the easiest choices for consumers. This means tackling the food environment in a holistic way, using strategic packages of policy measures and instruments[22]. This requires collaboration and co-ownership between multiple government departments[23].

The case studies of Flanders, the Netherlands and Sweden reveal problems with coordination and coherent policy implementation on climate-friendly diets, to date. Siloed thinking has been evident, reinforced by resource allocations tied to narrow departmental remits rather than cross-cutting goals.

More recent food strategies aim to encourage more holistic, systems-based action on food and diets (e.g. the Flemish Food Strategy). However, implementation is at an early stage, and formal evaluations of their effectiveness have yet to be conducted.

7.2 Policy measures and actions for climate-focused diets.

Table 7.1 gives examples of specific policy measures for climate-focused diets that may feature in holistic packages. It also shows whether any of these measures have been applied in Flanders, the Netherlands or Sweden.

On both the demand and supply sides of the food system there are fiscal and regulatory measures. Also on the demand side are public information provision, labelling and public catering. The supply side also includes influencing voluntary industry action. In Flanders, the Netherlands and Sweden, public information campaigns and public catering dominate on the demand side, while fiscal measures and influencing industry dominate on the supply side. The pros and cons of these measures are discussed below, with implications for Scotland.

[22] Matthews et al, 2023.
[23] Garnett et al., 2015.

	Policy Measure	Examples	At least one example applied in Flanders, Netherlands, Sweden?
Demand Side	Public information provision	Climate-friendly dietary guidance and information via websites, brochures, social media, digital technologies, face-to-face.	Yes (F, N, S).
	Labelling	Certifications for organic/agroecological production; carbon labels.	No new climate labels developed.
	Fiscal Measures	'Cash first' programmes for lower income groups; taxes on higher carbon foods; VAT reductions on lower carbon foods.	No food taxes or subsidies for climate reasons.
	Regulation	Advertising restrictions on higher carbon foods; food waste restrictions.	One city-level ban on outdoor advertising of meat (N).
	Public catering provision	Climate-friendly public food procurement standards; lower carbon menu design; carbon literacy training for catering staff.	Yes, voluntary actions for climate (F, N, S)
Supply Side	Influencing industry actions	Voluntary industry actions to reformulate products, give shelf space to plant proteins	Yes (F, N)
	Regulation	Climate-friendly domestic food production standards; climate-friendly standards for imported foods; mandatory carbon measurement and reporting.	Yes (F, N, S)
	Fiscal measures	Subsidies for climate-friendly farming; funding for climate-friendly research and innovation.	Yes (F, N, S)

Table 7.1. Examples of specific policy measures for climate-focused diets that may feature in holistic packages and adopted by at least one case-study jurisdiction

7.3 Public information provision

This is a popular measure to encourage climate-friendly consumption. All three case study jurisdictions have applied it. Public information campaigns are relatively quick and

inexpensive to implement, and the range of options now includes digital tools that offer interactivity (e.g. the Mijn Eetmeter diet tracking app in the Netherlands[24]).

However, there is little evidence that information alone can shift dietary habits. Population heterogeneity is significant, and people engage with or avoid information for multiple reasons[25]. Nevertheless, public information has a role to play in packages of policy measures. It may help to address low awareness of diet and sustainability issues in the population. Also, public information can signal the government's priorities and direction of travel to citizens, industry and public bodies. This can be a way to show leadership to stakeholders[26].

Implications for Scotland:

Develop public information campaigns or messaging for climate-friendly diets as part of strategic policy packages, rather than stand-alone actions. Consider the multiple audiences for information on climate-friendly diets, and explore the potential for campaigns to signal clearly the policy agenda to a range of stakeholders.

7.4 Labelling

In theory, labelling schemes for climate-friendly foods can have an 'industry pull' effect. As producers change their practices in order to get certified, this brings widespread improvements[27]. However, evidence for the capacity of labels to change consumer behaviour is mixed at best[28]. Consumers already face multiple labelling schemes which compete for their attention. Also, environmental impact labels for food products are beset with technical challenges. For example, standardised, reliable metrics for carbon scores are lacking. In addition, labels which only show carbon values are ignoring other important environmental impacts.

For these reasons, climate-friendly labelling is uncommon[29]. None of the case study jurisdictions have sought to develop climate labels. Instead, they recommend existing certification schemes that are already familiar to consumers, as ways to identify more sustainable options. These include organic labels.

Implications for Scotland:

The development of any new carbon-specific labelling is unlikely to be worthwhile. Following the examples of the Netherlands and Sweden, it would be more feasible to focus on existing certification schemes (e.g. organic, meat quality assurance schemes), and explore ways to strengthen their climate relevance.

[24] https://mijn.voedingscentrum.nl/nl/eetmeter/
[25] Roos et al, 2021; Matthews et al, 2023.
[26] Bailey and Ross Harper, 2015.
[27] Roos et al, 2021.
[28] Roos et al, 2021; Burgaz et al, 2023.
[29] Matthews et al, 2023.

7.5 Fiscal measures and regulation (demand side)

Demand side regulation has been used actively in the food sector for public health reasons. Examples include restrictions on advertising unhealthy foods to children, and on the use of trans fats in food manufacturing. Fiscal measures (e.g. subsidies, taxes) have also been implemented for health reasons, for example, the Soft Drinks Industry Levy. Both types of measure are associated with stronger behaviour change outcomes than information or labelling. They are also associated with driving positive changes in industry practices, including reformulation of products[30].

However, these measures are less commonly applied explicitly in relation to climate-friendly diets, as they can have unintended consequences and evidence on effectiveness is mixed[31]. A risk of taxing high carbon foods like meat, for example, is that some consumers switch to foods of lower nutritional value, such as HFSS foods. As lower income households are already more likely to purchase such foods, such taxes risk exacerbating health inequalities. Furthermore, taxes on domestic high carbon foods may lead to carbon 'leakage' through import/export substitution effects, with no net reduction in global climate impact.

Implications for Scotland:

Taxes on foods for climate reasons may lead, unintentionally, to regressive outcomes. To address risks of exacerbating health inequalities, taxes should be partnered with policies to make healthier substitutes affordable and accessible to lower income groups. To address risks of GHG leakages, domestic carbon taxes should be partnered with appropriate trade policies.

Importantly however, not all tax/subsidy powers reside with the Scottish Government. Even those that do are subject to UK-wide agreement under the Internal Market Act 2020 and/or the Subsidy Control Act 2022.[32] Hence not all fiscal policy options are necessarily feasible within Scotland.

7.6 Public catering provision

Public catering is frequently presented as a policy area with the potential for direct behaviour change towards more climate-friendly diets[33]. There are two main ways this can happen. First, procurement standards and criteria can be revised to be more climate-focused. Criteria can relate to food and non-food purchases, facilities and equipment. Second, catering service practices can be revised to reduce climate impact. This can include, for example, recipe and menu design, and food waste reduction.

[30] Scarborough et al 2020 cited by Burgaz et al 2023
[31] e.g. Purnell et al., 2014; Vermeir et al., 2020; Eluwa et al., 2023
[32] See United Kingdom Internal Market Act 2020 (legislation.gov.uk) and Subsidy Control Act 2022 (legislation.gov.uk)
[33] Roos et al, 2021

Flanders, the Netherlands and Sweden have all taken climate-related public catering actions, including introduction of meat-free days in school menus. To date, these actions have largely been voluntary for their sectors.

Implications for Scotland:
In the Scottish public sector, food procurement and catering provision are governed by separate standards. Often, they are also managed by different teams and processes, which presents challenges to coherent decision-making on climate impact.

To make public food procurement more climate friendly, a higher minimum weighting could be applied to climate criteria in contract awards. Suppliers could be asked to provide more carbon information, or be part of certification schemes. However, such demands may disproportionately impact small suppliers or first-time bidders. This would conflict with wider goals to encourage greater diversity in public procurement. Measures to reduce this risk may include supporting suppliers to meet more exacting climate requirements. Procurement officers could also be offered additional sustainability training.

Catering provision standards vary according to sector. In schools, statutory standards for food are based on nutritional not climate goals[34]. These standards could be revisited to explore ways to make them more climate-friendly. This would increase their consistency with local authority obligations to measure and reduce the carbon footprints of their services[35]. Extension of the Food For Life programme to all local authorities (currently voluntary) could also be a route to more climate focus.

In practice, school catering managers are increasingly taking voluntary climate actions, e.g. food waste reduction and meat-free days. Measures are needed to better support these actions, e.g. by strengthening public information on sustainable diets, and offering training and support for climate-friendly catering to service teams.

7.7 Influencing voluntary industry actions

Governments have well-established engagement with industry to encourage voluntary actions for public health reasons. Actions are now being encouraged to promote more climate-friendly food choices, for example, by reformulating products or changing microenvironments in-store to shape choice architecture[36]. Such approaches can be attractive to government since they avoid the time and effort needed to design and implement formal regulatory controls or taxes. However, industry actors may withdraw if market circumstances alter or industry leadership changes. Hence, voluntary agreements need to be monitored. They are often encouraged through the threat of imposing non-voluntary arrangements (e.g. regulation, fiscal measures) if engagement levels drop[37].

[34] Healthy Eating in Schools: guidance 2020 (www.gov.scot)
[35] Sustainable Scotland Network – Public Bodies Climate Change Reporting 2021/22: Analysis Report
[36] Burgaz et al, 2023; Bailey and Ross Harper, 2015
[37] Matthews et al 2023.

Both Flanders and the Netherlands are currently encouraging voluntary industry agreements related to sustainable diets. Under their Protein Strategies, they are encouraging domestic processors and retailers to increase activity in plant proteins. They have done this by presenting direct investments in domestic plant protein, derived from CAP Green Deal funding, as a market growth opportunity (see below). This is an example of more holistic policymaking, with coherence across supply and demand side measures.

Implications for Scotland:

Persuading industry partners to voluntarily adjust their practices requires either a perceived threat of future regulatory controls/fiscal distinctives from non-adjustment, or perceived benefits from doing so. Achieving either requires repeated engagement with industry stakeholders to establish mutual understanding of objectives, constraints and feasible options. Scottish industry stakeholders are already routinely involved in agricultural and food policy discussions, but voluntary actions by different stakeholders often progress at different rates. This can lead to poorly coordinated outcomes.[38]

7.8 Regulation and fiscal measures (supply side)

Various regulatory controls are applied to agricultural production across the EU, and some of these relate explicitly to mitigating GHG emissions. For example, farmers' support funding requires adherence to Good Agricultural and Environmental Condition (GAEC) criteria. EU-level efforts also seek to regulate food imports on the basis of their GHG emissions. However, the link between all regulatory measures and domestic dietary guidance is often implicit at best.

Similarly, fiscal support for domestic agricultural production is also deployed under the EU-wide CAP. Much of this takes the form of decoupled payments not tied explicitly to the production of any particular (or indeed any) food product. However, some support is targeted explicitly at specific sectors, such as organic production and plant protein production. For the latter, further public funding from other sources has been deployed for R&D activities and to leverage private funding along the supply chain. This has been the case in Flanders and Netherlands' Protein Strategies.

Implications for Scotland:

Agricultural production is already subject to various regulatory controls. Revision to agricultural funding support is likely to introduce new requirements related to GHG emissions. This will include obligations to monitor and report emissions[39]. Such improvements to the climate impact of Scottish agricultural production can be connected to advice within FBDGs, to choose more sustainably sourced foods.

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[38] For example, processors and retailers are progressing faster on adding climate-related criteria to their quality labels than sector-wide Quality Assurance or PGI schemes. The resulting fragmentation may not help consumers to make informed choices about climate-friendly options.

[39] https://www.ruralpayments.org/topics/agricultural-reform-programme/arp-route-map/ and https://www.gov.scot/publications/climate-change-action-policy-package/

Regulatory controls on imported food items fall outwith Scottish Government devolved powers.

Supply-side fiscal measures are already deployed within Scotland, most notably with respect to holders of agricultural land but also through investment and training grants for other parts of the supply-chain and funding for a range of research institutions. The majority of funding through such measures is not currently linked strongly to climate-related dietary change. However, as in some other countries, there may be scope to do so. This will require greater cross-departmental working and reprioritization of current budgets. Such issues feature in current parliamentary scrutiny of the Agricultural and Rural Communities Bill, including in relation to Good Food Nation ambitions.[40]

The scope for deploying new tax measures is more limited given constraints on devolved powers.

8 Conclusions

Listed by project objectives, the key findings are summarised here.

Dietary guidelines and recommendations in other jurisdictions

Out of 33 jurisdictions studied, only seven have FBDGs with extensive climate focus.

The main differences between health-focused and climate-focused guidance are that the latter recommends greater meat reduction, in particular ruminant meat, moderating dairy intake, choosing sustainably sourced foods, avoiding highly processed foods and avoiding food waste.

In three jurisdictions with climate-focused FBDGs (Flanders, the Netherlands, Sweden), the guidance was developed via a 'science first' approach, using expert panels and reviews. Stakeholder inputs were restricted to the final steps of messaging and implementation, to preserve the independence of the guidance.

Policies, strategies and actions taken to encourage progress to the guidelines

Policy implementation for climate-focused guidance requires coordination across government departments and budgets, and strategic packages of policy measures. These are needed to tackle food environments holistically, to make climate-friendly choices affordable and accessible.

Policy implementation of FBDGs in the three jurisdictions has lacked coordination, and measures have been largely limited to public information campaigns and encouragement of voluntary actions in public catering (e.g. menu adjustments).

[40] e.g. see https://www.youtube.com/watch?v=LrmbyMaxZhk and https://www.youtube.com/watch?v=KJ-2NjQC1ag

Potential applications in Scotland and impacts on different groups

Adoption of climate-focused FBDGs would be a generally low-regret action, consistent with the direction of travel for policies relating to climate and health.

Some micronutrient deficiency risks are possible for certain population groups, depending on which foods are substituted. These include women, young adults, and lower income households. Other risks include import/export carbon leakage.

To address such issues, a coordinated cross-departmental policy approach would be needed, deploying a mix of supply-side and demand-side measures.

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10 Appendices

Appendix A: Interviewees and discussion guide

Flanders:

Senior professional from Flanders Institute of Healthy Living (Gezonden Leven)

Senior professional from Flanders Department of the Environment and Spatial Planning

Netherlands:

Senior professional from the Netherlands Nutrition Centre (Voedingscentrum)

Sweden:

Senior academic from the Swedish University of Agricultural Sciences

Scotland:

Representative from NESTA

Representative from NFUS

Representative from the British Dietetic Association

Senior academic, University of Edinburgh

Representative from the Soil Association

Two representatives from ASSIST FM

Representative from the Food and Drink Federation Scotland

Other:

Team of academics from the London School of Hygiene and Tropical Medicine (undertaking similar research on behalf of Defra)

Discussion Guide

Aims of Interview

The Scottish Government currently provides dietary guidance via the EatWell Guide, which promotes better health and nutritional outcomes. Scottish Government is exploring how to align the guidance with its climate objectives, to encourage diets that are both healthy and climate-friendly. The purpose of these discussions is to gather views on what climate-friendly dietary guidelines could look like in Scotland, what actions would be most effective to encourage their uptake, and what barriers, problems or unintended consequences Scottish Government should be aware of, from your perspective as a representative of [name of stakeholder group].

1.Explain privacy notice and confirm consent to undertake the interview [2 mins]

2. Opener [5 mins]

- From the perspective of your organisation/profession, what does a climate-friendly diet mean to you?
- What key features, or guidelines, would you expect in a climate-friendly diet?
- *If interviewees are familiar with the EatWell Guide, could also ask how climate-friendly they think it currently is, and what they would change/revise, to make it more climate-friendly.*

3. Discussion of climate friendly dietary guidance, using prompt material [10 or 15 mins, depending on interviewee's expertise]

In advance, we will share the attached montage of dietary guidelines assembled from climate-focused FBDGs, i.e. Flanders, Netherlands, Sweden:

On the slide are examples of climate-friendly dietary guidance, from other countries. Please tell me:

- What is your impression of these dietary guidelines?
- To what extent could they apply in Scotland?
- In particular, what is your view about the advice to:
  - Reduce meat consumption, especially red meat (including specifying maximum intake per week)?
  - Moderate dairy consumption?
- From your perspective, what difference does the addition of climate-focused guidance make to nutritional outcomes? Does it create any tensions? Will consumers be more or less receptive?
- What problems or unintended consequences might come from guidance such as this in Scotland?
- Which groups may particularly benefit, and which groups may be negatively impacted?
- *(If time - If ScotGov decided to develop climate-friendly dietary guidelines, what would your advice be about which stakeholders should be involved in the development process?*
- *Who should lead the process?*

4. Discussion of how to encourage take-up of dietary guidance, using prompt material [10 or 15 mins, depending on interviewee's expertise]

In advance, we will share the attached montage of policy instruments from other jurisdictions, designed to encourage climate-friendly diets.

On the slide are examples of policy actions in other countries to encourage take-up of climate-friendly diets. Please tell me:

- What is your impression of these policy actions?
- To what extent could they apply in Scotland?
- In particular, what is your view of:
  - *Carbon labelling of food*
  - *Subsidising fruit and vegetables to targeted groups*
  - *Changing public catering standards to encourage more meat-free menus*
  - *Acting on the food environment*

5. Wrap up

- Do you have any questions you would like to ask?
- Confirm how information will be used
- Thank participant and end interview

Appendix B: FBDG information for selected countries

Dietary Guideline information for selected countries, citing official documentation and showing degree to which guidance is linked to environmental impact. Recommendations included where linked explicitly to environment/climate[41]

All weblinks accessed during December 2023.

[41] Tables adapted from style deployed in supplementary material presented by James-Martin et al. (2022). Where recourse has been made to machine translation via Google Translate and DeepL, the accuracy of terminology and titles in English may be imperfect.

10.1.1. Austria

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Austrian Agency for Health and Food Safety	Austrian Food Pyramid (2010)* https://www.fao.org/3/as659o/as659o.pdf also The Austrian Food Pyramid - AGES	12 (pdf)	Only ref to environment is sustainable fish. Recommends low meat consumption, and seasonal, regional and organic food, but not for environmental reasons. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	None found[42]	None found	N/A	N/A

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Consumer.	Consume sustainably sourced fish.	"In the spirit of sustainability"	"In the spirit of sustainability, when buying fish, look for certifications from MSC, ASC or organic"	"At least 300g fish per week"

* New Austrian Food Pyramids (plural) are due to be published in the autumn of 2024, https://www.sozialministerium.at/Themen/Gesundheit/Ern%C3%A4hrung/%C3%96sterreichische-Ern%C3%A4hrungsempfehlungen-NEU.html

[42] However, the FAO suggests Ministry of Health, the Austrian Agency for Health and Food Safety, the National Nutrition Commission and the Austrian Nutrition Society; Ministry for Labour, Social Affairs, Health and Consumer Protection

10.1.2. Australia

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	National Health and Medical Research Council	Eat for Health. Australian Dietary Guidelines Summary (2013) https://www.eatforhealth.gov.au/sites/default/files/2022-09/n55a_australian_dietary_guidelines_summary_131014_1.pdf	2 (pdf)	No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	National Health and Medical Research Council	Eat for Health. Australian Dietary Guidelines (2013) https://www.eatforhealth.gov.au/sites/default/files/2022-09/n55_australian_dietary_guidelines.pdf	226 (pdf)	Briefly mentions climate and emissions, although cited examples do not relate to primary production. No dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which Document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

NB. National level guidelines apply everywhere but supporting policy measures vary across sub-national jurisdictions across Australia.

10.1.3. Belgium (country-wide)

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Superior Health Council FPS Public Health, Walloon Agency for Quality Life (AVIQ) for the French version, Gezond Leven and Vlaanderen is zorg for the Flemish version.	FBDG: Eat and gain life-years? Doable! (2019) https://www.youtube.com/watch?v=_GcH7x7unQY The Food Tree (2019) https://www.karott.be/karott-epi-alimentaire/ and https://www.foodinaction.com/nl/voedingstak-pijlers-beter-eten/ (in Dutch and French, machine translated to English via Google Translate and DeepL)	2.14 minutes (video) 6 (pdf)	Dietary recommendations are not linked explicitly to environment and climate.
Background 🟨	Superior Health Council	Dietary Guidelines for the Belgian Adult Population (2019) https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/20191011_shc-9284_fbdg_vweb.pdf	91 (pdf)	Sustainability issues are noted and endorsed as relevant, but not in an integrated way. Dietary recommendations are not linked explicitly to environment and climate.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

NB. Guidance expected to be updated after 2023 see https://www.health.belgium.be/en/advisory-report-9284-fbdg-2019

10.1.4. Belgium (Flanders)

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟩	Departement Omgeving (Department of Environment)	Eating According to the Food Triangle: Good for Yourself and the Planet (2021) Food-triangle-EN.pdf (gezondleven.be)	24 (pdf)	Dietary recommendations are linked explicitly to environment and climate.
Background 🟩	Vlaams Instituut Gezond Leven (Flemish Institute for Healthy Living)	Rationale for a substantive food and health vision (2017); Food & Environmentally Responsible Consumption (2021) Achtergronddocument-Voeding-en-gezondheid.pdf (gezondleven.be) (in Dutch, machine translated to English via Google Translate and DeepL) Background-food-and-environment-EN.pdf (gezondleven.be) and www.gezondleven.be/voedingsdriehoek .	30 (pdf) 133 (pdf)	Dietary recommendations are linked explicitly to environment and climate.

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨Partial 🟥Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Consumer. NB. Guidelines for Flanders are distinct from those issued by Wallonia, and indeed to those issued by the Superior Health Council for all adult Belgians.	Eat more plant-based food than animal-based food. Eat seasonal fruit and veg. Drink mostly tap water. Moderate fish consumption. Opt for less processed plant-based meat and dairy substitutes.	"Plant-based generally has lower environmental impact. Legumes very low impact compared to meat. Not only are seasonal fruits and veg at their best, but their environmental impact is also more limited. Did you know that buying local is not always better for the environment? They can have a higher environment impact if they are grown in heated greenhouses." "Given that no packaging and transport is required, tap water has a lower environment impact. Fish can have a significant environmental impact."	"Make a week menu and plan one veggie day to begin with. Increase number of veggie days step by step. Website and app for tasty and healthy recipes and a decision-tree to help choice. Better to opt for less processed variants like tofu, tempeh and seitan and use the Nutri-Score to make better choices. For dairy substitutes, soy drinks enriched with calcium and vitamins has nutritional value comparable to milk. Drinks based on nuts, oats or rice have lower protein content."	"Start with one meat-free day per week and build from there. Eat handful of unsalted nuts every day." "If opt for meat, have one meat meal per day and have a small portion… size of your palm." "It is recommended to eat (oily) fish once or twice per week."

10.1.5. Brazil

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Ministry of Health	Food Guide for the Brazilian population (2018) https://www.gov.br/saude/pt-br/assuntos/saude-brasil/publicacoes-para-promocao-a-saude/guiadebolso2018.pdf/@@download/file (in Portuguese, machine translated by Google Translate and DeepL).	49 (pdf)	Environmental sustainability is mentioned briefly, but no dietary recommendations are linked explicitly to environment and climate.
Background 🟨	Ministry of Health University of São Paulo	Dietary Guidelines for the Brazilian Population (2015) https://bvsms.saude.gov.br/bvs/publicacoes/dietary_guidelines_brazilian_population.pdf Food and health: the scientific basis of the food guide for the Brazilian population (2019) https://www.livrosabertos.sibi.usp.br/portaldelivrosUSP/catalog/view/339/298/1248	152 (pdf) 133 (pdf)	Environmental sustainability is acknowledged as important but no dietary recommendations are linked explicitly to environment and climate.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.6. Canada

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Health Canada	Canada's Food Guide (2019) https://food-guide.canada.ca/sites/default/files/artifact-pdf/HEPs-Guide-nw-en.pdf see also https://food-guide.canada.ca/en/	2 (pdf)	Does recommend choosing protein that comes from plants more often and notes lower environmental impact, but no dietary recommendations are linked explicitly to environment or climate
Background 🟥	Health Canada	Canada's Dietary Guidelines for Health professionals and Policy makers (2018/19) https://food-guide.canada.ca/sites/default/files/artifact-pdf/CDG-EN-2018.pdf see also https://www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating-strategy.html	62 (pdf)	Background document briefly notes emissions from food waste. No dietary recommendations are linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

NB. National level guidelines apply everywhere but supporting policy measures vary across sub-national jurisdictions across Canada.

10.1.7. Chile

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Ministry of Health	Food Guides for Chile (2022) https://www.minsal.cl/wp-content/uploads/2023/08/Guias-alimentarias-version-corregida-MINSAL.pdf (in Spanish, machine translated into English by Google Translate, DeepL unable to do so)	12 (pdf)	No mention of climate or environment beyond reducing food packaging and waste. No dietary recommendations are linked explicitly to environment or climate
Background 🟨	Ministry of Health	Dietary Guidelines for Chile (2022) https://www.minsal.cl/wp-content/uploads/2022/12/guias_alimentarias_2022_2ed.pdf (in Spanish, machine translated into English by Google Translate and DeepL) Updating Of Food-Based Dietary Guidelines Food-Based Dietary Guidelines (Fbg) For The Chilean Population". Conceptual Development Framework Reports 1 & 2 (2022) https://www.minsal.cl/wp-content/uploads/2022/12/02.11.2022-PRODUCTO-1.pdf https://www.minsal.cl/wp-content/uploads/2022/12/02.112022-PRODUCTO-2.pdf (in Spanish, machine translated into English by Google Translate and DeepL)	108 (pdf) 686 (pdf) 236 (pdf)	Sustainable, environment and climate are mentioned frequently, but no dietary recommendations are linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨 Partial 🟥Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.8. Croatia

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Croatian Institute for Public Health	Healthy living. Do you also eat healthy? (2018) https://www.hzjz.hr/wp-content/uploads/2020/03/Hrana-LETAK.pdf (in Croatian, machine translated into English by Google Translate and DeepL)	2 (pdf)	No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate
Background 🟥	Croatian Institute for Public Health	Recommendations for the spring and summer nutrition (2018) https://zivjetizdravo.eu/wp-content/uploads/2020/03/Brosura-PROLJECE_LJETO-.pdf and Recommendations for the autumn and winter nutrition, 2018 https://zivjetizdravo.eu/wp-content/uploads/2020/03/Brosura-JESEN_ZIMA-LowRes.pdf (in Croatian, machine translated into English by Google Translate and DeepL)	2 x 28 (pdf)	No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.9. Cyprus

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Ministry of Health	National Nutrition and Exercise Guidelines leaflet (2011) (in Greek, machine translated into English by Google Translate, DeepL unable to do so) Layout 1 (moh.gov.cy)	2 (pdf)	No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate
Background 🟥	Ministry of Health	National Nutrition and Exercise Guidelines (2011) Layout 1 (moh.gov.cy) (in Greek, machine translated into English by Google Translate, DeepL unable to do so)	16 (pdf)	No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

NB. National level guidelines apply everywhere but supporting policy measures vary across sub-national jurisdictions across Canada.

10.1.10. Denmark

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer	Ministry of Food, Agriculture and Fisheries	The Official Dietary Guidelines – Good for Health and Climate (2021) https://foedevarestyrelsen.dk/publikationer/2021/de-officielle-kostraad-godt-for-sundhed-og-klima-pjece (in Danish, machine translated into English by Google Translate and DeepL). Website also includes other materials.	23 (pdf)	Frequent mention of climate/ environment. Recommendations are linked explicitly to environment or climate
Background	National Food Institute Department of Risk Assessment and Nutrition	Nordic Nutrition Recommendations 2023 Integrating Environmental Aspects (2023) https://pub.norden.org/nord2023-003/ Advice on sustainable healthy eating. Professional basis for a supplement to the Official Dietary Guidelines (2020) https://www.food.dtu.dk/english/-/media/institutter/foedevareinstituttet/publikationer/pub-2020/rapport-raad-om-baeredygtig-kost.pdf (in Danish, machine translated into English by Google Translate and DeepL).	c.20 (web) 116 (pdf)	Explicit reference to Planetary Boundaries, SDGs, environment, climate change and EAT-Lancet etc. Recommendations are linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: Extensive and frequent Partial Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Consumer	"Eat more fruit and veg." "Limit the use of butter". "Eat less meat."	Fruit and veg "…are among the foods with the lowest carbon footprint." "A high intake of dairy products contributes to increased climate impact. "Cutting down on meat is also good for the climate. This applies to all types of mea, especially beef and lamb…. Poultry, pork and eggs have a significantly lower impact on the climate than beef and lamb."	"Introduce meat-free days and use less meat in your meals. "Replace meat with vegetables, legumes or wholegrains." "Choose vegetable oils and low-fat dairy products." "Eat foods with wholegrains."	"Around 350g or meat per week is sufficient." "Around 250ml milk product per day, 20g cheese per day" "30g nuts per day, 1-2 tablespoons seeds per day" "75g wholegrains per day" "600g per day fruit and veg" plus "100g per day legumes"

10.1.11. Estonia

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Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	National Institute for Health Development	The Food Pyramid(2017) tai_toidupuramiid_plakat_est_420x594mm_bleed_5mm_FIX (in Estonian, machine translated to English via Google Translate)	1 (pdf)	No mention of environment or climate No dietary recommendations are linked explicitly to environment or climate
Background 🟨	National Institute for Health Development	Estonian Diet and Exercise Recommendations (2017) https://intra.tai.ee/images/prints/documents/149019033869_eesti%20toitumis-%20ja%20liikumissoovitused.pdf (in Estonian, machine translated to English via Google Translate)	338 (pdf)	Section on sustainable consumption and notes climate and environmental impacts. No dietary recommendations are linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.12. Finland

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer ■	Finnish Food Authority	Nutrition and Food Recommendations (2020) https://www.ruokavirasto.fi/en/foodstuffs/healthy-diet/	c.30 (web)	Dietary recommendations are linked explicitly to environment and climate.
Background ■	State Nutrition Advisory Board	Health from food. Finnish Nutrition Recommendations 2014 (2018) https://www.ruokavirasto.fi/globalassets/teemat/terveytta-edistava-ruokavalio/kuluttaja-ja-ammattilaismateriaali/julkaisut/ravitsemussuositukset_2014_fi_web_versio_5.pdf (in Finnish, machine translated to English via Google Translate)	59 (pdf)	Dietary recommendations are linked explicitly to environment and climate.

Degree to which document links guidance to environmental impact: ■ Extensive and frequent ■ Partial ■ Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Consumer.	"More fruit and berries, vegetables, leguminous plants, whole and nuts and seeds." "Less red meat and meat products" "We should favour domestic plants of the crop season, i.e. local and seasonal food."	"A higher proportion of vegetables, root plants, potatoes, berries and fruit as well as cereal products in the diet reduces the load on the climate and eutrophication."	"The more colourful your food is, the better! Eat some of your vegetables uncooked. Oil-based dressings add juiciness and flavour to salads and grated vegetables. Eating berries and fruit whole is better than juicing them." "…it is advisable to select poultry meat rather than red meat."	"Eat at least five handfuls of vegetables, berries and fruit a day." "No more than 500 g of red meat and meat products a week (cooked weight)."

10.1.13. France

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟨	Santé publique France	50 Tips to Eat Better and Move More (2017) https://www.mangerbouger.fr/content/show/1501/file/Brochure_50_petites_astuces.pdf (in French, machine translated using Google Translate and DeepL)	32 (pdf)	Document makes limited reference to the env, and only for meat and bottled water consumption. Other guidance, such as eating more veg, consuming organic, is made without linking to env outcomes. Eating to benefit the env is presented as choosing local and seasonal products.
Background 🟥	ANSES French Agency for Food, Environmental, and Occupational Health & Safety Santé publique France	Updating of the PNNS guidelines: revision of the food-based dietary guidelines ANSES opinion Collective expert report (2016) https://www.anses.fr/en/system/files/NUT2012SA0103Ra-1EN.pdf Recommendations Concerning Diet, Physical Activity and Sedentary Behaviour for Adults (2019, Updated 2023) https://www.santepubliquefrance.fr/content/download/515446/3807453?version=1	282 (pdf)	Document gives explanation of the process by which the revised guidelines were arrived at, and justification/evidence for the decisions. It does not refer to the environment – it is entirely health-based.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Consumer.	"Good eating also means taking into account the environment by showing preference for foods from local producers and foods in season." "Eat less meat, eat more pulses."	"Of all foods, it's meat which has the biggest climate impact. Pulses are the heroes of sustainable agriculture, as they naturally enrich the soil without need for fertilisers, and use little water."	Various meal suggestions for including more pulses. No actual direction on swapping meat with pulses	"Maximum of 500g per week of meat, of which maximum 150g processed meat. Eat minimum 2 portions of pulses per week."

10.1.14. Germany

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Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer ■	German Society for Nutrition (DGE)	DGE Nutrition Circle (2024) https://www.dge.de/gesunde-ernaehrung/gut-essen-und-trinken/dge-ernaehrungskreis/ but also Eat and drink well – the DGE recommendations (2024) Eat and drink well – the DGE recommendations | DGE and FAQ (2024) https://www.dge.de/gesunde-ernaehrung/faq/lebensmittelbezogene-ernaehrungsempfehlungen-dge/#c6508	1+ (web) 1+ (web) 1+ (web)	Explicit reference to environment impacts, albeit not explained in great detail
Background ■ ■	German Environment Agency German Federal Ministry for Food and Agriculture German Society for Nutrition (DGE)	Towards healthy and sustainable diets in Germany An analysis of the environmental effects and policy implications of dietary change in Germany (2023) https://www.umweltbundesamt.de/sites/default/files/medien/11740/publikationen/2023-05-10_texte_67-2023_towards_healthy_1.pdf Key Issues Paper: Towards the Federal Government's Food Strategy (2022) https://www.bmel.de/SharedDocs/Downloads/DE/_Ernaehrung/ernaehrungsstrategie-eckpunktepapier.html (in German, machine translated to English using Google Translate and DeepL) Scientific basis of food-related dietary recommendations for Germany (2024) https://www.ernaehrungs-umschau.de/fileadmin/Ernaehrungs-Umschau/pdfs/pdf_2024/03_24/EU03_2024_M158_M166_Online.pdf (machine translated via DeepL)	11 (pdf) 10 (pdf) 9 (pdf)	Environmental impacts of dietary choices acknowledged explicitly.

Degree to which document links guidance to environmental impact: ■Extensive and frequent ■ Partial ■ Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Consumer	Take advantage of the variety of foods and eat a varied diet. Choose predominantly plant-based foods.	Predominantly plant-based diet have less impact on the environment and the climate. In the production of plant-based foods, the consumption of resources and the emission of harmful greenhouse gases is lower than in the production of animal-based foods	Incorporate vegetables and fruits into every meal, either raw or gently prepared, so that many nutrients are preserved. The more colorful, the better. For meat and sausage, choose the low-fat variants.	At least 550g of fruit and vegetables daily. No more than 500g of milk and dairy products daily. A weekly amount of meat and sausage of no more than 300g.

10.1.15. Greece

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Ministry of Health	National Nutrition Guide for Greek Adults (2014) http://www.diatrofikoiodigoi.gr/files/PDF/ADULTS.pdf (in Greek, machine translated to English via Google Translate) Also http://www.diatrofikoiodigoi.gr/?page=summary-adults (English summary)	132 (pdf) 16 (web)	Pollution from food transport is mentioned. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	Ministry of Health	National Nutrition Guide for Greek Adults – Scientific Documentation (2014) http://www.diatrofikoiodigoi.gr/files/PDF/ADULTS_PRO.pdf	250 (pdf)	Briefly notes climate and environmental impacts of animal production and benefits of plant based Mediterranean diet, but no dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.16. Hungary

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	National Association of Hungarian Dietitians (endorsed by Food Science Scientific Committee of the Hungarian Academy of Sciences)	OKOSTÁNYÉR® - SmartPlate, new Hungarian Dietary Recommendations (2016, renewed in 2021) http://mdosz.hu/uj-taplalkozasi-ajanlasok-okos-tanyer/ (Hungarian, machine translated into English using Google Translate and DeepL) and https://www.okostanyer.hu/wp-content/uploads/2021/11/2021_OKOSTANYER_ANGOL_felnott_A4.pdf (in English). Other web resources (2018 – 2021) at https://www.okostanyer.hu/ (some in English)	1+ (web) 3 (pdf)	Renewed version mentions more plant-based foods and restricting meat. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	None found	None found	N/A	N/A

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.17. Iceland

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Directorate of Health	Dietary Recommendations for Adults and Children from the Age of Two (2017) https://island.is/en/nutrition-recommendations/radleggingar_spurningar_svor see also Radleggingar_mataraedi_vef_utgafa_2021.pdf (ctfassets.net) and diskamodel- skola (ctfassets.net) (both in Icelandic, machine translated to English using Google Translate and DeepL)	28 (pdf)	Based on Nordic Nutrition Recommendations from 2013. No mention of environment or climate. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	Directorate of Health	Basis for dietary recommendations (2016) Grundvollur_radlegginga_um_mataraedi_og_radlagdir_dagskammtar.pdf (ctfassets.net) (in Icelandic, machine translated to English using Google Translate)	25 (pdf)	Based on Nordic Nutrition Recommendations from 2013. Passing reference to environment and climate. No dietary recommendations are linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.18. Ireland

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Health Service Executive	The Healthy Food Pyramid (2016) https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/heal/food-pyramid-images/food-pyramid-simple-version.pdf and Healthy Food for Life. The Food Pyramid guide to every day food choices for adults, teenagers and children aged five and over (2016) https://assets.gov.ie/7649/3049964a47cb405fa20ea8d96bf50c91.pdf	1 (pdf) 7 (pdf)	No mention of environment or climate No dietary recommendations are linked explicitly to environment or climate
Background 🟥	Health Service Executive	Healthy Food for Life Food Pyramid Questions and Answer (2016) https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/heal/food-pyramid-images/foodforlifefoodpyramidqas2016.pdf Healthy Food for Life Revised healthy eating guidelines and Food Pyramid rationale (2016) https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/heal/food-pyramid-images/foodforlifefoodpyramidrationale2016.pdf	4 (pdf) 8 (pdf)	No mention of environment or climate No dietary recommendations are linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.19. Italy

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟨	CREA Food and Nutrition Research Center	Guidelines for Healthy Eating (2019) https://sapermangiare.mobi/483/linee-guida.html (in Italian, machine translated to English using Google Translate and DeepL), with links through to sections of Background document (oddly ignoring meat) Sustainable Diets https://sapermangiare.mobi/N3567/diete-sostenibili.html (in Italian, machine translated to English using Google Translate and DeepL)	13 (web + vidoes)) 1 (web)	Sustainable consumption discussed, but dietary recommendations are not linked explicitly to environment or climate, and env criteria are secondary to health and cultural criteria
Background 🟨	CREA Food and Nutrition Research Center	Healthy Eating Guidelines Revision 2018 (2019) https://www.crea.gov.it/en/web/alimenti-e-nutrizione/-/linee-guida-per-una-sana-alimentazione-2018 (in Italian, machine translated to English using Google Translate and DeepL)	231 (pdf)	Section on sustainable consumption and notes climate and environmental impacts, but dietary recommendations are not linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.20. Latvia

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Ministry of Health	Eat healthily using the plate principle (2020) https://esparveselibu.lv/sites/default/files/2020-09/Skivja-princips-infografika.pdf (in Latvian, machine translated to English using Google Translate and DeepL)	1 (pdf)	No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	Ministry of Health	Dietary Guidelines for Adults (2020) https://esparveselibu.lv/sites/default/files/inline-files/VM_Uztura_ieteik_pieaug.pdf (in Latvian, machine translated to English using Google Translate and DeepL)	13 (pdf)	Guidelines influenced by the WHO recommendations and Nordic Nutrition. No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.21. Malta

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Ministry for Health	Dietary guidelines for Maltese adults. Healthy eating the Mediterranean way! (2015) https://hpdp.gov.mt/sites/default/files/2023-07/healthy_eating_the_mediterranean_way_en.pdf Dietary Guidelines for Maltese Children the Mediterranean Way! (2018) https://mariocaruana.com.mt/wp-content/uploads/2018/09/Dietary-Guidelines-for-Maltese-Children_2018.pdf	16 (pdf) 16 (pdf)	No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	N/A	None found (but strategy is published as https://health.gov.mt/wp-content/uploads/2023/04/Food_and_Nutrition_Policy_and_Action_Plan_for_Malta_2015-2020_EN.pdf)	N/A	FAO cites "Dietary guidelines for Maltese adults: information for professionals" but links are broken

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.22. Netherlands

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Netherlands Nutrition Centre	The Wheel of five (2020) https://www.voedingscentrum.nl/Assets/Uploads/voedingscentrum/Documents/Service/English/Wheel-of-five.pdf	5 (pdf)	Mentions sustainability but no meaningful link to recommendations
🟩	Netherlands Nutrition Centre	How do you eat healthy and sustainably? Sustainable eating in 7 steps (2020) https://www.voedingscentrum.nl/nl/duurzaam-eten/duurzaam-eten-in-7-stappen.aspx https://www.voedingscentrum.nl/nl/gezond-eten-met-de-schijf-van-vijf/hoe-eet-je-gezond-en-duurzaam.aspx (in Dutch, machine translated to English using Google Translate, DeepL unable to do so)	1 (web) 1 (web)	Dietary recommendations are linked explicitly to environment or climate.
Background 🟩	Netherlands Nutrition Centre	Eating More Sustainably: Fact Sheet for professionals (2022) https://www.voedingscentrum.nl/Assets/Uploads/voedingscentrum/Documents/FS%20Duurzaam%20eten%20-%20Engels%202022.pdf	8 (pdf)	Dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Background	"..eat less meat, and what meat you do eat, make it more sustainably produced meat" "within each food category, eat the most sustainably produced or lowest envtl impact option" "eat enough dairy and cheese, but within boundaries". "navigate trade-offs between sustainability impacts of animal production systems"	"The current Dutch diet is not sustainable." "The food we eat has a major impact on the environment" "Generally speaking, the greatest environmental benefit can be achieved by: eating less meat and more sources of plant-based proteins, such as pulses and nuts; wasting less food; only eating what you need". "...meat is responsible for easily the largest proportion of GHG emissions"	"A diet based on the Wheel of Five can be food for your health as well as beneficial in terms of sustainability." "Opt more often for pulses, nuts or eggs". "Select certified products from the list approved by Milieu Centraal" "Consume fewer products that are not on the Wheel of Five" "Buy and cook what you need", "eat recommended amounts" "...sometimes compromises are necessary...	"If you eat 400g of meat a week rather than the recommended maximum of 500g, this would result in a reduction in GHG emissions of 9% for men and 10% for women". Also "If you stop eating meat and replace it with pulses, nuts and eggs, this would result in a reduction in GHG emissions of 35% for men and 37% for women"

10.1.23. New Zealand

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Ministry of Health	Eating and Activity Guidelines for New Zealand Adults: Summary of Guidelines Statements and Key Related Information (2021) https://www.health.govt.nz/system/files/documents/publications/eating-and-activity-statements-for-new-zealand-adults-summary-of-guidelines-statements-and-key-related-information-jan_21.pdf	6 (pdf)	No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate
Background 🟥	Ministry of Health	Eating and Activity Guidelines for New Zealand Adults (2020) https://www.health.govt.nz/system/files/documents/publications/eating-activity-guidelines-new-zealand-adults-updated-2020-oct22.pdf	164 (pdf)	Mentions environmental impacts and emissions but no dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.24. Norway

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer ■	Norwegian Directorate of Health	Norwegian Dietary Guidelines (c.2014) https://www.helsedirektoratet.no/brosjyrer/helsedirektoratets-kostrad-brosjyre-og-plakat/Helsedirektoratets%20kostr%C3%A5d%20-%20engelsk.pdf/_/attachment/inline/80f68126-68af-4cec-b2aa-d04069d02471:dcb8efdbe6b6129470ec4969f6639be21a8afd82/Helsedirektoratets%20kostr%C3%A5d%20-%20engelsk.pdf	28 (pdf)	No mention of climate or environment. No dietary recommendations are linked explicitly to environment or climate
Background □	National Council for Nutrition, Directorate of Health	Dietary advice to promote public health and prevent chronic illnesses: methodology and scientific knowledge base (2011). Not found online, only in printed form https://www.fagbokforlaget.no/Kostr%C3%A5d-for-%C3%A5-fremme-folkehelsen-og-forebygge-kroniske-sykdommer/I9788245022995	353 (physical)	N/A

Degree to which document links guidance to environmental impact: ■ Extensive and frequent ■ Partial ■ Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

NB New Nordic Nutrition Recommendations (2023) https://www.norden.org/en/publication/nordic-nutrition-recommendations-2023 explicitly address sustainability issues and may indicate likely revision to expected update of dietary guidelines

10.1.25. Poland

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟨	Ministry of Health National Institute of Public Health	Eating and Activity Guidelines for New Zealand Adults: Summary of Guidelines Statements and Key Related Information (2021) Talerz i zalecenia 3 strony www (pzh.gov.pl) (in Polish, machine translated to English using Google Translate and DeepL)	3 (pdf)	Environment mentioned only once, in relation to recommendation for meat and meat products
Background 🟥	None found	N/A	N/A	N/A

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Consumer	Substitute meat with plant-based protein products, i.e. pulses (beans, chickpeas, soybeans, peas, lentils, broad beans) and nuts, as well as fish and eggs.	For health and the environment	Step 1 - Enter one day a week without meat. Step 2 - Swap processed meats and red meat for poultry, fish, pulses and eggs. Step 3 - Substitute meat with plant-based protein products, i.e. pulses (beans, chickpeas, soybeans, peas, lentils, broad beans) and nuts, as well as fish and eggs.	Do not eat more than 500 grams of red meat and processed meat (cold cuts, sausages) per week. Swap processed meats and red meat for poultry, fish, pulses and eggs.

10.1.26. Portugal

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Portuguese Health Directorate; Portuguese Consumer's Directorate	The New Food Wheel. Guide to daily food choices. (2016) https://alimentacaosaudavel.dgs.pt/theme/alimentacao-saudavel-e-dieta-mediterranica/?topico=roda-dos-alimentos&formato=documento#a-ax433o.pdf (in Portugese, machine translated to English using Google Translate and DeepL) The Mediterranean Food Wheel. Culture, tradition and Balance.(2020) https://alimentacaosaudavel.dgs.pt/roda-dos-alimentos/ (in Portugese, machine translated to English using Google Translate and DeepL)	5 (pdf) 1 (web)	Two sets of guidelines exist in parallel. Environment and climate are not mentioned in either. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	University of Porto	The Portuguese mediterranean diet wheel: development considerations (2022) https://pubmed.ncbi.nlm.nih.gov/34530943/	7 (pdf)	Environment mentioned in passing. No dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.27. Romania

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Ministry of Health	The Food Pyramid (2006) https://www.ms.ro/documente/5%20recomandari%20nutritionale_8319_6030.pdf (in Romanian, machine translated to English using Google Translate and DeepL)	1 (pdf)	Environment and climate are not mentioned. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	Romanian Nutrition Society	Guide to Healthy Eating (2006) https://www.spitalsmeeni.ro/docs/ghiduri/ghid_alimentatie_populatie.pdf and https://www.fao.org/3/as693ro/as693ro.pdf (in Romanian, machine translated to English using Google Translate and DeepL)	48 (Word) 173 (pdf)	Environment and climate are not mentioned. No dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.28. Spain

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 	Spanish Agency for Food Safety and Nutrition	Sustainable Dietary and Physical Activity Recommendations (2022) https://www.aesan.gob.es/AECOSAN/docs/documentos/nutricion/RECOMENDACIONES_DIETETICAS_EN.pdf •	19 (pdf)	Recommendations are linked explicitly to environment or climate
Background 	Spanish Agency for Food Safety and Nutrition	Report of the Scientific Committee of the Spanish Agency for Food Safety and Nutrition (AESAN) on sustainable dietary and physical activity recommendations for the Spanish population (2022) https://www.aesan.gob.es/AECOSAN/docs/documentos/seguridad_alimentaria/evaluacion_riesgos/informes_cc_ingles/RRDD_SOSTENIBLES_INGLES.pdf	55 (pd)	Explicit reference to Planetary Boundaries, SDGs, environment, climate change and EAT-Lancet etc. Recommendations are linked explicitly to environment or climate

Degree to which document links guidance to environmental impact: Extensive and frequent Partial Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Consumer	"Consume a minimum of 5 [fruit and veg] servings per day…3-6[cereals] servings a day….. a maximum of 3 [dairy]servings a day". "0 to a maximum of 3 servings of meat per week" "At least 3 [fish] servings per week" "Consume a maximum of 4 medium-sized eggs a week" "Consume at least 4 [legume] servings a week"	"The environmental impact of cereals…vegetables and fruits is low…legumes have little environmental impact." "The environmental impact of meat is greater than that of other types of food" "…high environmental impact of dairy products…"	Prefer buying fresh seasonal, local, and minimally processed products. Choose products from farms where animal husbandry meets the highest standards of animal welfare and eat all parts of the animal (including fatty cuts and offals), to avoid waste. Prioritising the consumption of white meat of poultry and rabbit	Fruit & veg: 120g – 200g per portion Cereals: 40g -80g per portion Legumes: 50g – 60g per portion Fish: 120g – 150g per portion Eggs: 53g – 63g per portion Dairy: <250g per portion Meat: 100g – 125g per portion

10.1.29. Slovenia

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	National Institute for Public Health	12 Steps Towards Health Eating. Dietary recommendation (2018) https://nijz.si/wp-content/uploads/2022/07/12_korakov_plakat_0.pdf (in Slovenian, machine translated to English using Google Translate and DeepL)	1 (pdf)	Meat free days and plant-based food mentioned. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	None found	None found	N/A	N/A. However, a Strategic Council for Health & Nutrition was appointed in 2023 and endorses a shift to the Eat Lancet approach – implying it is not currently deployed https://www.gov.si/zbirke/delovna-telesa/strateski-svet-za-prehrano/

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.30. Sweden

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟩	Swedish Food Agency	The Swedish Dietary Guidelines. Find your way to eat greener, not too much and be active (2015) https://www.livsmedelsverket.se/globalassets/publikationsdatabas/andra-sprak/kostraden/kostrad-eng.pdf	28 (pdf)	Frequent mention of climate/ environment. Dietary recommendations are linked explicitly to environment or climate.
Background 🟩	Swedish Food Agency	The Swedish Dietary Guidelines - risk benefit and management report (2015) https://www.fao.org/3/az907e/az907e.pdf	79 (pdf)	Frequent mention of climate/ environment. Dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
Consumer	“eat more.. fruit and veg…seafood, healthy fats… low fat dairy” “., switch to wholegrain, eat less meat”. “Choose more sustainably produced foods”	“what you eat isn’t just important to your own personal well-being: it’s important to the envt as well… one quarter of the climate impact of Swedish households comes from the food we eat – or throw away. That’s why we’ve devised this advice on how you can eat sustainably – to the benefit of both your health and the envt. So that you don’t have to choose.”	"Ecolabels such as ‘organic’ help you choose foods produced with the envt in mind.” “Focus more on vegetarian foods and eggs, and sometimes fish or poultry. Or eat meat a little more often, but in small quantities.” “If you cut back on meat, you’ll have enough money for meat produced sustainably, with attention paid to the welfare of the animals. Choose ecolabelled meats such as free range, organic or certified eco-friendly.”	Fruit & veg: 500g per day (does not include potatoes) Fish: 2-3 times p/w (with caveats for oily fish from polluted waters Wholegrain 70g per day women, 90g per day men Red meat and processed meat; 500g per week Dairy: 2-3 decilitres of milk or fermented milk per day, to ensure you get enough calcium

10.1.31. Switzerland

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Swiss Society for Nutrition	The Swiss Food Pyramid (2016) https://www.sge-ssn.ch/media/sge_pyramid_E_basic_20161.pdf	5 (pdf)	Environment and sustainable diets mentioned. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	Federal Department of Home Affairs. See also Federal Office of Food Safety and Veterinary Affairs; Federal Commission for Nutrition	Eating Well and Staying Healthy Swiss Nutrition Policy 2017–2024 (2017) https://www.blv.admin.ch/dam/blv/en/dokumente/lebensmittel-und-ernaehrung/ernaehrung/schweizer-ernaehrungsstrategie-2017-2024.PDF.download.PDF/Ernaehrungsstrategie_Brosch_EN.PDF also Nutrition Strategy Action Plan (2017) https://www.plandactionnutrition.ch/ NB Reappraisal of the scientific evidence linking consumption of foods from specific food groups to NCDs (2020) https://www.blv.admin.ch/blv/en/home/das-blv/organisation/kommissionen/eek/pyramide-neubewertung-lebensmittelkonsum-ncd.html	N/A	No mention of environment or climate. No dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.32. UK (England, Northern Ireland, Scotland and Wales)

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	Public Health England in association with the Welsh Government, Food Standards Scotland and the Food Standards Agency in Northern Ireland	The Eat Well Guide (2016) https://assets.publishing.service.gov.uk/media/5a75564fed915d6faf2b2375/Eatwell_guide_colour.pdf (mirrored identically on official websites in Northern Ireland, Scotland and Wales) The Eatwell Guide. Helping you eat a healthy, balanced diet (2019) https://www.food.gov.uk/sites/default/files/media/document/eatwell-guide-master-digital%20Final.pdf (mirrored almost identically on official websites in Northern Ireland, Scotland and Wales)	1 (pdf) 12 (pdf)	No mention of environment or climate, sustainable mentioned briefly. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	As above As above	From Plate to Guide: What, why and how for the eatwell model (2016) https://assets.publishing.service.gov.uk/media/5a7f73f7e5274a2e8ab4c461/eatwell_model_guide_report.pdf The Eatwell Guide: a More Sustainable Diet. Methodology and Results Summary (2016) https://www.foodstandards.gov.scot/downloads/The_Eatwell_Guide_a_more_sustainable_diet.pdf	37 (pdf) 12 (pdf)	Lack of a sustainability criteria acknowledged (and no dietary recommendations are linked explicitly to environment or climate) but points to ex post estimation by Carbon Trust of positive environmental gains relative to current average diet

Degree to which document links guidance to environmental impact: 🟩 Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

10.1.33. USA

Document type	Publishing organisation	Document name (publication date) and weblink source	Document length (pages)	Comments
Consumer 🟥	United States Department of Agriculture	MyPlate (2020) https://myplate-prod.azureedge.us/sites/default/files/2021-01/DGA_2020-2025_StartSimple_withMyPlate_English_color.pdf but see also broader web resources https://www.myplate.gov/	4 (pdf) c.30+ (web)	No mention of environment or climate. No dietary recommendations are linked explicitly to environment or climate.
Background 🟥	United States Department of Agriculture	Dietary Guidelines for Americans 2020 – 2025 (2020) https://www.dietaryguidelines.gov/sites/default/files/2021-03/Dietary_Guidelines_for_Americans-2020-2025.pdf	164 (pdf)	No mention of environment or climate. No dietary recommendations are linked explicitly to environment or climate.

Degree to which document links guidance to environmental impact: 🟩Extensive and frequent 🟨 Partial 🟥 Occasional or none

Which document?	What Advice?	Why Do This?	How Do This?	Quantification?
N/A	N/A	N/A	N/A	N/A

NB. Federal MyPlate guidance appears to apply across all individual States. Some (e.g. California) have State-badged material that is otherwise identical to Federal guidance. However, Alaska and Hawaii (plus Pacific Island dependencies) appear to also refer to the Secretariat of the Pacific Community and The Pacific Food Guide. The latter was sponsored by the United States Department of Agriculture to account for regional differences in culture and dietary challenges, but makes no mention of environmental or climate impacts of dietary choices: http://manoa.hawaii.edu/ctahr/pacificfoodguide/index.php/about-the-guide/. In response to academic criticism of the Federal guidance, Harvard University publishes the 'Healthy Eating Plate' as an alternative to MyPlate, https://www.health.harvard.edu/staying-healthy/healthy-eating-plate

Appendix C: Recommended intakes for key food groups, in FBDGs for 22 jurisdictions

	All meat (g/wk)	Red/processed Meat (g/wk)	Dairy (ml/day)	Fruit and vegetables (g/d)
Austria	399-450g		600	650
Australia	-	455	625	675
Belgium Flanders	-	500	250-500	550
Denmark	350	-	>250	600
Finland	500	-		-500
France	-	500	-	-
Germany	300	60	250	550
Greece	450	150	500	690
Hungary	-	350-500	500	600
Iceland	-	500	500	500
Italy	300	100	375	800
Latvia	-	500	-	500
Malta	480	180	500	400
Netherlands	500	300	300-450	450
New Zealand	-	500	-	-
Norway	-	500	-	500
Poland	-	500	-	400
Portugal	595	-	500	820
Spain	375	-	500	690
Sweden	-	500	200-500	500
Switzerland	-	-	450-600	600

Source: derived from references listed in Appendix B

Appendix D: Summary dietary patterns, recommended intakes and population characteristics for Flanders, Netherlands, Sweden and Scotland

	Belgium (2014)	Netherlands (2021)	Sweden (2010/11)	Scotland (2021)
Fruit	115	134	128	134
Vegetables	155	174	176	131
Meat	104	92	110	80
Dairy	202	329	245	230
18 <= BMI <25	49%	50%	49%	32% (42%)*
25 <= BMI <30	35%	35%	35%	36% (35%)*
BMI >= 30	14%	13%	14%	31% (20%)*
Population	6.8m	18.0m	10.6m	5.4m

* Scottish-specific BMI figures with UK figures in brackets from same Eurostat source as other countries. Comparisons are indicative given differences in survey methods, definitions and vintage.

Dietary statistics sources:

Belgium.

Scientific Institute for Public health 2016 Food Consumption Survey 2014-2015 https://www.sciensano.be/en/biblio/enquete-de-consommation-alimentaire-2014-2015-resume-des-resultats

Healthy Belgium 2020 Nutritional habits https://www.healthybelgium.be/en/health-status/determinants-of-health/nutritional-habits

STATBEL 2023. Structure of the Population.

https://statbel.fgov.be/en/themes/population/structure-population

Statistics Flanders 2023. Gross domestic product per capita

https://www.vlaanderen.be/en/statistics-flanders/macro-economy/gross-domestic-product-per-capita

For a Healthy Belgium 2020. Weight status.

https://www.healthybelgium.be/en/health-status/determinants-of-health/weight-status#references

Netherlands.

National Institute for Public Health and the Environment: Ministry of Health, Welfare and Sport. 2022. The diet of the Dutch Results of the Dutch National Food Consumption Survey 2019-2021 on food consumption and evaluation with dietary guidelines. https://www.rivm.nl/bibliotheek/rapporten/2022-0190.pdf

National Institute for Public Health and the Environment: Ministry of Health, Welfare and Sport. 2023. Dutch National Food Consumption Survey 2019-2021: Consumption https://statline.rivm.nl/#/RIVM/nl/dataset/50110NED/table?ts=1706353152036

Statistics Netherlands 2023. Regional key figures; National Accounts https://www.cbs.nl/en-gb/figures/detail/84432ENG

Statistics Netherlands 2023. Population Counter https://www.cbs.nl/en-gb/visualisations/dashboard-population/population-counter

Sweden

Swedish National Food Agency 2012 National food - adults 2010-11. Food and nutrient intakes among adults in Swedenhttps://snd.gu.se/en/catalogue/dataset/ext0093-1

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https://www.scb.se/en/finding-statistics/statistics-by-subject-area/prices-and-consumption/purchasing-power-parities/purchasing-power-parities-ppps/pong/statistical-news/purchasing-power-parities-20102012/

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Barton, K. and Ronald, C. 2023. Estimation of Food and Nutrient Intakes from Food Purchase Data in Scotland 2001-2018 https://www.foodstandards.gov.scot/downloads/FSS_-_Monitoring_Dietary_Intakes_-_Living_Costs_and_Food_Survey_-_LCFS_-_2001_to_2018_-_Report_for_Publication_-_FINAL_-_PDF_Version_for_Publication_on_Website_-_01_February_2022.pdf

Stewart, C., McNeill, G., Runions, R., Comrie, F., McDonald, A. and Jaacks, P.L.M., 2023. Meat and milk product consumption in Scottish adults: Insights from a national survey. Available at SSRN 4628199. https://deliverypdf.ssrn.com/delivery.php?ID=857005071031031000088070115122121000008032020031003054085010011001034115108111087086083066097092081020103030015004125120065026076016072087060115025026001021037011068002087078095090086003011000052053046070037015000090031072029087122085104109065002075126019112074019089127120092112074085122005&EXT=pdf&INDEX=TRUE

Scotland's Census 2023. Scotland's Census 2022 - Rounded population estimates.

https://www.scotlandscensus.gov.uk/2022-results/scotland-s-census-2022-rounded-population-estimates/

Obesity statistic sources:

Eurostat Body mass index (BMI) by sex, age and country of citizenship https://ec.europa.eu/eurostat/databrowser/view/hlth_ehis_bm1c/default/table?lang=en&category=hlth.hlth_det.hlth_bmi

NCD-RISC NATIONAL ADULT BODY-MASS INDEX https://www.ncdrisc.org/data-downloads-adiposity.html

Scottish Government 2022. Scottish Health Survey 2021 https://www.gov.scot/collections/scottish-health-survey/#2022

Appendix E: Dietary guidance development and selected food policies and strategies in Flanders

10.1.34. Governance of the Flanders region

Flanders is a region of Belgium. At 483 km^2, it comprises less than half the land mass of Belgium, but with more than 6 million inhabitants it represents 57% of the population. Authority for many aspects of health and environmental policy are devolved to regional governments in Belgium, including Flanders, whilst fiscal policy, defence, etc are governed centrally.

10.1.35. FBDGs in Flanders: the Flanders Food Triangle

In Flanders, the FBDGs are captured in a 24-page consumer-facing document "Eating According to the Food Triangle: Good for Yourself and the Planet" (2021). It was developed by the Flemish Institute of Healthy Living ("Gezond Leven"), in cooperation with the Department of the Environment of the Flemish Government. The stated aims of the document are to draw from the latest science and expert advice, in order to provide concrete, achievable consumer recommendations for diets that can improve human health and that of the planet.

The context of the guidance emphasises that the environmental impact of our food is currently greater than what our planet can bear, so dietary change is needed. A graph (Figure 13.1) ranks foods according to their environmental impact, such that citizens are advised to eat more of the foods at the top (legumes, tofu, wheat and rye, potatoes, root vegetables and nuts), and less of the foods at the bottom (lamb, beef, pork, cheese and milk). It also emphasises that consumer choices and habits are strongly influenced by the food environment. Consequently, it argues a multi-stakeholder effort is needed to make healthy, climate-friendly diet choices the most obvious and appealing options for consumers.

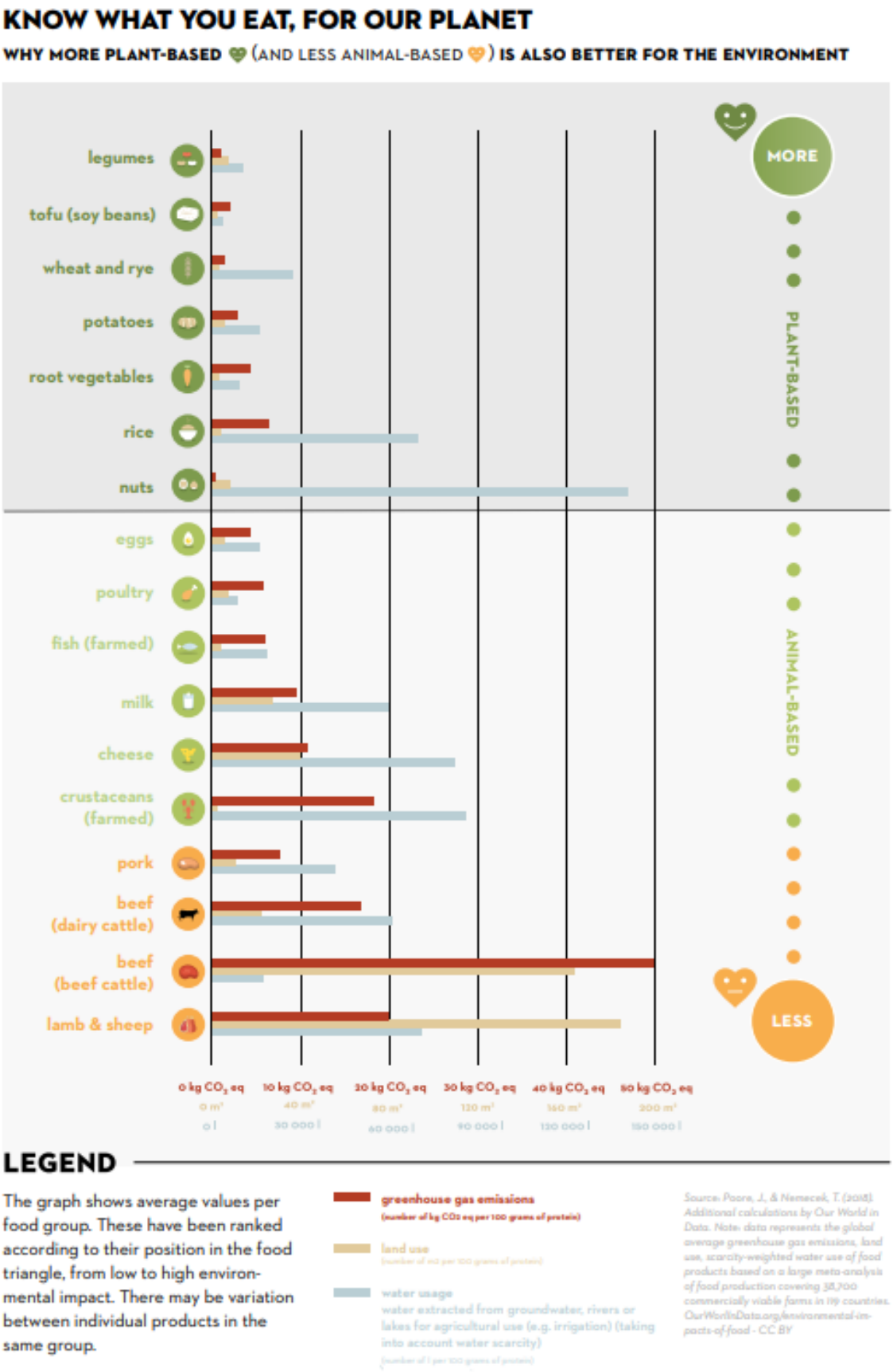

Figure 14.1. 'Know what you eat, for our planet': graphic from Flanders FBDGs

In terms of content, the Food Triangle is offered as the basis for a healthy and environmentally responsible diet. It is underpinned by 3 principles: (i) eat proportionately more plant-based food than animal-based food (due to the former generally having lower environmental impact than the latter); (ii) eat and drink as few nutrient poor foods as possible (because every food production step adds an environmental burden, hence our foods need to 'count' more); (iii) avoid food waste and moderate your consumption (because every food item that is wasted is an environmental impact that could have been avoided).

The guidance offers specific advice for each of the food groups in the Triangle, which includes quantified amounts for each category, with continued reference/justification to environmental impact. Discretionary foods (foods high in fat, salt and sugar) are separated from the triangle as non-essential to the diet, and this category also includes processed meat.

The Flanders FBDGs emphasises gradual change, not radical shifts: "balance is key: take care of yourself and the planet, but don't forget to enjoy yourself." It also recommends up to three or four days per week of meat-free meals. Links are offered to relevant support materials, developed by Gezond Leven, such as recipes for vegetarian meals and a seasonal buying guide for fruit and vegetables.

The guidance offers detailed and nuanced advice about the environmental impacts of different types of production system, and of transportation. For example, it cautions against assumptions that locally sourced food is automatically lower carbon. The guidance also advises on processed meat substitutes, for example, by recommending substitutes like tofu and tempeh, which are less processed than alternatives. It also gives specific advice about nutritional contents to look for in milk and dairy substitutes.

10.1.36. How the FBDGs were developed

Gezond Leven was the lead partner developing the guidance. It is an independent agency working under contract to the Flanders Government, responsible for public health promotion. The other key partner was the Department of the Environment and Spatial Development. The steps of the development process are depicted in Figure 13.2, and can be summarised as follows. The process began with a commissioned review of the scientific literature on the health and environmental impacts of dietary choices. Next, a cross-disciplinary expert panel of academics was convened, to help analyse the evidence and determine the core content of the final guidance, including the visual model. This step also involved development of the underpinning reasoning for the guidance, based on a strong scientific foundation. After this, public-facing messaging was designed and tested amongst citizens. Only after the guidance was finalized were stakeholders consulted on matters related to coordination and implementation of the guidance. Stakeholders did not influence or change the substance of the guidance.

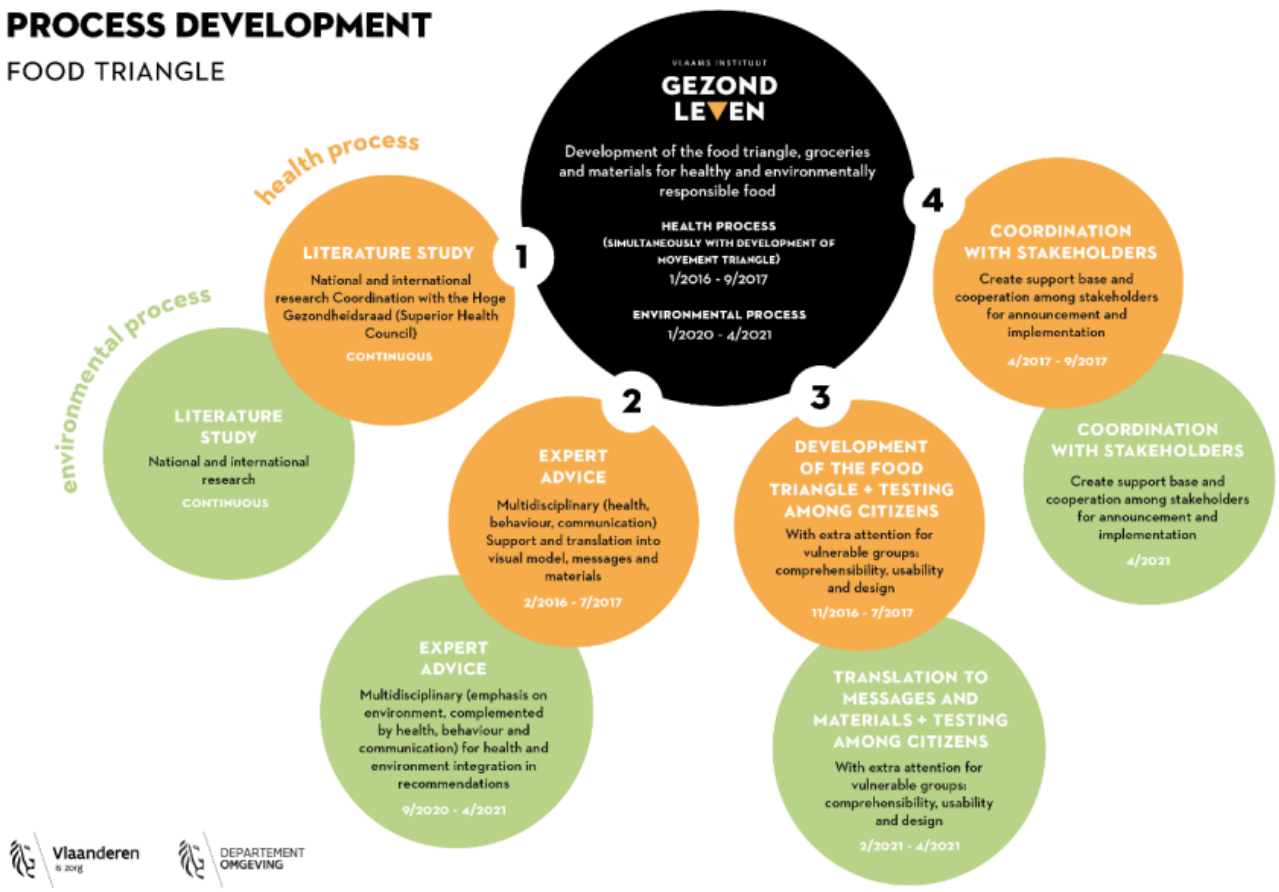

Figure 14.2: Development process for the Flanders Food Triangle (source: Rubens et al (2021) Background-food-and-environment-EN.pdf (gezondleven.be)

The primacy of science in the development process, and the exclusion of stakeholders from the core development, was a deliberate decision by Gezond Leven. It was based on its first experience of designing climate-focused guidance in 2017, where stakeholders were included in the development process, and less time was spent establishing the scientific underpinning. Gezond Leven received criticisms from stakeholders and the media that the ensuing guidance was biased and lacking in scientific evidence. This led to the 'science first' approach for the 2021 guidance.

A co-benefit of developing a solid science base for the current guidance has been the creation of a background document, which explains clearly the reasoning for the integration of climate aspects. This helps Gezond Leven, and the Department of the Environment, to keep the momentum in policy actions which might otherwise be delayed or distracted, with regressive 'why are we doing this?' questions.

10.1.37. Policies, strategies and actions related to the FBDGs

The Flemish FBDGs, 'Eating according to the food triangle: good for yourself and the planet'[43] do not exist in isolation but sit alongside several other food and/or climate-related government strategies and policies.

For example, the 'Strategic Plan: Fleming Lives Healthier in 2025' was published in 2018. This acknowledges multiple influences upon human health but makes explicit reference to nutrition and food and the importance of enabling healthy choices, plus monitoring dietary patterns. Similarly, the 'The Flemish Climate Policy Plan' commits to reducing agricultural emissions and acknowledges the role of diets and local production patterns in achieving this but notes the challenge of doing so against a backdrop of rising agricultural emissions.[44] Reducing food waste is also addressed in the 'Action Plan Circular Food Loss and Biomass (Residual) Flows 2021-2025'.[45]

More particularly, the 2019-2024 Flemish Coalition Agreement included a commitment to create a strong food policy. This led to the Department of Agriculture and Fisheries publishing 'Go4Food: A Flanders Food Strategy for Tomorrow' in 2020 (subsequently updated).[46]

The Food Strategy explicitly recognises the importance of a healthy and environmentally responsible diet but highlights the need for an inclusive system-wide approach considering the interests of different groups of food consumers and producers. Moreover, the Strategy is acknowledged to exist alongside international (e.g. EU), national (i.e. Belgian) and municipal (e.g. city authorities) food strategies.

[43] Food-triangle-EN.pdf (gezondleven.be)
[44] https://publicaties.vlaanderen.be/view-file/13458, be_final_necp_parta_en_0.pdf (europa.eu) and be_final_necp_partb_en_0.pdf (europa.eu)
[45] 210706 English version VR 2021 0204 DOC. Actieplan voedselverlies en biomassa 2021-2025 EN (oneplanetnetwork.org)
[46] Go4Food, A Flanders food strategy for tomorrow. Synthesis | Vlaanderen.be

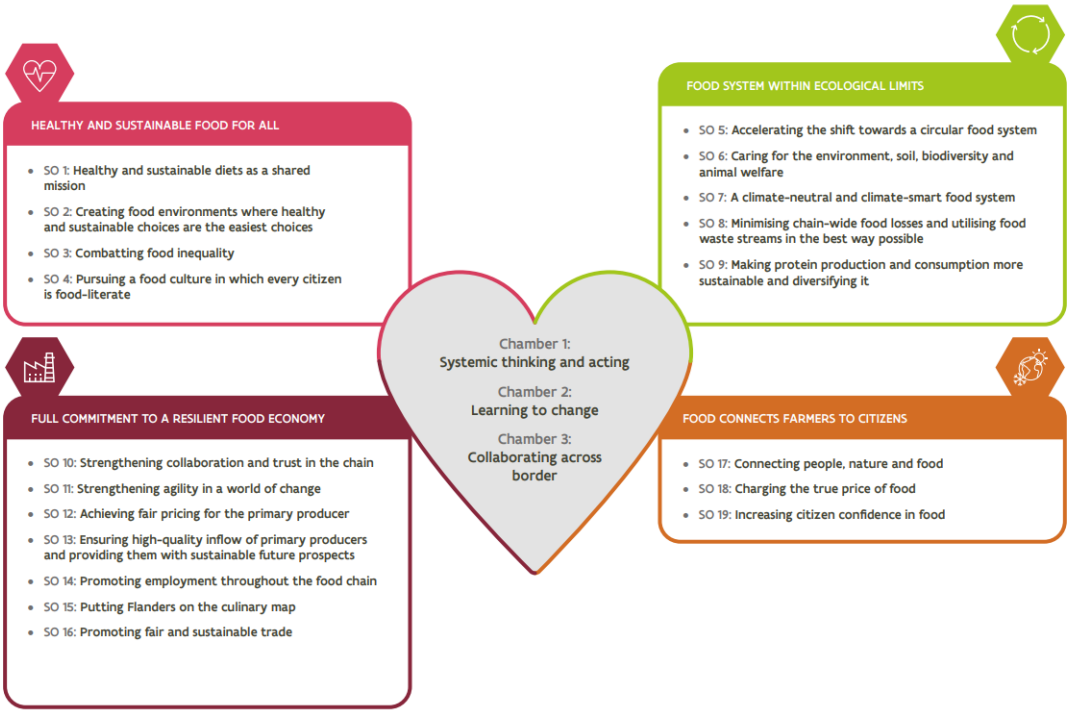

Figure 14.3: Go4Food Strategic Pillars and Objectives (source: Voedseltop Synthese (vlaanderen.be) (p8)

As shown in Figure 13.3 above, Go4Food presents four strategic pillars linked to 19 strategic objectives. The objectives include explicit reference to healthy and sustainable diets (SO1, SO2) and environmental sustainability (SO6 and SO7), plus more specific topics such as a circular economy (SO5), minimising food waste (SO8) and more sustainable protein production and consumption (SO9). In turn, these are linked to 11 'Food Deal' ambitions, around which cross-cutting actions are encouraged to coalesce, supported by funding (albeit not yet specified).

The Strategy does not itself describe detailed policy measures but does list various possible policy. For example, public communications, education and training, research and development, voluntary agreements with private supply-chains, and financial incentives and regulatory controls.

A number of 'food projects' and 'food deals' with stakeholders have been initiated under the Strategy. However, no specific ring-fenced funding is attached to the Strategy, with budget allocations needing to be sought on an individual basis across multiple Departmental boundaries (and/or leverage private sector funding) and apparently encountering some political and administrative resistance (pers. comm).

One area in receipt of funding is protein production, reflecting the relative importance attached to the 'Flemish Protein Strategy 2021-2030' published in 2021.[47] The Protein Strategy represents an evolution from similar, earlier strategies to increase the volume and

[47] Vlaamse Eiwitstrategie 2021-2030 (oneplanetnetwork.org)

range of domestically produced protein (to reduce reliance on imports, particularly where imports are deemed to be produced unsustainably).

In particular, there is an emphasis on growing additional plant protein for animal feed but also for domestic human consumption, with explicit recognition that this links to dietary change (novel protein sources such as insects and lab-grown cultures are also included). No specific targets are stated for reducing animal protein consumption, but health and climate advantages are noted.

A possible reason for specific funding being made available for the Protein Strategy may be that it aligns with EU-level ambitions to increase self-sufficiency in plant proteins. Such ambitions have recently been reinforced by the European parliament but were already stated to some degree in the EU's Green Deal and the Farm-to-Fork Strategy, and have been translated into explicit funding commitments in the Flanders CAP Strategic Plan.[48] Consequently, ring-fenced EU funding is available for increased on-farm production of plant proteins (e.g. in the form of specific public payments per hectare of crop grown). This has perhaps also made it easier to secure additional (if more modest) funding for product development and processing facilities (pers. comm.).

Ring-fenced funding under the Flanders CAP Strategic Plan is also available to increase the area of organic agriculture, and to increase the area of fruit and vegetables (not just protein crops) grown. Moreover, additional capital grant assistance is available for Producer Organizations (e.g. coops) wishing to invest in infrastructure or equipment for fruit and vegetable production. Such measures may increase the availability of locally produced food. Again, such measures align with EU-level ambitions, but it is notable that Flanders' use of them is higher than in other Member States (including elsewhere in Belgium).[49]

[48] EU protein strategy (europa.eu), REPORT European protein strategy | A9-0281/2023 | European Parliament (europa.eu), The Commission approves the CAP Strategic Plans of Belgium - European Commission (europa.eu), 16925dca-08d0-4592-8c87-202d12ec8bcd_en (europa.eu)

[49] 7b3a0485-c335-4e1b-a53a-9fe3733ca48f_en (europa.eu) (Fig 30), Organic action plan - European Commission (europa.eu), Fruit and vegetables - European Commission (europa.eu). Organic and fruit & vegetable support has been and remains available in Scotland under the CAP, albeit with more modest funding.

Appendix F: Dietary guidance development and selected food policies and strategies in the Netherlands

10.1.38. Background to the Wheel of Five and Seven Steps to Sustainability

In the Netherlands, climate-focused dietary guidance is captured in the "Eating more sustainably: fact sheet" (2022), which accompanies the "Wheel of Five" main dietary guidance, both produced by the Netherlands Nutrition Centre (NNC). The former is a 10-page document targeted at professionals/policymakers. The stated aims are to set out the case for environmentally sustainable diets, and how the Dutch diet should change to be in line with science-based planetary health recommendations.

In terms of context/framing, the document begins by conveying the environmental impacts of food production and consumption, and the urgent need for change. It states that the current Dutch diet is not sustainable ("the environmental footprint of the average Dutch diet is almost twice as large as the available area on the planet, per person, for food production", p2) because the Dutch population (i) consumes too much animal products (ii) wastes huge amounts of food (iii) consumes more energy than is recommended.

The document then refers explicitly to the Dutch "Wheel of Five" model (Figure 15.1), which depicts the proportions in which different food groups are recommended to feature in the diet (vegetables and fruit; spreading and cooking fats; dairy, nuts, fish, legumes, meat and eggs; bread, grain/cereal products and potatoes; drinks). In the model, discretionary foods (high in fat, salt and sugar) are classed as 'outside' the model and non-essential to diet. The document states that shifting from the current diet to the Wheel of Five is good for health and climate.

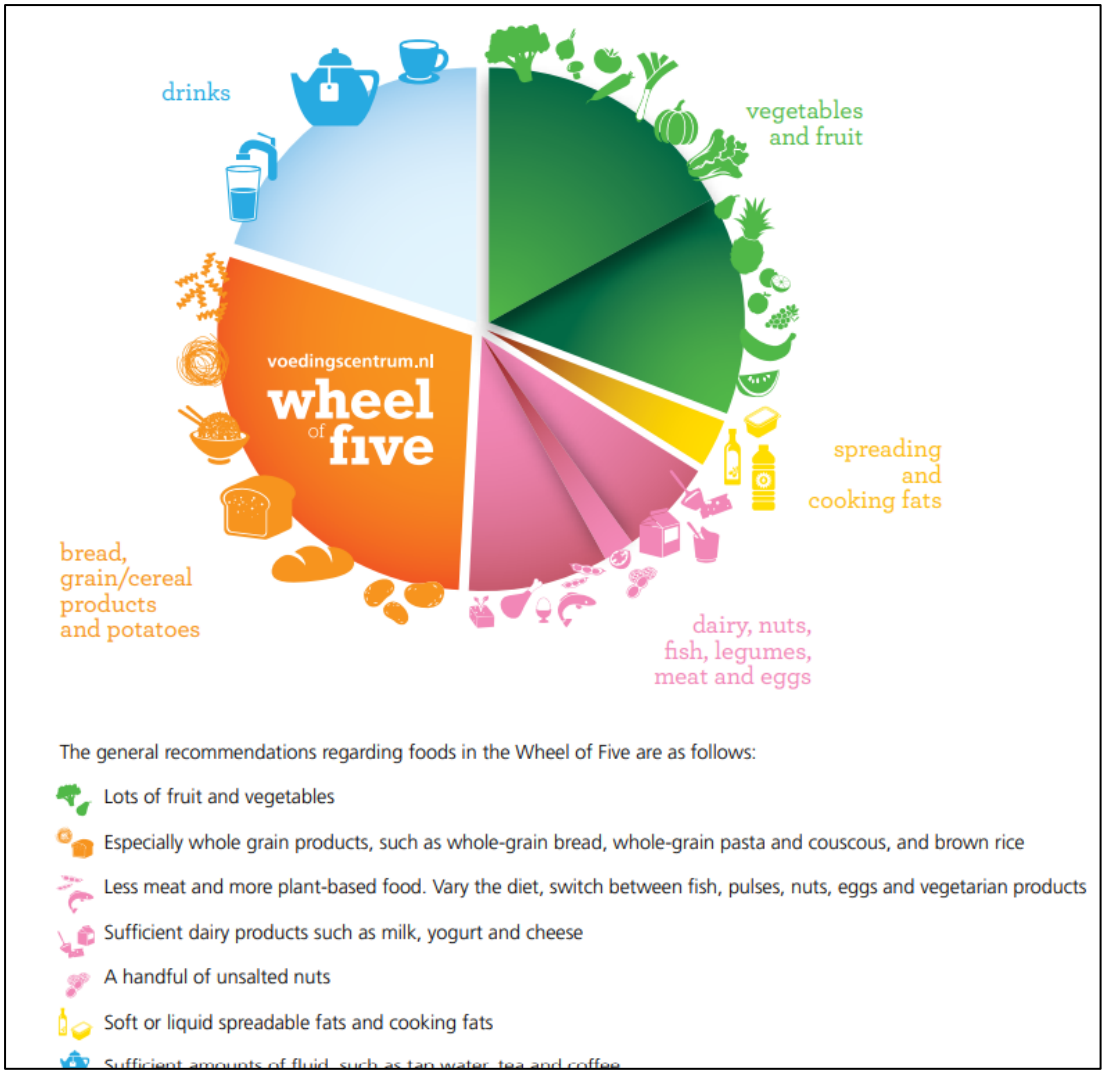

Figure 15.1: the Wheel of Five

Finally, the document gives specific advice within food groups, about the most sustainable options to choose, and sums these up in '7 steps to a more sustainable diet'. These are: eat less meat (opt more often for pulses, nuts or eggs); waste as little as possible (buy and cook what you need); eat recommended amounts (moderate your snacks and sweets); drink mostly tap water; eat enough dairy and cheese (but within bounds); buy seasonally (and check product origins); choose premium sustainability labels.

Overall, there are three eye-catching features of the Dutch FBDGs. First, the dairy intake recommendations are to "eat sufficient dairy to avoid chronic diseases but not more than that". Second, there is detailed and nuanced advice about meat. The guidance recommends clearly that eating less meat and dairy reduces the impact on the environment, however it explains that eating a small amount of meat (around once per week), requires less agricultural land than a totally meat-free diet. This is because animals can convert some inedible plants into edible proteins. Thus, the guidance advises that animal products have their place in a sustainable diet, but intake levels need to be less than current consumption. Finally, the guidance places emphasis on

making diets more sustainable by choosing better options within food categories, by way of eco-labels, and in particular, from a defined set of 'reliable' eco-labels. This set has been compiled by the Dutch government to help address consumer confusion over labels, so they can choose with confidence.

10.1.39. Background to the FBDG development process

Two agencies led the development of the Dutch FBDGs. These were the National Institute for Public Health and the Environment (NIPHE), a research centre which collects and analyses scientific evidence and conducts data modelling, and the Netherlands Nutrition Centre (NNC), a body which translates the science into practical FBDGs for consumers and health professionals. Both are independent bodies, funded solely by the Ministries of Health and Agriculture. In 2015, the NIPHE reviewed the scientific evidence on health and climate impacts of diets, with input from academic subject experts. NIPHE used this intelligence to model dietary guidelines as close as possible to the existing Dutch diet, while meeting parameters of health, climate impact, feasibility and applicability to different target groups. Figure 15.2 shows the model constraints. For health reasons, minimum intake levels of vegetables, fruit, wholegrains, fish, legumes, nuts and dairy were specified. For climate reasons, maximum intake levels of fish, red meat, total meat, eggs and dairy products were specified. Maximum intake levels of red meat and eggs were specified also for health reasons.

Constraints on products, not on impacts (GHGE, LU)
Based on environmental impact & feasibility (Brink et al. 2019)

Table 2 List of food constraints for adults used in the optimisation calculations in the development of food-based dietary guidelines for the Netherlands

Food group	Minimum	Reason for minimum	Maximum	Reason for maximum
Vegetables (g/d)	200	Health*	–	
Fruit (g/d)	200	Health*	–	
Wholegrain cereals (g/d)	90	Health*	–	
Fish (g/week)	100	Health†	125	Environmental impact‖
Legumes (g/week)	65	Health†	135	Feasibility§
Red meat (g/week)	–		Male: 500†,‡ Female: 50th percentile of consumption§	Health†, environmental impact‖
Total meat (g/week)	–		50th percentile of consumption§	Environmental impact‖
Eggs (g/week)	–		150	Health†, environmental impact‖
Nuts (g/d)	15	Health*	25	Feasibility§
Dairy products (g/d)	300	Health†	75th percentile of consumption§	Environmental impact‖

Figure 15.2. Food constraints for adults in optimization modelling of FBDGs in the Netherlands.

The NNC used the modelled solutions to draft the public facing dietary guidance, including the graphics. A transparent consultation process followed with experts, to check for any errors/omissions in the science, and also health professionals, to advise on practical implementation.

The food industry was specifically not involved in the consultation. Only after the final guidance was completed were meetings held with industry representatives. This

approach was taken to maintain both the real and perceived independence of the NIPHE and NNC. In total, the development process took several years.

At the time of writing, the Dutch Health Council are currently updating their nutritional guidance, and advances in climate science/data mean there is the opportunity for NNC to add more environmental indicators into their modelling (e.g. land and water use, pollution, and biodiversity), for the next revision. Another ambition is to set a clearer sustainability target for the FBDGs, for example, to achieve a certain percentage reduction of GHGs in the Dutch diet.

10.1.40. Policies, strategies and actions related to the FBDGs

Policies relevant to food in the Netherlands appear to reflect the traditional priorities of host ministries, with relatively little integration of health and climate goals. For example, the 2018 'National Prevention Agreement: Towards a Healthier Netherlands' presents ambitions for healthier lifestyles by 2040 but without reference to sustainability. Similarly, the 2015 'National Health Policy'[50] includes goals to increase consumption of fruits and vegetables, but these are justified for health not climate reasons. Meanwhile, the 2019 'Climate Agreement', which sets economy-wide emission reduction targets of 49% by 2030, contains only one brief reference to the need for change in food consumption habits (5 lines in a 247 page document).

In relation to agriculture, significant public funding has been allocated to support progress towards agricultural emission targets. This includes continuing production support measures under the CAP for organic farming, fruit and vegetable production, and protein production.[51] For example, direct support to increase the area of particular crops grown, consistent with EU-level ambitions to expand organic agriculture and reduce dependency upon imported protein crops and fruit and vegetables.[52] Dutch deployment of fruit and vegetable aid under the CAP is relatively high compared to most other Member States, although less than in Flanders.[53]

The Dutch National Protein Strategy represents a more integrative policy approach. As in Flanders, CAP funding has been used to encourage plant protein production at farm level. This is being combined with further funding made available under the National Green Fund. It also includes leverage of private sector investment, on the basis of potential market opportunities for plant (and more novel) forms of protein. The Strategy also links to broader

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50 https://extranet.who.int/nutrition/gina/sites/default/filesstore/NLD%202015%20National%20Health%20Policy%20Note.pdf

51 Including for organic production and fruit and vegetable production Microsoft Word - 20220209_Nederlands NSP GLB - versie 1.0 (overheid.nl)

52 Organic action plan - European Commission (europa.eu), Fruit and vegetables - European Commission (europa.eu) , EU protein strategy (europa.eu), REPORT European protein strategy | A9-0281/2023 | European Parliament (europa.eu)

53 7b3a0485-c335-4e1b-a53a-9fe3733ca48f_en (europa.eu) (Fig 30)

ambitions under the earlier 'Strategic Biomass Vision for the Netherlands towards 2030'.[54] Both Strategies acknowledge the health and climate motivations for reducing overall protein consumption by 10% to 15% whilst also decreasing the proportion of animal-based protein.

Example responses to encouragement for private funding to support the protein shift include bids for research and development, product innovations, and conversion of a meat processing plant to handle plant proteins.[55]

Actions specifically to encourage take-up of the FBDGs are led by the NNC, and it has deployed a range of communication tools, including extensive use of social media and also diet tracker apps. Other policy measures include voluntary private sector agreements to reformulate processed products[56] and reductions in advertising aimed at children. Certain municipalities have moved to ban advertising of fast food, and Haarlem is introducing a ban in outdoor advertising of meat.

In addition, reducing VAT on fruit and vegetables from the current rate of 9% to 0% has been proposed. This has, however, been delayed repeatedly because of political difficulties. A recent independent report commissioned by the government cautioned that implementation would be difficult. It also suggested that increased fruit and vegetable consumption would not be guaranteed.[57]

[54] 92465_visie_biomassa_engels_def.pdf (europa.eu)
[55] Five major players launch masterplan for protein transition as economic engine in The Netherlands - WUR, The 'master plan' to double legume consumption in the Netherlands by 2030 (foodnavigator.com) , Test resolution 4K magazine design (investinholland.com) , 'ME-AT the alternative' launches first locally grown protein chain – Vion Food Group
[56] https://www.rivm.nl/publicaties/nieuwe-criteria-voor-productverbetering
[57] https://www.seo.nl/wp-content/uploads/2023/03/2023-32-btw-nultarief-eindrapport.pdf https://www.seo.nl/wp-content/uploads/2023/03/2023-32-btw-nultarief-eindrapport.pdf

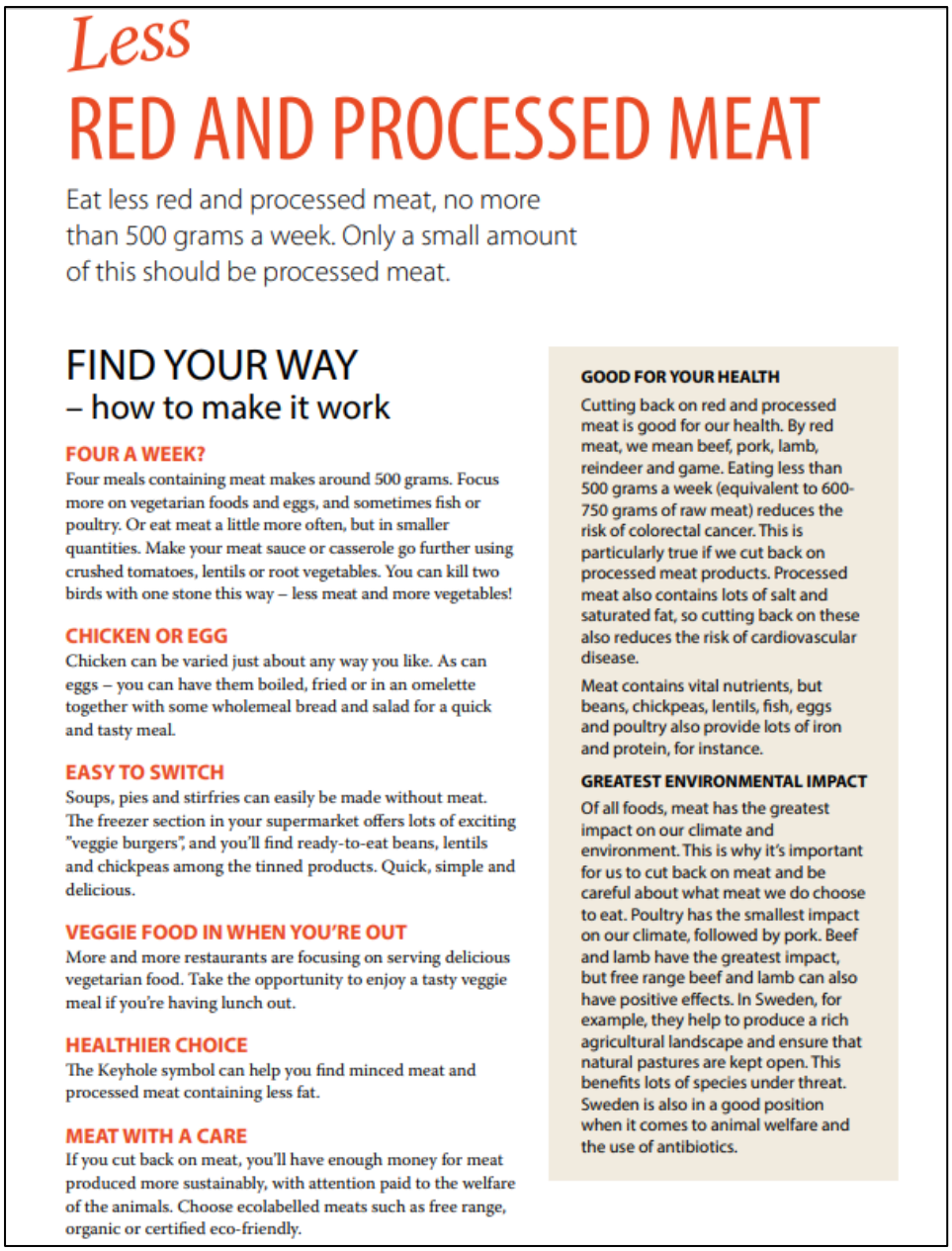
Appendix G: Dietary guidance development and selected food policies and strategies in Sweden

10.1.41. Background to "Find your way to eat greener, not too much and be active"

In Sweden, the FBDGs are captured in the 28-page consumer-facing document "Find **your** way to eat greener, not too much, and be active" (2015). It was developed by the Swedish Food Agency, in cooperation with the Swedish Public Health Agency, Board of Agriculture and Environmental Protection Agency. The Swedish Food Agency is an independent, government-funded body, which administers public diet and health activities, and is also charged with responsibility to achieve Swedish Government environmental targets.

The document explains that because what we eat has an impact on the environment as well as health, we need to eat more sustainably. In terms of context, it explains that one quarter of climate impact from Swedish households comes from food eaten or thrown away. Eating more sustainably means economising on Earth's resources, to ensure there's enough good food to eat in future. It refers to a wide range of environmental issues, including water quality, pesticide use and antibiotics in farm animals as well as climate change.

The guidance itself does not incorporate any plate or pyramid model. Instead, it structures advice around 3 sections: 1. things to eat/do **more** of; 2. things to **switch**; and 3. things to eat **less** of. For each of these actions, there is a dedicated page which explains the advice in more detail, including the link to environmental impact, offering specific ingredient and recipe suggestions to help make the change. There is strong emphasis on "making the changes work for you". Figure 16.1 shows the page of guidance for red and processed meat. This includes practical advice for reducing consumption of these products, foods to swap with, dish and recipe suggestions, and advice on how to buy the most sustainable red meat.



Less

RED AND PROCESSED MEAT

Eat less red and processed meat, no more than 500 grams a week. Only a small amount of this should be processed meat.

FIND YOUR WAY – how to make it work

FOUR A WEEK?
Four meals containing meat makes around 500 grams. Focus more on vegetarian foods and eggs, and sometimes fish or poultry. Or eat meat a little more often, but in smaller quantities. Make your meat sauce or casserole go further using crushed tomatoes, lentils or root vegetables. You can kill two birds with one stone this way – less meat and more vegetables!

CHICKEN OR EGG
Chicken can be varied just about any way you like. As can eggs – you can have them boiled, fried or in an omelette together with some wholemeal bread and salad for a quick and tasty meal.

EASY TO SWITCH
Soups, pies and stirfries can easily be made without meat. The freezer section in your supermarket offers lots of exciting "veggie burgers", and you'll find ready-to-eat beans, lentils and chickpeas among the tinned products. Quick, simple and delicious.

VEGGIE FOOD IN WHEN YOU'RE OUT
More and more restaurants are focusing on serving delicious vegetarian food. Take the opportunity to enjoy a tasty veggie meal if you're having lunch out.

HEALTHIER CHOICE
The Keyhole symbol can help you find minced meat and processed meat containing less fat.

MEAT WITH A CARE
If you cut back on meat, you'll have enough money for meat produced more sustainably, with attention paid to the welfare of the animals. Choose ecolabelled meats such as free range, organic or certified eco-friendly.

GOOD FOR YOUR HEALTH
Cutting back on red and processed meat is good for our health. By red meat, we mean beef, pork, lamb, reindeer and game. Eating less than 500 grams a week (equivalent to 600-750 grams of raw meat) reduces the risk of colorectal cancer. This is particularly true if we cut back on processed meat products. Processed meat also contains lots of salt and saturated fat, so cutting back on these also reduces the risk of cardiovascular disease.

Meat contains vital nutrients, but beans, chickpeas, lentils, fish, eggs and poultry also provide lots of iron and protein, for instance.

GREATEST ENVIRONMENTAL IMPACT
Of all foods, meat has the greatest impact on our climate and environment. This is why it's important for us to cut back on meat and be careful about what meat we do choose to eat. Poultry has the smallest impact on our climate, followed by pork. Beef and lamb have the greatest impact, but free range beef and lamb can also have positive effects. In Sweden, for example, they help to produce a rich agricultural landscape and ensure that natural pastures are kept open. This benefits lots of species under threat. Sweden is also in a good position when it comes to animal welfare and the use of antibiotics.

Figure 16.1. Swedish FBDG advice about red and processed meat consumption

There are three points of particular interest in the Swedish guidance. First, as Fischer and Garnett (2016) note, the guidelines are nuanced and detailed about **which** types of foods to choose **within** a category, and why those are best for the environment. For example, the guidance advises high fibre vegetables over greenhouse salad crops, due to lower GHGs in production, and better transportation. It also recommends other grains and potatoes over rice, within the cereals group, because of the high carbon impact of rice production.

Second, the advice takes a nuanced approach to the environmental impacts of animal production systems, noting that livestock can contribute to landscape and biodiversity. This leads to a mantra of a 'less but better' approach to meat consumption, with 'better' meaning organic, eco-labelled and Swedish: "If you cut back on meat, you'll have

enough money for meat produced sustainably, with attention paid to the welfare of the animals. Choose eco-labelled meats such as free range, organic or certified eco-friendly." There is no further discussion of this advice in relation to lower income households, for example.

10.1.42. Background to the FBDGs development process

The origins of the current FBDGs date back to 2007/08, when the Swedish Government was motivated to act on international evidence on climate change, including from the IPCC, which recognised that food is part of the climate problem. From 2008-13, the Swedish Food Agency commissioned analysis of the environmental impacts of different foods, alongside evidence on the health effects of diet gathered from Nordic Nutrition Recommendations (NNR)[58]. The joint evidence was reviewed, in collaboration with experts from the Swedish Public Health Agency, Board of Agriculture and Environmental Protection Agency. The review was supported by a stakeholder panel.

Discussions during the review process were reportedly constructive, helped by the fact that the process was data-driven (e.g. no one could dispute that Swedes ate too much meat with the relevant statistics in front of them). Emphasis was also placed on finding points of agreement between the parties. For example, that although meat consumption should decrease, consumption of Swedish meat need not decrease, as Sweden is a net importer of meat. This led to the "less but better" messaging, which was supported by multiple stakeholders.

In 2014, a public consultation took place, including participants from industry, consumer and patient organisations, and public health professionals. From this process, the guidance was drafted and tested with consumers. The guidance was published in 2016/17, hence the whole process from initial discussions to publication took almost 10 years.

It is worth noting that since the development of this guidance, the latest revision of the Nordic Nutrition Recommendations (NNR), in 2023, has been published. The NNR is a forum and programme funded by the Nordic countries, including Sweden, to gather robust evidence on diet and nutrition. The latest revision includes explicit reference to climate impact. It therefore provides a very high standard, scientifically informed evidence base on climate-friendly diets.

10.1.43. Policies, strategies and actions related to the FBDGs

In Sweden, the policy landscape for sustainable diets appears fragmented. For example, the 2016 "A National Food Strategy for Sweden", and subsequent "Action Plan" published in 2019, focus almost exclusively on supply-side measures, notably funding for farmers and technological innovation. This relies heavily upon pre-existing (ring-fenced)

[58] The NNR is a forum and programme funded by the Nordic countries, including Sweden, to gather the latest scientific evidence on diet and nutrition. The aim is to provide a robust evidence base that national governments in the Nordics can use to inform their dietary guidance.

funding under the Common Agricultural Policy (CAP). The Strategy is justified in terms of increasing production for domestic and export markets and to increase self-sufficiency and rural employment. However, these measures are not connected to actions to stimulate domestic capacity or growth on the demand side.

In addition, the 2016 'Strategy for Sustainable Consumption' contains only a brief reference to food (a short paragraph, which refers to a Government desire for country of origin labelling of meat in restaurants and canteens). Meanwhile, the 2018 "Climate Framework Policy", which sets out the Swedish Government's net zero targets for the whole economy, also makes no reference to food consumption or dietary change.

The gap between supply and demand side policy actions for healthy and sustainable food is also apparent in relation to organic food. The Government aims for 30% of Swedish agricultural output to be certified organic by 2030. It also aims for an increase in consumption of organic food, for 60% of public food to be certified organic by 2030. However, while direct funding has been allocated to support production, much less has been targeted at achieving the demand side ambitions.

In 2021, the Swedish Government tasked the Swedish Food Agency and Public Health Agency to propose areas of action needed for a more sustainable food system in Sweden, and indicators to measure progress[59]. The work was based on consultations with authorities, industry and civil society. The report, published 2024, emphasizes the need for joined-up policies to tackle health and climate problems: for example, Action area 3 concerns "cooperation between public and commercial actors to promote a sustainable and healthy food environment". However, given recent shifts in politics in Sweden and hardening resistance from industry stakeholders to food system change, it may be challenging for officials to take forward many of the recommended Actions in the report.

The National Food Strategy does not provide details of specific policy measures but does list types of measures. For example, the provision of information to consumers and the role of public sector catering. However, the main focus is on support to food supply-chains to increase productivity and reduce food waste. Efforts to improve productivity include support for research and innovation, but also deployment of funding under the CAP Strategic Plan. This includes coupled support for livestock production but also funding for organic production plus a limited amount for fruit and vegetable production.[60]

A follow-up Action Plan to the National Food Strategy published in 2019[61] does list more specific policy measures and projects, accompanied by budget allocations, but again focuses

[59] Government Office Sweden 2021. Sweden's pathway for sustainable food systems.
[60] 7b3a0485-c335-4e1b-a53a-9fe3733ca48f_en (europa.eu)
[61] The Government's action plan part 2: A food strategy for Sweden – more jobs and sustainable growth throughout the country - Regeringen.se

almost completely on production rather than consumption. The Action Plan also sets targets for 30% of Swedish agricultural and 60% of public food consumption to be certified organic by 2030.

The general absence of specific targets and policy measures in relation to sustainable food consumption has also attracted commentary from Swedish academics.[62] Similarly, several published studies suggest that dietary change, particularly away from meat to more plant-based diets, has health as well as climate benefits.[63] However, whilst meat consumption has reduced slightly in recent years, it is acknowledged that changing consumer behaviour to achieve further reductions is challenging.[64]

Published academic studies have also commented on the general absence of specific policy measures. For example, over-reliance on public information, public sector catering and increased domestic production rather than direct regulatory controls and/or fiscal measures.[65]

It is possible that the anticipated refresh of the National Food Strategy scheduled for 2024 will address some or all of the identified policy weaknesses. However, the Board of Agriculture and its Minister are still actively promoting production-based policy approaches (pers. comm.)

[62] e.g. sei-wp-climate-food-transport-gong-2205a.pdf

[63] e.g. Less meat, more legumes: prospects and challenges in the transition toward sustainable diets in Sweden | Renewable Agriculture and Food Systems | Cambridge Core , Sustainability benefits of transitioning from current diets to plant-based alternatives or whole-food diets in Sweden | Nature Communications and Food Dishes for Sustainable Development: A Swedish Food Retail Perspective - PMC (nih.gov)

[64] e.g. Identifying barriers to decreasing meat consumption and increasing acceptance of meat substitutes among Swedish consumers - ScienceDirect, Livsmedelskonsumtion av animalier. Preliminära uppgifter 2020 - Jordbruksverket.se

[65] Dawkins et al. (2023) and 2023. Policy for sustainable consumptionan assessment of Swedish municipalities. Frontiers in Sustainability, 4, p.1265733. and Policy-Options-for-Sustainable-Food-Consumption-2021-Mistra-Sustainable-Consumption-report-1.pdf (sustainableconsumption.se)

climateXchange
Scotland's centre of expertise connecting climate change research and policy

info@climatexchange.org.uk
+44 (0) 131 651 4783
@climatexchange_
www.climatexchange.org.uk

ClimateXChange, Edinburgh Climate Change Institute, High School Yards, Edinburgh EH1 1LZ

If you require the report in an alternative format such as a Word document, please contact info@climatexchange.org.uk or 0131 651 4783.