

1495



UNIVERSITY OF  
**ABERDEEN**

The Rowett Institute

RESAS-funded rapid response project

# **The role of the Eatwell Guide in supporting healthy and environmentally-sustainable eating for adults in Scotland**

**Prof. Alexandra Johnstone, The Rowett Institute**

**5th January 2026**





# Contents

Methods: .....	5
<b>Part 1</b>	
<b>Health and environmental aspects and the relationship to the Eatwell Guide (EWG).....</b>	<b>6</b>
1.1 What is the Eatwell Guide? .....	7
1.2 Current population level trends in diet in Scotland .....	7
1.3 The Eatwell Guide (EWG) alignment with health and environmental sustainability .....	7
1.4 Supporting both a healthy and environmentally sustainable diet in Scotland .....	9
1.5 Impact of cost of food on dietary health inequalities.....	11
<b>Part 2</b>	
<b>Policy approaches to support The Eatwell Guide (EWG) .....</b>	<b>14</b>
2.1 Recent evidence on national policy approaches and actions to support healthy diets.....	15
2.2 Education and awareness public health campaigns .....	18
2.3 Alignment of Scottish Diet with environmental goals .....	18
2.4 Application of nudging strategies in out of home (OOH) businesses .....	20
2.5 Front of pack eco labelling.....	21
2.6 Reduction of food miles for sustainable diets .....	22
Conclusions .....	23

## Purpose and aims

This paper was commissioned under the Underpinning National Capacity element of the Scottish Government's Environment, Natural Resources and Agriculture (ENRA) Strategic Research Programme, specifically as the result of a call-down funding request on impactful actions and policies around food and diets. This represents a rapid evidence summary which aims to summarise current understanding of research literature on the role of The Eatwell Guide (EWG) to support healthy and environmentally sustainable diets for adults in Scotland (Part A). The rapid nature of the report means that important literature pertaining to children or young people is not included. The paper gives focus on sharing recent data, from and for Scottish citizens, with emphasis on public health and policy highlights, and where appropriate, a commentary on research gaps (Part B). This paper focuses on exploring some of the myths associated with current healthy eating advice, and current evidence on how to achieve a reduction in the environmental footprint for a healthy population and planet. It was undertaken to inform the Scottish Government ahead of the implementation of the national **Good Food Nation Plan**, published on the 17th December 2025. This report provides insights into the challenges and opportunities for supporting changes in Scottish food policy to reduce impact on health and environment. This publication is not comprehensive in reporting all results and study limitations, rather the references can be used as a signpost for the reader to explore policy documents in full. The report references key policies from Scotland where possible, and UK-data to supplement limited research findings from Scotland. The research findings and views summarised in this report do not necessarily reflect the views or policies of the Scottish Government or the Scottish Ministers.



## **Key findings:**

The Eatwell Guide (EWG) supports healthy and environmentally sustainable eating for adults in Scotland, however, most consumers do not follow the EWG advice. Policy initiatives focus on a food systems approach to support changing the food environment to support consumers to make healthy and environmentally sustainable food choices.

## **Conflict of Interest:**

Professor Johnstone holds a voluntary committee role with the British Nutrition Foundation, Nutrition Society and Association for the Study of Obesity.

## **Acknowledgement:**

Mr David Morecroft contributed to earlier versions of the report.

## **Methods:**

A rapid evidence summary quickly synthesizes existing research to inform timely decisions, using systematic methods but in a condensed timeframe compared to exhaustive systematic reviews. This technique is primarily used to guide policy, practice, or identify gaps for further research. The report helps validate existing knowledge and pinpoint missing evidence; it does not generate new knowledge. The strength is that it is designed for quick turnaround (days) to meet urgent needs, but it is not exhaustive. We acknowledge its limitations and potential biases due to its rapid nature.

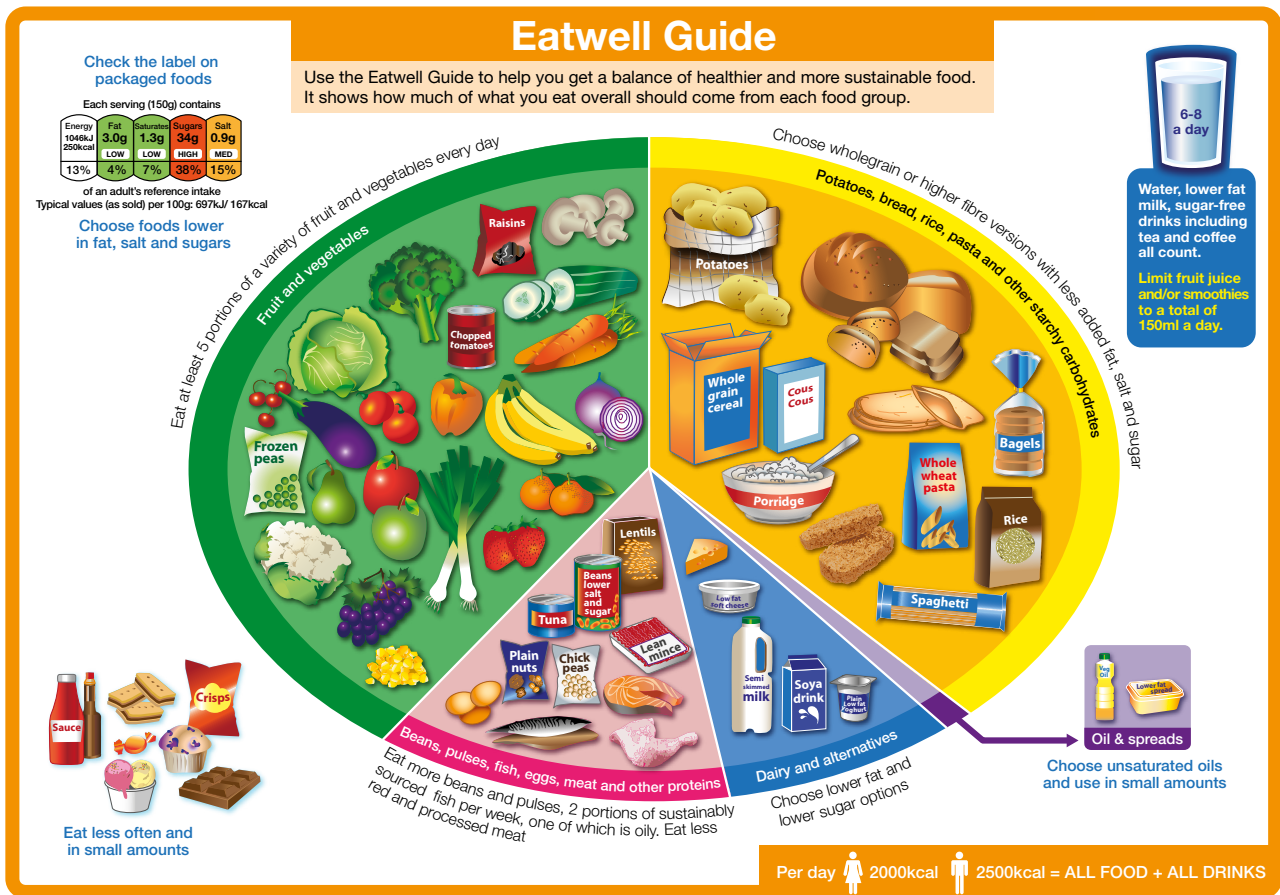
The report uses hyperlinks for referencing, with links underlined.

## **Wording:**

The report uses the terminology 'healthy and environmentally sustainable diet' to mean a 'sustainable diet' (terminology commonly used by FAO and WHO) or a 'planetary health diet' which has been popularized by the EAT-Lancet Commission to emphasize human health and staying within planetary boundaries.

# Part 1

## Health and environmental aspects and the relationship to the Eatwell Guide (EWG)



Source: Public Health England in association with the Welsh Government, Food Standards Scotland and the Food Standards Agency in Northern Ireland

© Crown copyright 2016

Figure 1 The Eatwell Guide (EWG) infographic (from **PHE, 2018**)

**1.1** What is the Eatwell Guide? The UK's food-based dietary guidelines, created by Public Health England (PHE), is outlined by the Eatwell Guide (EWG) (**PHE, 2018**), which is a visual representation of the recommended key food groups and proportions of these for a balanced diet. The EWG (Figure 1) indicates colour coded proportions of different food groups for a healthy, balanced diet, emphasizing fruits/vegetables (green section), starchy carbs (yellow section), protein (purple section), dairy/alternatives (blue section), and small amounts of oils (purple section), plus fluids and infrequent treats, aiming for balance over a day or week, not every single meal. It replaces the "Eatwell Plate," applies to most people (not toddlers under 2), and encourages wholegrains, varied proteins (including fish), lower fat dairy, and limiting sugary/fatty foods.

## **1.2 Current population level trends in diet in Scotland**

Currently, diets in Scotland significantly contribute to ill health, with 66% of the adult population classed as overweight and obese, with the proportion of those with obesity 32%, increasing over time (SHeS, 2024). Further, poor diets and excessive weight are each responsible for 1 in every 10 years of healthy life years lost (PHS, 2024). Current dietary intake within Scotland does not align with the EWG and substantially deviate from recommendations particularly for fruit and vegetable intake, being only 3.4 portions/day, and fibre being 16g; only 6% of the population achieving the 30g per day recommendation for dietary fibre (**SHeS, 2023**). Intake of oily fish is also inadequate, at 33g per week, while intakes of saturated fat (15.4% of energy), free sugars (13.4%) and energy density (172kcal per 100g) all exceeded recommendations. However, nearly a third of adult consumers report exceeding the red and red processed meat recommendation of  $\leq 70$ g per day (**Stewart et al., 2024**). This cut off of 70g/d of cooked weight red or processed meat is supported by **the NHS** and **British Dietetic Association** because the World Research Cancer Fund has strong evidence that both red and processed meat consumption are causes of colorectal cancer.

## **1.3 The Eatwell Guide (EWG) alignment with health and environmental sustainability**

The EWG is recognised as a healthy and environmentally sustainable dietary approach (**Scheelbeeck et al., 2020**). The EWG wasn't explicitly developed to be a sustainable dietary pattern; it's primary use is as an evidence-based public health tool to promote healthful eating and combat diet-related ill health. Analyses show that shifting the UK population's average diet closer to the EWG could prevent major diseases like cardiovascular disease and some cancers, and extend life expectancy, according to modelling studies of Eatwell Guide dietary patterns (**Cobiac et al, 2016**). The Cobiac et al. (2016) study modelled the health benefits of the EWG, finding large potential gains: adopting it could add over four months to average life expectancy, prevent millions of type 2 diabetes/ cardiovascular disease cases, and reduce DALYs (disability-adjusted life years) by averting significant disease burden; primarily by shifting diets

towards more fruits, veg, and plant-based foods while reducing sugar, saturated fat, red/processed meats, and dairy. Other research since has also shown substantial reductions in diet-related disease and ill health, including cardiovascular disease, when dietary patterns or components align with the EWG (e.g. **Levy and Tedstone, 2017**). Recently, **Fadnes et al., (2023)** assessed the link between adherence to healthy dietary patterns and the role this had in preventing the development of non-communicable diseases and life expectancy. They utilised the **UK Biobank resource** for their analysis, which is a prospective population-based cohort data with over 500,000 participants (aged 40-69 at recruitment), from the general population. In brief, between 2006 and 2010, participants attended one of 22 assessment centres across Scotland, England, and Wales and participants are followed over decades, allowing scientists to see how health changes over time. They report that sustained healthy eating, focusing on whole grains, fruits, nuts, and less sugar/processed meat, significantly boosts life expectancy, potentially by over a decade for 40-year-olds, and reduces risks for non-communicable diseases (NCDs) like cancer and heart disease, showing strong benefits regardless of genetic risk. These findings underscore the importance of dietary changes for public health policy and personal health, showing substantial gains in healthy aging and longevity. However, despite UK and national governmental support, a very small proportion of the population currently follow all the EWG recommendations (**Scheelbeek et al., 2020**). A major analysis (**Scheelbeek et al., 2020**) assessed how adherence to the UK's Eatwell Guide dietary recommendations relates to health and environmental outcomes, and their main findings are summarised:

- Reduced mortality risk: Higher adherence to the Eatwell Guide (meeting  $\geq 5$  of the guideline recommendations) was associated with a lower risk of death compared to those with low adherence (risk ratio 0.93; 99% Confidence Interval 0.90–0.97).
- Lower dietary carbon footprint: Diets that better follow the Eatwell Guide had about 30 % lower greenhouse-gas emissions ( $\approx 1.6$  kg CO<sub>2</sub> eq/day) than diets that met few recommendations, indicating reduced environmental impact.
- Specific benefits:
  - o Meeting the fruit and vegetable recommendation was linked with the largest reduction in mortality risk.
  - o Meeting the lower red/processed meat recommendation was associated with greater reductions in greenhouse emissions.

Thus, the EWG leads to both improved health outcomes, such as reduced risk of cardiovascular disease and certain cancers, and a lower environmental impact, including a lower dietary carbon footprint.

## 1.4 Supporting both a healthy and environmentally sustainable diet in Scotland

**A food system approach** tackles both health and environmental challenges simultaneously. This is a holistic, interconnected view of all activities, actors, and outcomes involved in getting food from farm to fork, including production, processing, distribution, consumption, and waste, recognizing their links to health, environment, and society to find effective, sustainable solutions. It moves beyond a single issue, like crop yield to understand how agriculture, economy, climate, health, and social factors all influence each other, preventing unintended consequences from isolated policies. The transition to a sustainable and healthier diet is essential for the Scottish food system and its citizens. Both the Food Standards Scotland **Public Health Nutrition strategy (2023)** and the national **Good Food Nation Plan (2025)** embed these food policy approaches. Despite a singular example of a sustainable diet not existing, the definition from the World Health Organisation and the FAO sustainable diets is commonly applied, as:

*“those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.” (FAO, 2012)*

Recent reports have shown that increased adherence to EWG recommendations is associated with environmental benefits in parallel with health benefits (**One Blue Dot, UK Committee for Climate Change (CCC) report, Net Zero; Comrie et al., 2024**). The **Carbon Trust report (2016)** commissioned by Public Health England compared the environmental impacts of the EWG (which includes sustainability aspects). They report impacts in terms of greenhouse gas emissions (GHGe), land use, and blue water consumption. The EWG-aligned diet has appreciably lower environmental footprint compared to the current UK diet and the environmental footprint of the EWG diet is about 32% lower than that of the average national diet. This suggests that if people adopted Eatwell’s recommended mix of foods, there’d be roughly a 30-ish percent reduction in impacts (GHG, land, water) for the diet components.

A **recent FSS report** commissioned by Food Standards Scotland (FSS) and carried out by the University of Edinburgh, used adult dietary intake data from the Scottish Health Survey. This was prompted in December 2022, when the Climate Change Committee recommended that the Scottish Government “take low-cost, low-regret actions to encourage a 20% shift away from all meat by 2030, rising to 35% by 2050, and a 20% shift from dairy products by 2030”. They modelled what would happen if consumption of meat (especially red & processed meat, recommendation of  $\leq 70\text{g}$  per day) and dairy in Scotland reduced to align with public health / climate targets. Areas of focus of the FSS report included nutrient intake, disease risk, and how such dietary

shifts might contribute toward climate change mitigation. If high red and processed meat consumers reduced consumption to  $\leq 70$  g/day, this will lead to around a 16% reduction in total meat consumption in Scotland. This helps move toward the Climate Change Committee's (CCC) target of reducing all meat consumption by 20% by 2030. The health impact would be an estimated reduction of around 10,000 cases of Type 2 diabetes over a ten-year period under the scenario of high consumers reducing red & processed meat to  $\leq 70$  g/day. The results suggest that meeting the red & processed meat recommendation of  $\leq 70$  g/day for high meat consumers (those consuming more than 90g/d) would contribute meaningfully toward health and climate goals. Around a third of Scottish consumers are considering reducing meat consumption; **McBey et al (2024)** conducted an online consumer survey (n=1590) of adults living in Scotland, to understand how often people are eating meat, whether they have any plans to change, and what they see as barriers to any such change. Their results highlight that few people want to cut meat out of their diet, and most believe they currently eat a healthy amount of meat. They asked respondents about their current diets. Most people identify as omnivorous (83.6%), and 10.9% followed flexitarian diets - defined as 'sometimes avoid(ing) meat'. Smaller numbers follow meatless diets such as vegan, vegetarian, or pescatarian (5.5%), which is consistent with other studies.

The **Food and You 2 survey** by the Food Standards Agency (FSA) tracks UK consumer attitudes, with the recent Scottish Wave 8 report published in Feb 2025. The report, '**Food and You 2 Survey: Scotland**' was generated from the Wave 8 data collection, conducted between 12 October 2023 and 8 January 2024. A total of 1,377 adults (aged 16 years or over) from 954 households across Scotland completed the survey. The report focused on eating at home and food safety practices, eating out and ordering takeaways, concerns about food, food allergies and intolerances, sustainable diets and meat alternatives and genetic technologies. Respondents were asked if they had made any changes to their eating habits or food related behaviours in the past twelve months. The most common changes reported were that they had eaten less processed food (43%) and started minimising food waste (37%). Some 26% of respondents reported that they currently eat meat alternatives, 18% reported that they used to eat meat alternatives but no longer do, and 49% reported that they had never eaten meat alternatives. Respondents were asked, from a list of options, what they thought contributes most to someone having a sustainable diet. Three out of five (61%) thought that eating less processed food contributed most to someone having a sustainable diet and 49% thought that minimising food waste did. Nearly half thought that eating more fruit and/or vegetables (47%), and 30% thought that eating less meat, poultry, or fish contributed most to a sustainable diet. Fewer respondents thought that eating a vegetarian (11%) or vegan (8%) diet or consuming less dairy (13%) contributed most to a sustainable diet. Almost one in ten (7%) respondents reported that they did not know what contributed most to someone having a sustainable diet.

Despite this intention to improve the sustainability and healthfulness of diets, widespread common beliefs of what constitutes a sustainable diet and the necessary actions to provide a sustainable diet diverge from the scientific consensus (**Polleau et al., 2021; Whittal et al., 2023; Cleland et al., 2025**). Locality, seasonality, organic, food miles (*aka* distance food has travelled) and transportation are often cited as the most critical aspects of food contributing to diet and food sustainability in the UK (**Polleau et al., 2021**). This is also reported by the Scottish population (**Macdiarmid, Douglas & Campbell, 2016**), with consumers citing food packaging, food waste, transportation of food, and food production, as concerning for the environmental impact of food. Further, these reports suggest that consumers were sceptical or strongly disagreed when prompted about the environmental impact of food. However, this has slightly improved in a more recent follow-up study to re-assess beliefs after more widespread media attention on sustainable diets (**Cleland et al., 2025**). Their findings suggested that more citizens agreed that food impacts the environment, in contrast to their similar survey published ten years ago, in **2016**. Citizens in urban and low deprivation areas agreed that food choice impacts the environment whilst rural groups, regardless of deprivation level, exhibited more varied responses; some disagreed outright and others questioned the scale of the impact, for example, comparing food choices to other factors that were deemed to be more important, such as the burning of fossil fuels, car and plane travel, and mining for minerals for batteries. Further, those who agreed on environmental impact, cited mainly the origin of food, transportation-related emissions, and food miles, with many describing the importance of eating locally sourced, seasonal food to mitigate environmental impacts. Food waste and plastic packaging also emerged as common environmental concerns in the current study, which dominated the discussion of the environmental impact of food in the previous study, which is outwith the scope of this report. This discrepancy represents a key public health challenge and barrier in the transition to a more sustainable and health dietary pattern within Scotland. Understanding and outlining effective actions and policies in providing this transition with the appropriate evidence, is paramount.

### **1.5 Impact of cost of food on dietary health inequalities**

A relevant question is, why do consumers not follow the Eatwell guide? The cost-of-living crisis, with increasing food and energy costs, has impacted on dietary choices and health. Food prices and affordability play an important role in influencing dietary choices, which in turn have implications for public health. In September 2022, 40% of British consumers reported that they were worried about being able to afford to purchase food in the next month (**FSA, 2022**). In high-income countries, diet quality and health status are strongly correlated with socioeconomic status. For example, in Scotland, obesity rates are 36% in areas in the highest quintile of deprivation (based on the Scottish Index of Multiple Deprivation, SIMD) and 26% in areas in the lowest

social deprivation quintile (**SHeS, 2021**). With slight regional variations, around two thirds of adults in the UK are living with overweight or obesity. The rising cost of food may lead to increased levels of food insecurity by limiting access to healthy and nutritious foods. The current food system in the UK enables the consumption of highly processed foods, high in energy density, fat, sugar, and salt, which are cheaper than more nutritious foods. In the UK, healthier foods are three times more expensive per calorie than unhealthy foods (**The Broken Plate Report, 2025**). It has been shown in the US, that food sources of protein, fibre, vitamins, and minerals cost more per 100g, after adjustment for energy (**Drewnowski, 2010**). As a result, the dietary choices of those on the lowest incomes are often limited to a low-price, high-energy combination, which, in the long term, can promote weight gain, especially when combined with a sedentary lifestyle. It is an apparent paradox that along with the increasing rates of food insecurity, an increasing prevalence of obesity is observed—a link that may seem self-contradictory to the general public (**Lonnie & Johnstone, 2023**). However, the intersection between low income and obesity is more complex than simply the “energy in–energy out” concept and is not easy to reconcile.

**Hoenink et al., (2024)** present a commentary on changes in UK food prices from 2013 to 2023 by food group and by food healthiness. They established a dataset spanning the years 2013–2023 by combining price data from the UK Consumer Price Index for food and beverage items with nutrient and food data from the UK nutrient databank and UK Department of Health & Social Care's National Diet and Nutrition Survey data. They calculated the price (£/100 kcal) for each food item by year as well as before and during the period of inflationary pressure, and classified items into food groups according to the UK Eatwell Guide and as either “more healthy” or “less healthy” using the UK nutrient profiling model (NPM). They report that in 2023, *bread, rice, potatoes and pasta* was cheapest (£0.12/100 kcal) and *fruit and vegetables* most expensive (£1.01/100 kcal). Less healthy food was cheaper than more healthy food (£0.33/100 kcal versus £0.81/100 kcal). Before the inflationary pressure period (from 2013 to late 2021), the price of foods decreased by 3%. After this period, the price of food increased by 22%: relative increases were highest in the food group *milk and dairy food* (31%) and less healthy category (26%). While healthier foods saw smaller relative price increases since 2021, they remain more expensive, potentially exacerbating dietary inequalities. These data support the view that the price of healthier foods can limit the adoption of healthier eating habits. Food environments where healthy foods such as fruits and vegetables are hard to access, more expensive and have a lower quality contribute to higher rates of diet-related non-communicable diseases such as type 2 diabetes.

Our own recent RESAS-funded work further highlights the role of dietary health inequalities on quality of the diet. We reviewed Scottish adults dietary intake in 2022 (**Johnstone SEFARI Blog**) using the National Diet and Nutrition Survey dataset (years 2008-2019, for Scottish adults (n=aged 40-70), to consider the influence of sex, age, income and Scottish Index of Multiple Deprivation levels (SIMD) score upon the quality of diet. In particular, and as illustrated in our infographic below, we found that those living with the lowest deprivation SIMD level had a better quality of diet in terms of higher consumption of fibre, fruit and vegetables, and plant protein, compared to those with the highest deprivation SIMD level. Consumption of a similar amount of red and processed meat (99g/d) was evident across deprivation areas. This highlighted that in general, Scottish consumers ate more red meat than the **World Health Organisation's recommended daily amount (<90g/d)**. Plant protein intake (peas, beans, pulses) was the lowest for those with the highest deprivation SIMD level (18.5g/d), in contrast to those in the lowest and middle SIMD groups (22g and 21g, respectively). Socio-economic status has a profound impact on food security and diet quality and health outcomes.

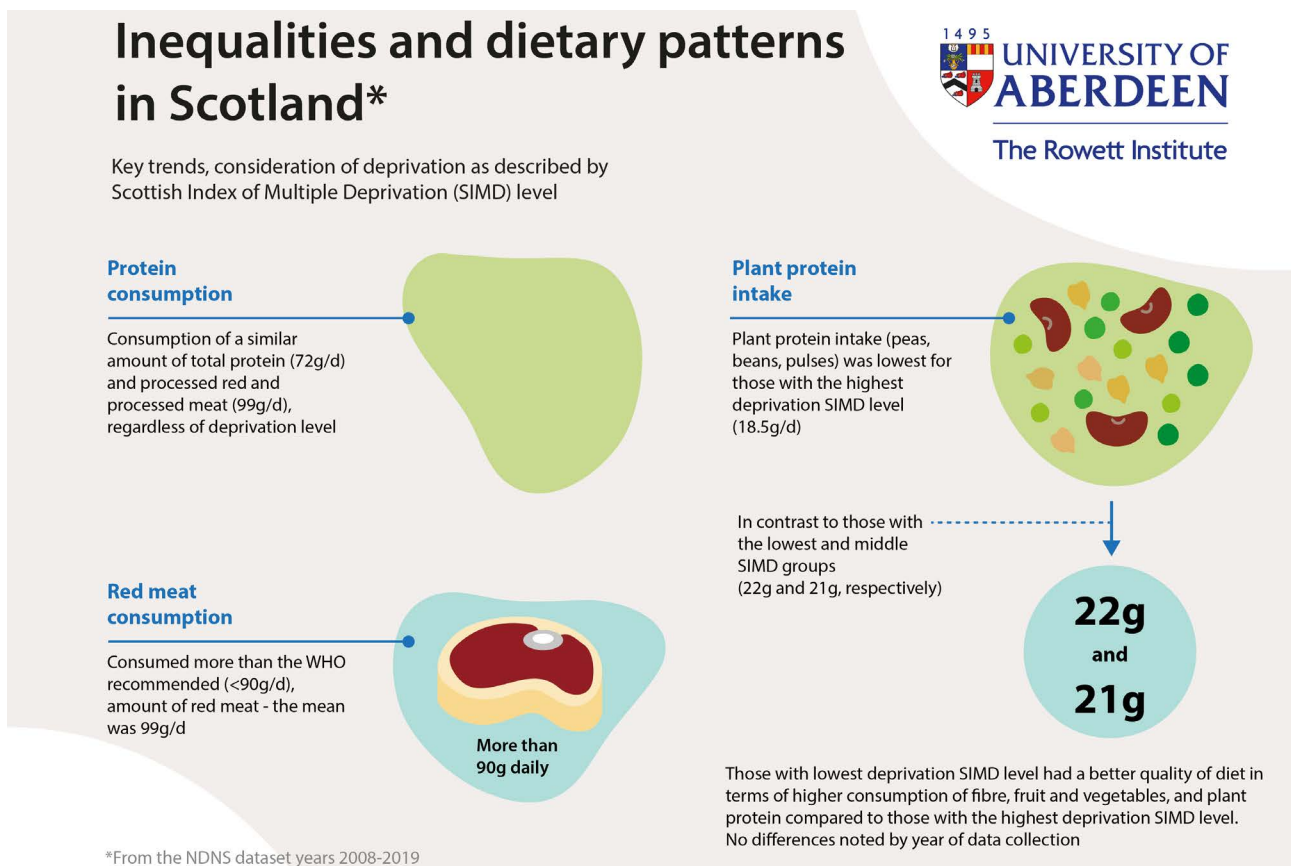


Figure 2 Infographic on dietary health inequalities in Scotland

## Part 2

### Policy approaches to support The Eatwell Guide (EWG)

This part of the paper gives focus on sharing recent data, from and for Scottish citizens, with emphasis on public health and policy highlights, and where appropriate, a commentary on research gaps. The report references key policies from Scotland where possible, and UK-based data to supplement limited research findings from Scotland. There is an emphasis on summarising evidence of change needed across the food system to improve the food environment, rather than emphasis on behaviour change from individuals.



## 2.1 Recent evidence on national policy approaches and actions to support healthy diets

The UK's **Soft Drinks Industry Levy (SDIL)**, or "sugar tax," is a policy implemented in 2018 to reduce sugar in soft drinks by taxing manufacturers/importers based on sugar content, encouraging reformulation. The primary goal of the SDIL is to incentivize manufacturers to reformulate their products by reducing sugar content to below the tax threshold, or to encourage consumers to choose healthier, lower-sugar options. **The Department of Health and Social Care gave an update in November 2025**, on the effects of the legislation on soft drinks in the UK. **The initial SDIL, introduced in 2018, led to a 46% average reduction in sugar content in soft drinks within its scope.** The government hopes this will lead to further health benefits and help tackle rising obesity levels. **Rogers et al., (2023)** compared trends before the SDIL was announced and 1 year after implementation. They examined absolute and relative differences in the volume of, and amount of sugar in, soft drinks categories, all soft drinks combined, alcohol and confectionery purchased per household per week 1 year after implementation. They report that compared with trends before the SDIL was announced, 1 year after implementation, volume of all soft drinks purchased combined increased by 189 mL, or 2.6% per household per week. Because of reformulation of many soft drinks, the amount of sugar in those drinks was 8 g, or 2.7%, lower per household per week. A related study again by **Rogers et al. in 2023**, extended this work, finding sustained sugar reductions (7.5g/week) 19 months later, with larger reductions in lower-income households, suggesting long-term health gains without harming the industry. The key findings from this work was:

- **Volume vs. Sugar:** While total soft drink volume increased slightly, the sugar content significantly dropped, showing reformulation.
- **No Substitution:** Households did not significantly increase purchases of sugary snacks or alcohol to compensate for lower sugar drinks.
- **Sustained Reductions:** Reductions in sugar from soft drinks persisted even 19 months after the levy, indicating lasting impact.
- **Equity:** The levy had a greater sugar-reducing impact in lower-income households.

The UK government announced in 2025 that they are extending the Soft Drinks Industry Levy (SDIL), or "sugar tax," to include high-sugar, pre-packaged milk-based and milk substitute drinks. This policy change will take effect on January 1, 2028. Previously, milk-based drinks with at least 75% milk content were exempt from the SDIL to encourage calcium consumption. This exemption is being removed because current data suggests these drinks are not a significant source of calcium intake for young people and the health harms of excess sugar are deemed to outweigh the benefits (**DHSC, 2025**). The general sugar content threshold for the levy is being lowered from 5g to 4.5g of total sugar per 100ml. The extension will bring pre-packaged items such

as bottled milkshakes, flavoured milks, sweetened yoghurt drinks, and ready-to-drink coffees into scope.

Restricting the advertisement of products with high fat, salt, and sugar (HFSS) content has been recommended as a policy tool to improve diet and tackle obesity. The policy aimed to restrict HFSS product placement in high-prominence areas (store entrances, checkouts, aisle ends, online equivalents) which was implemented in October 2022, targeting larger retailers (50+ employees) to encourage healthier choices. One study ([Yau et al., 2022](#)) aimed to evaluate the impact of HFSS advertising restrictions, supported by the Mayor of London, implemented across the London (UK) transport network in February 2019, on HFSS purchases. This study identified a 1000 kcal (7%) reduction on energy purchases from HFSS products, driven predominately by a 19% lower purchasing of chocolate and confectionery. There was also a  $\geq 7\%$  decrease in fat, saturated fat and sugar purchasing. Our recent [research grant](#) has evaluated involved collaboration with the Institute of Grocery Distribution, and 4 major supermarkets (Asda, Morrisons, Sainsbury's, Tesco) to access sales data, to look at changes in purchase patterns before and after HFSS legislation. [Morris et al \(2025\)](#) have reported that, by selecting stores across the deciles of the Priority Places for Food Index (developed by the Consumer Data Research Centre and Which?) we were able to understand how the legislation may be impacting diet and health inequalities. We also conducted surveys and interviews with representatives from the four UK supermarkets, the British Retail Consortium (BRC) and enforcement officers. Nearly 2,000 shoppers were also surveyed to find out how the legislation was perceived and how it impacted shopping behaviour. This work estimates that two million fewer in-scope HFSS products were sold per day in the retail food environment, after the new law took effect. Although the legislation did not cover Scotland and Wales, the research on sales from a smaller number of stores in these nations found aspects may have carried across. This could be because some retailers decided to implement the legislation across all their stores throughout England, Scotland and Wales. Even for those that didn't choose to do this, it may have been difficult to implement different policies across different areas, leading to some duplication of store set ups, even if not intended. The impact of the legislation on sales of in-scope HFSS products was consistent in supermarkets across all deciles of the Priority Places for Food Index, indicating that the legislation was equitable. In other words, importantly, the policy did not widen dietary inequalities, rather it appeared that change in transaction data was similar across geographical areas of deprivation.

- **Reduced Sales:** The legislation led to fewer purchases of HFSS items in supermarkets like Asda, Morrisons, Sainsbury's, and Tesco.
- **Small Shift in Proportion:** HFSS products dropped from 20% to 19% of total sales by weight, equating to roughly two million fewer products sold daily.

- Discreet Impact: Most shoppers (73%) felt their own habits weren't affected, while many (71%) thought the rules influenced others.
- Need for More: Researchers emphasize the need for better enforcement, clearer guidance, and more focus on making healthy foods affordable and accessible to achieve broader dietary change
- In England, the expanded restriction of HFSS products by volume/price came into force on 1st October 2025. England's HFSS (High in Fat, Sugar, or Salt) legislation, under the **Food (Promotion and Placement) Regulations 2021**, restricts the sale of "less healthy" foods by banning volume-based price promotions (like "buy-one-get-one-free or BOGOF") from 1st October 2025; there is no data on the effect of this policy to date.

These data support future evaluation of the impact of HFSS legislation to improve diet quality in Scottish consumers. Scotland will implement a similar policy in 2026. Scotland's **HFSS** (High Fat, Sugar, Salt) policy for 2026 introduces significant restrictions on promoting unhealthy foods, including a UK-wide 9 pm TV watershed and online advertisement ban from January 2026, plus Scotland-specific in-store placement and price promotion bans (multibuy, free refills) from October 2026, targeting large retailers (50+ staff) on pre-packaged foods to encourage healthier choices. These regulations aim to align with England/Wales but focus on Scotland's unique food environment, impacting retailers and advertising strategies significantly.

**The Scottish Government**, in 2022, shared modelling on the economic impact of restricting in-premise all price promotions of discretionary foods on sales and on total calories and nutrients purchased, using Kantar data. The report defined discretionary food categories as those typically high in calories, fat, sugar, or salt and not essential for a healthy diet. The food categories modelled using the Kantar data included:

- Confectionery: Including take-home chocolate and sweets.
- Biscuits: Specifically sweet biscuits.
- Savouries: Take-home savoury snacks such as crisps.
- Cakes and Pastries: Including higher fat and sugar "morning goods" like croissants or danishes.
- Puddings and Desserts: All varieties of total puddings and dairy desserts.
- Edible Ices and Ice Cream: Including ice lollies and sorbets.
- Soft Drinks: Specifically those with added sugar.

In broad terms, two complementary methods were performed to estimate the impact of restricting price promotions and advertising of price promotions on discretionary food categories purchasing: (1) demand analysis using Kantar Worldpanel data and (2) economic choice experiment. The results indicate a policy to restrict all price

promotions of discretionary foods would result in a net change of -613 kcal per capita per week taking account of substitution of different items within food category and between food categories. All the nutritional categories showed similar results (calories, sugar, fat, salt), which indicates that the impact of promotion restrictions could be positive in terms of the purchase and consumption of foods high in fat, sugar and salt. Results were also similar across all Scottish indexes of multiple deprivations (SIMD), therefore this action would not contribute to a health gap seen across SIMD. The reduction in nutrients was only partially compensated by the increase in quantities in non-discretionary food and drinks (i.e., other food and drinks). The overall results indicate that restricting the advertising of all price promotions (i.e., temporary price reduction, Y for £X, Multi-buy and other promotions) has the potential to reduce the number of calories, sugar, saturated fats and sodium (even when considering the substitution effects) for most food groups. However, it should be noted that the results are aggregated across all price promotions. Overall, the modelled impacts may be best viewed as an upper bound on the actual impacts and will depend on what types of promotions for discretionary foods are restricted, as well as other factors, such as future changes in consumer purchasing decisions and retailer behaviour.

## **2.2 Education and awareness public health campaigns**

A recent publication assessed improving communication of the EWG (Culliford, Bradbury & Medici, 2023) to policy makers, the food industry, health professionals and the public to drive dietary behaviour change. The authors conducted a rapid review of the scientific literature available in the SCOPUS database published between 2012 and 2022 (inclusive). They highlighted several useful findings relating to effective communication, and as a result, five recommendations: (1) review of language and tone of nutrition and sustainability related messages; (2) targeting of food based dietary guidelines and communications to specific population segments; (3) addressing barriers to and benefits of adopting the EWG recommendations; (4) development of practical tools and resources to support implementation of the guidelines; and (5) leveraging social media and social marketing techniques to increase public engagement.

## **2.3 Alignment of Scottish Diet with environmental goals**

**The UK Committee for Climate Change (CCC) report, Net Zero**, includes specific dietary recommendations for intake of ruminant meat (beef and lamb) and dairy should be reduced by 20%. Achieving this reduction, however, requires evidence-based strategies to help consumers make lasting behavioural changes. To effectively translate these recommendations into action, it is essential to focus on providing clear information and support that makes it easier for individuals to adjust their diets. Furthermore, the Carbon Trust analysis of The Eatwell Guide shows healthier eating

would have a lower environmental impact than the current UK diet, supporting a sustainable dietary approach. The Carbon Trust estimates that if individuals moved from current eating patterns to The Eatwell Guide recommendations, a 31% reduction in GHG emissions, 17% saving on water use and 34% reduction in land use could be achieved (**Carbon Trust 2016, The Eatwell Guide: a More Sustainable Diet**). As more people increasingly choose to move towards more plant-based eating to address environmental concerns, barriers and opportunities to support Scottish consumers make informed dietary decisions are a focus. Also to consider that not all healthy eating patterns are guaranteed to be sustainable, and conversely, a diet that has a low environmental impact is not necessarily nutritionally adequate.

**McBey et al.**, reported in 2025, that a little over 1/3 of adults in Scotland seem to be considering reducing meat consumption, but there is an even larger block who are not looking to change and see no need to do so. Characteristics in Scottish consumers, such as age, gender, and income, do not appear to predict those considering such changes to their diet. The most significant predictor for future reduction appears to be reduction in the past, suggesting that once people start limiting their intake, they intend to continue to reduce, and are more likely to cite ethical or animal welfare reasons for doing so. However, there may be limits to how much people are willing to reduce meat consumption if they believe their intake is healthy and health is the largest driver of change. Changes in the diets of around a third of people may not, therefore, be currently enough to reduce emissions sufficiently compared to the vast majority who believe they don't need to change; however, these population trends may change over time. In addition, although people may wish to reduce meat consumption for environmental reasons, for many, meat consumption is seen as less impactful on reducing environment damage than other food-related decisions. More work based on Scotland is needed to identify effective food system approaches to support shift in dietary patterns to support reduced environmental impact of food.

**Garvey et al., (2021)** examined how demand-side interventions—changes in what and how people consume food—can contribute to the UK's goal of reaching net zero greenhouse gas emissions by 2050. It uses a hybrid physical input-output model to simulate emissions outcomes from dietary and waste changes. They analysed the effect of transformative demand-side interventions in the UK food system, evaluating the effect on emissions of moderating calorific intake to that in the UK Government Dietary Recommendations, with focus on modal shifts in diets towards plant-derived proteins, and of reducing consumer food waste. They conclude that the UK could reduce absolute annual GHGe by 52% (from 2017 to 2050) in the most ambitious scenario (with the most substantial support from policy), where dietary transitions are the single most effective measure with reductions of 22–44% followed by reduction of calories to dietary recommendations (maximum emission reduction of 5%) and lastly food waste reductions (maximum emission reduction of 4%). This shift towards lower-

emission, healthier diets in the UK appears challenging but feasible, particularly when supported by coordinated policy and structural change. Evidence suggests that many of the dietary adjustments required to reduce food-system emissions—such as reduced consumption of red and processed meat, lower overall caloric intake, and reduced food waste—are broadly aligned with existing UK dietary guidelines. This alignment increases political and social feasibility by framing climate-oriented dietary change as a public health co-benefit rather than a purely environmental sacrifice. This work from Garvey et al, 2021 displays the potential contribution of multiple changes within food context with overall diet shifts having the most substantial effect on emissions reduction especially when maximally supported with adequate policy. However, this delivery at scale will not occur through voluntary action alone. This work is based on modelling and the feasibility depends on the use of established policy levers to enable and normalise change. Key mechanisms include public sector procurement standards, food waste reduction measures, clearer consumer information, and incentives that improve access to affordable, healthy foods. These measures can be implemented within existing policy frameworks and have precedents across devolved administrations and local authorities. Risks to feasibility include uneven uptake across income groups, potential public resistance if policies are perceived as restrictive, and impacts on domestic producers if change is not managed alongside supply-side transition support. These risks can be mitigated through phased implementation, stakeholder engagement, and alignment with agricultural, health, and cost-of-living policies.

**Jaacks et al., 2024** share a comprehensive report that examines historical and current evidence on dietary patterns and their associated emissions to understanding of the climate impact of food consumed in Scotland. Meat and dairy are frequently consumed in Scotland by most people. However, the type of meat consumed has changed over time, and this, among other factors, has contributed to a decline in GHG emissions associated with food consumption. Specifically, since 1970, the consumption of red and processed meat, particularly beef, lamb, bacon, ham and sausages has declined. Nevertheless, red and processed meat continue to be the largest food group contributing to food system-related GHG emissions. For a more comprehensive and specific understanding of GHG emissions associated with food consumed in Scotland, further work is needed. It is noted that which there are no Scotland-specific estimates for GHGe currently available.

## 2.4 Application of nudging strategies in out of home (OOH) businesses

**Broers et al., (2017)** share an interesting systematic review and meta-analysis to test the effects of *nudging* to encourage people to select more fruit and vegetables. Nudges are interventions that alter people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives - referring to behaviours and decisions that occur without reflection or deliberate thought. This analysis shows

that nudging interventions that aim to increase fruit and/or vegetable choice/sales/ servings have a moderately significant effect, with the largest effect for altering placement and combined nudges. **Pandeys's et al., work (2023)** also supports this approach in the canteen food environment, publishing on nudging toward sustainable food consumption at university canteens, with a systematic review and meta-analysis. They identified that presentation, availability, and information as the most promising nudge intervention for achieving sustainable food consumption at the university canteen or similar settings. This suggests that more work in this area is warranted, where examples of nudging include simplification and framing of information, and altering the physical layout of places where food is consumed or purchased.

Our own work on nudging (**McBey, Watts & Johnstone, 2019**) explored impact of meat consumption in Scottish consumers in small groups, to explore if going beyond simply informing the general public of the health, environmental, and ethical dimensions of meat consumption can bring about behaviour change. The team explored how people in Scotland view three different ways of reducing meat consumption: using small changes to influence food choices (a technique called 'nudges'), creating new meat-free products as alternatives, and encouraging change at different stages of life. Using thematic analysis of the discussion, we report that Scottish citizens see value in all three approaches, but food choices are influenced by many personal and social factors, which complicates a 'one size fits all' approach. The study concluded that reducing meat consumption will likely require a combination of approaches rather than a single solution.

## 2.5 Front of pack eco labelling

Information alone will not be enough to bring about changes in behaviour for meat and processed meat consumption and if people are to change consumption patterns it may be necessary to consider more direct approaches. For example, if the public is informed of the environmental consequences of their food choices, then the use of on-pack labelling could again be considered. **Potter et al., (2021)** conducted a systemic review to assess the effects of environmental labels on consumers' demand for more sustainable food products. Fifty-six studies (N=42,768 participants, 76 interventions) were included. Outcomes comprised selection (n=14), purchase (n=40) and consumption (n=2). The ecolabel was presented as text (n=36), logo (n=13) or combination (n=27). Message types included: organic (n=25), environmentally sustainable (n=27), greenhouse gas emissions (n=17), and assorted "other" message types (n=7). Ecolabels were tested in actual (n=15) and hypothetical (n=41) environments. These comparison of labels included looking at labels with environmental sustainability labelling vs. without a labelling (the control). The researchers asked, *Did the label lead people to choose or buy the more environmentally sustainable option more often?* This allowed assessment if ecolabeling - with a variety of messages and

formats - was associated with the selection and purchase of more sustainable food products. The results indicated that 60 out of 76 label comparisons found that people were more likely to select or purchase environmentally sustainable food or drink when a sustainability label was present. And, 16 out of 76 comparisons found that the control condition (no label) performed better, or the label had no positive effect (and in some cases slightly reduced sustainable choices). In summary, people generally chose or bought more environmentally friendly products when those products were labeled as such. About 1 in 5 comparisons showed no benefit or even a negative effect from labels. Most studies found that environmental sustainability labels increase sustainable food choices, but the effect is not universal or guaranteed. However, ecolabeling comes with inherent challenges and limitations regarding its utility and practical implementation. The FSA in 2021, outlined that currently the primary barrier is in the context of methodology, particularly which metric(s) is used to have valid and reliable ecolabels. Furthermore, the need for a standardised universal approach across different business and sectors is essential for effective implementation.

## 2.6 Reduction of food miles for sustainable diets

Food miles refers to the distance food travels from where it is produced to where it is consumed. Despite many believing that 'food miles' significantly contribute to the sustainability of diets, the evidence suggests that this may be overstated. In a global context, **Poore & Neemeck (2018)** international meta-analysis paper has been heavily cited, to reducing food's environmental impacts through producers and consumers. Their consolidated data on the multiple environmental impacts of ~38,000 farms producing 40 different agricultural goods around the world in a meta-analysis comparing various types of food production systems found that transport accounts for just 5% of food system emissions (which has since been corroborated by **Crippa et al., (2021)**). Thus transportation (and displaying food miles on packaging) only mediates a minority of the environmental impact of food. There are a few papers from Scotland on the agri-food chain (**Leat et al., 2011a; Leat et al., 2011b; Leat et al., 2008**) and this will continue to be high on the agenda for those involved in the food system.

It is also important to consider food miles and transportation within a regional context, as environmental impact can vary 50-fold among producers of the same product (**Poore and Neemeck, 2018**). The impact of food miles and transportation on the sustainability of the UK diet is dependent on an interplay of many factors such as transportation method, supply chain length, seasonality and food type. **Frankowska et al., (2019)** provides a comprehensive evaluation of the life cycle environmental impacts of vegetables consumed in the UK. They assessed 56 fresh and processed products produced domestically and imported from abroad, considering both the product and sectoral levels, product level, taking into account the market mix of fresh and processed vegetables for each vegetable type sold in the UK. Asparagus has the highest per-kg

impacts across most of the 19 impact categories considered, while cabbage, celery and brussels sprouts are generally environmentally most sustainable. At the sectoral level, the annual consumption of 10.8 t of vegetables generates 20.3 Mt CO<sub>2</sub> eq., consumes 260.7 PJ of primary energy and depletes 253 Mt eq. of water. Most of the impacts are caused by potatoes since they account for 56% of the total amount of vegetables consumed, with crisps and frozen chips contributing most to the total impacts. Importing vegetables grown in unheated greenhouses in Europe has a lower impact than UK vegetables cultivated in heated greenhouses, despite the transportation. Therefore, food miles as an approach to sustainable diets may be an unhelpful heuristic and ineffective single method for the transition needed in Scotland. This should be further considered in context of food security.

## Conclusions

The aim of this report is to demonstrate how shifting the focus from actions relating to individuals towards an emphasis on broader changes is needed across the food system to improve the food environment.



This paper from The Rowett Institute, University of Aberdeen is a rapid evidence summary of research literature on the role of The Eatwell Guide (EWG) in supporting healthy and environmentally sustainable diets for adults in Scotland as of 2025. It focuses on sharing recent data, from and for Scottish citizens, with emphasis on public health and policy highlights and, where appropriate, a commentary on research gaps. The paper focuses on exploring some of the myths associated with healthy eating advice and evidence on how to achieve a reduction in the environmental footprint for a healthy population and planet. It was commissioned under the Underpinning National Capacity element of the Scottish Government's Environment, Natural Resources and Agriculture (ENRA) Strategic Research Programme, specifically as the result of a call-down funding request on impactful actions and policies around food and diets to help inform the government ahead of the implementation of the national **Good Food Nation Plan**.



1495  
**UNIVERSITY OF  
ABERDEEN**

The Rowett Institute



Scottish  
Government  
Riaghaltas  
na h-Alba

**RESAS**

Rural & Environmental Science  
and Analytical Services