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Analysing Scotland's diet and climate policy landscape

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1 Executive summary

The Climate Change Committee's 2023 Report to the Scottish Parliament called for stronger action on food system emissions. Policy interventions need to address the environmental impacts of food production and consumption while ensuring dietary improvements and economic sustainability.

This report assesses Scotland's diet and climate policy landscape, identifying areas for policy development and providing recommendations to support the Scottish Government's climate, public health and food security goals going forward.

The study combined desk-based research, stakeholder engagement and categorisation using a PESTLE (Political, Economic, Social, Technological, Legal, and Environmental) framework.

1.1 Key findings

Scotland's complex diet and climate policy landscape includes several emerging developments and opportunities, yet challenges persist. These challenges typically reflect areas that would benefit from policy coordination and development.

- **Political alignment and coordination:** Scottish Government has taken steps to articulate sustainable food ambitions through legislation such as the Good Food Nation Act. Fragmentation across different policy fields (health, agriculture, environment, economy) limits integrated food system transformation. Coordination between local, devolved, and UK governments remains limited, leading to conflicting priorities. The absence of clear emissions targets for food production constrains alignment with net-zero ambitions.
- **Economic levers and constraints:** Investments in local food initiatives and growing interest in sustainable supply chains signal progress. Fiscal policies have the effect of benefiting high-emission food production over sustainable alternatives. Financial barriers constrain local authorities, small producers, and community groups in

adopting agroecological approaches. The cost of sustainable food options continues to limit access and dietary change.

- **Social attitudes and engagement:** Public interest in sustainable diets is increasing, and some awareness campaigns have gained traction. Cultural traditions, cost concerns, and inconsistent messaging shape public resistance to reducing red meat consumption. Food insecurity remains a barrier to sustainable diet access for lower-income households. Greater public engagement is needed to build trust and understanding of dietary policy aims.
- **Technological tools and innovation:** Advances in precision agriculture and digital tools offer potential for more sustainable production. Lack of a standardised food emissions-tracking system limits evidence-based policymaking for reducing environmental impact. Rural areas often lack the digital infrastructure to adopt new technologies. Inadequate sustainability labelling limits informed consumer choice.
- **Legal frameworks:** The Good Food Nation Act provides a foundation for coordinated food policy development. The evidence suggests a lack of strong enforcement mechanisms to drive change. Regulation of food marketing, labelling, and ultra-processed foods is limited. Devolved and UK-wide inconsistencies create legal misalignment across food, health, and trade policy.
- **Environmental integration:** Scotland has made progress in climate policy and land stewardship through initiatives like the Land Use Strategy. There are challenges in balancing different land use functions such as forestry, agriculture, and biodiversity protection. Climate adaptation strategies for agriculture need to be better developed, due to increasing climate risks. The ecological role of grazing land in biodiversity and carbon sequestration is underutilised in policy planning.

1.2 Opportunities for action and policy implications

A summary of key opportunities for action is presented in the table below. A fuller articulation of these opportunities, with supporting detail, is included in Section 6, Conclusions and policy implications.

Building a resilient and sustainable Scottish food system

Key insights and policy pathways

Political

- Promote more coordinated governance approaches to food policy.
- Enhance cross-sector collaboration to support integrated food system policy.
- Consider mechanisms to improve accountability across the food system.

Economic

- Align agricultural support with sustainability goals.
- Explore ways to enhance financial support for sustainable food systems.
- Explore the effectiveness of fiscal policies for dietary shifts.

Social

- Address food affordability and accessibility.
- Foster inclusive public engagement and food education.
- Support culturally sensitive dietary transitions.

Technological

- Promote development of standardised emissions data for food products.
- Enhance digital food labelling to support sustainability and consumer awareness.

Legal

- Review opportunities to strengthen food regulations.
- Support better alignment between devolved and UK-wide food policies.
- Support increased transparency in food supply chains.

Environmental

- Promote climate adaptation planning within food and land-use policy.
- Balance food security with biodiversity needs.
- Explore opportunities to align land-use policies with sustainability objectives.

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2 Glossary and abbreviations table

Agroecology	A sustainable farming approach that applies ecological principles to agriculture and prioritises local knowledge, biodiversity, and low-input systems.
Carbon sequestration	The process of capturing and storing atmospheric carbon dioxide, often through natural systems like forests and soils.
Climate Change Committee (CCC)	The Climate Change Committee is an independent, statutory body established under the UK's Climate Change Act 2008. Its primary role is to advise the UK Government and devolved administrations on emissions targets and to report to Parliament on progress in reducing greenhouse gas emissions and preparing for climate change.
Food for Life (Scotland)	Food for Life Scotland is a programme operated by the Soil Association, funded by the Scottish Government, with the mission to make good food the easy choice for all. The initiative focuses on harnessing the power of public food to positively impact health, the environment, and the local economy.
Food sovereignty	The right of people, communities, and countries to define their own food systems, including the production, distribution, and consumption of food.
Food system transformation	A fundamental shift in the way food is produced, distributed, and consumed to improve sustainability, health, and equity.
Fortification	The process of adding essential vitamins and minerals (such as iron, iodine, vitamin D, or folic acid) to food to improve its nutritional quality and prevent or correct dietary deficiencies in a population. Common examples include the fortification of flour with folic acid or milk with vitamin D.
Good Food Nation (Scotland) Act	The Good Food Nation (Scotland) Act 2022 establishes a framework for Scotland mandating the creation of national and local Good Food Nation Plans, aiming to ensure that food-related policies contribute to various aspects of well-being, including health, economic development, and environmental sustainability.
Just Transition	A policy framework to ensure that the shift to a low-carbon economy is fair and inclusive, protecting workers and communities.
Net-zero	Achieving a balance between greenhouse gas emissions produced and those removed from the atmosphere.
PESTLE analysis	A strategic framework used to identify and analyse Political, Economic, Social, Technological, Legal, and Environmental factors for understanding the broader context for decision-making.

Precision Livestock Farming (PLF)	Precision Livestock Farming refers to the application of advanced technologies and data-driven methods to monitor and manage individual animals within a herd. PLF aims to enhance animal health, welfare, productivity, and environmental sustainability.
Plant based	A diet or product primarily made from plants (e.g., vegetables, fruits, grains, legumes, nuts, and seeds). While not always strictly vegan or vegetarian, plant-based diets typically minimise or avoid animal products.
Plant based meat alternatives (PBMAs)	Food products designed to mimic the taste, texture, and appearance of conventional meat but are made from plant-based ingredients.
Procurement	The strategic process by which organisations acquire goods, services, or works from external sources to fulfil their operational needs. This process encompasses a series of steps designed to ensure that acquisitions are made in a timely, cost-effective, and quality-assured manner.
Reformulation	The process of altering the ingredients of food or drink products to improve their nutritional profile; for example, by reducing salt, sugar, or saturated fat, while maintaining taste and consumer acceptability.
Regenerative agriculture	A system of farming practices that aims to restore and enhance soil health, biodiversity, water cycles, and ecosystem resilience while producing food.
Scope 3 emissions	Refers to accounting for the indirect greenhouse gas emissions that occur across a retailer's value chain, such as those from the production of goods they sell, transportation, packaging, and consumer use and disposal. Including Scope 3 emissions provides a more comprehensive picture of a retailer's wider environmental impact beyond their direct operations.
Scottish Dietary Goals (SDGs)	A set of nutritional targets established by the Scottish Government to improve the overall health of the population by promoting healthier eating habits. These goals outline the recommended intake levels for various nutrients and food groups, aiming to reduce the prevalence of diet-related conditions such as obesity, heart disease, and type 2 diabetes.
Scottish National Adaptation Plan 2024-2029 (SNAP3)	The Scottish National Adaptation Plan 2024-2029 (SNAP3) is Scotland's strategic framework aimed at enhancing the nation's resilience to the impacts of climate change over a five-year period. SNAP3 outlines a comprehensive approach to adaptation, ensuring that Scotland's communities, economy, and environment are prepared for current and future climate challenges.

Semi-structured interview	A qualitative data collection method that uses a flexible interview guide with open-ended questions. It allows the interviewer to explore specific topics in depth while also adapting questions based on participants' responses.
Stakeholder mapping	A strategic process used to identify, analyse, and visualise individuals or groups (stakeholders) who have an interest in or are affected by a project, organisation, or policy. This technique helps to understand stakeholders' influence, interests, and relationships, facilitating effective communication and engagement strategies.
Supply chain	The network of organisations, people, activities, information, and resources involved in the creation and delivery of a product or service from the supplier to the end customer.
Sustainable diet	A diet that promotes health and well-being while reducing environmental impact and supporting food system resilience.
Systematic literature review	A structured and comprehensive method for identifying, evaluating, and synthesising all relevant research on a specific topic using transparent and replicable procedures.
Third Sector	The part of an economy or society comprising non-governmental and non-profit organisations, such as charities, community groups, voluntary organisations, social enterprises, and cooperatives.
Ultra-processed food	Industrially formulated foods that typically contain additives and minimal whole ingredients; often linked to poor health outcomes.
Urban agriculture	The practice of growing, processing, and distributing food within or around cities and towns (e.g., community gardens, rooftop farms, vertical farming, backyard gardening, and small-scale livestock or aquaculture). It can support local food systems, access to fresh produce, and community engagement, climate resilience, and urban greening.
Vertical farming	A method of growing crops in vertically stacked layers, often in controlled indoor environments. This allows year-round production and is commonly used in urban areas to reduce food miles and increase local food resilience.
Zoonotic disease	A disease that can be transmitted between animals and humans. These diseases can be caused by viruses, bacteria, parasites, or fungi, and can spread through direct contact, food, water, or vectors like mosquitoes. Zoonotic diseases are a key concern in public health, agriculture, and environmental management due to their potential for outbreaks and global spread.

3 Introduction

3.1 How can Scotland balance climate goals, public health, and economic resilience in food policy?

Scotland's diet and climate policy landscape is shaped by multiple, often competing priorities, making policy development and implementation particularly complex. Scotland's net-zero ambitions don't sit in isolation and delivery is influenced by UK Government food policy and wider cross-border complexities. Any approach must align with, Scotland-specific advice such as Recommendation R2024-003 from the Climate Change Committee's (CCC) 2023 Report to the Scottish Parliament, which calls for stronger action on food system emissions (CCC, 2023). The CCC's carbon budget for Scotland is due to be published in May 2025, and the CCC has highlighted that agriculture is projected to become the second-highest emitting sector by 2040. Efforts to reduce the environmental impact of food consumption need to be balanced with public health goals, economic considerations, and social acceptability. While the Scottish Government plans to introduce measures such as restricting unhealthy food promotion and encouraging sustainable agricultural practices, significant barriers remain. Public resistance to dietary change, particularly reductions in red meat consumption, reflects deep-seated cultural attitudes and concerns about choice, affordability and accessibility. Furthermore, promoting lower meat diets could lead to economic contraction in agriculture-related sectors, especially the red meat sector (Allan, Comerford & McGregor, 2019). If food system transitions are to be just, they must ensure that rural economies and farming communities remain viable while meeting climate targets, requiring sensitive and adaptive policy solutions.

Another layer of complexity arises from policy fragmentation and governance challenges. Responsibilities for food, health, environment, and agriculture are divided across multiple sectors and levels of government, including devolved and UK-wide authorities, leading to inconsistencies in strategy and implementation. Furthermore, the socio-economic impacts of dietary policy shifts, including how changes affect low-income households or food supply chains, are not yet fully understood due to limited data and evaluation frameworks. Addressing these challenges will require a holistic approach that integrates cross-sectoral collaboration, rigorous evidence, and stakeholder engagement to navigate trade-offs and identify the most feasible pathways for change.

3.2 Aims of the project

This report addresses two primary aims:

1. Analysis of a mixed-method evidence base for diet and climate policy in Scotland using a structured PESTLE framework.
2. Identification of evidence gaps and the proposal of actionable recommendations to inform future policy development.

These two aims seek to support the Scottish Government in developing policies aligned with climate targets, while also advancing a just transition that considers the nutritional needs of communities, and the livelihoods of people employed in the food system.

4 Methodology

4.1 Research design

This research adopted a mixed-method design to analyse the intersection of diet and climate policy in Scotland. It combined desk-based research, stakeholder engagement, and thematic categorisation using a PESTLE framework (Political, Economic, Social, Technological, Legal, and Environmental dimensions).

4.2 Research approach and evidence sources

The study integrated three core sources of evidence:

- **Literature review**: A systematic review of academic, grey, and policy literature, including documents from the Scottish Government, Climate Change Committee, Food Standards Scotland, and international case studies. Further detail on the literature review method can be found in Appendices C and D.
- **Stakeholder engagement**: 14 semi-structured interviews with stakeholders from government, academia, and civil society provided insight into governance challenges, socio-economic impacts, and practical barriers to policy implementation. Further detail on the method can be found in Appendix E.
- **Workshops**: Three stakeholder workshops (one in-person, two online)[1] were conducted to validate findings, prioritise areas for further policy development, and co-develop recommendations. These involved scenario planning and structured group discussion. Workshop protocols and details of participating stakeholders are displayed in Appendix F.

4.3 Ethics and data management

The research followed ethical guidelines from the University of Bath and ClimateXChange. All participants gave informed consent and were offered anonymity. Data handling adhered to the Scottish Government's "open as possible, closed as necessary" principle. Triangulation across data sources helped ensure reliability and consistency.

4.4 Stakeholder mapping

Stakeholders were identified through desk research and consultations (see Appendix A) and classified into categories including government, academia, third sector, public health, industry, and community groups. A database of 447 stakeholders was compiled (Appendix B).

[1] A second in-person workshop (Workshop 2) was planned in Edinburgh on Friday 24th January but had to be cancelled at the last minute due to disruption from Storm Eowyn.

4.5 PESTLE framework

The PESTLE framework guided the thematic analysis of areas for policy development and opportunities, ensuring comprehensive coverage of structural, social, and environmental dimensions. It helped surface interdependencies and evidence gaps across policy domains.

4.6 Limitations and future research

Due to time constraints, the analysis could not include quantitative modelling or longitudinal data. While the research drew from diverse sectors, representation from the food industry was more limited. Further research should explore economic modelling of dietary transitions, consumer behaviour dynamics, and legal feasibility of regulatory measures.

Further methodological detail, including workshop protocols and stakeholder lists, is available in the Appendices.

5 Analysis of diet and climate policy evidence

While the literature, stakeholder meetings, and workshops all highlighted the need for more integrated, cross-sectoral approaches to diet and climate policy, each source also highlighted distinct emphases.

- The literature focused on systemic analysis and policy gaps, often referring to structural barriers, need for further regulation, and the dominance of voluntary policy mechanisms.
- The stakeholder meetings added a degree of nuance on political sensitivities, informal policymaking, and institutional fragmentation, often surfacing insights that were missing from the literature, such as the influence of farming identities, lobbying, and inter-departmental misalignment (i.e. the lack of coordination between government departments, such as health, agriculture, and climate, which can lead to contradictory or disconnected policies).
- The stakeholder workshops, by contrast, reflected the practical and lived experience of policy implementation, giving voice to tensions related to affordability, cultural norms, and supply chain dynamics, and offering grounded ideas for cross-sector collaboration.
- Taken together, these sources converged on key challenges but revealed gaps in empirical evidence on effective interventions and highlighted the need for more inclusive, community-informed policy processes.

The following sections present an analysis of the issues shaping diet and climate policy, drawing on insights from the literature review, stakeholder meetings, and workshops.

We begin by outlining key areas for policy development, offering a comprehensive view of the diverse factors influencing policy in Scotland. For clarity, each PESTLE dimension is analysed separately, although we recognise that many issues cut across multiple dimensions. In addition to the summaries in Sections 5.1–5.6 of the report, extended analyses and illustrative examples are provided in Appendices G–L.

5.1 PESTLE Political dimension

The PESTLE Political dimension highlights key political drivers and barriers shaping Scotland's food system, focusing on governance, policy coherence, and regulatory alignment. Despite ambitious climate and health goals, food policy remains fragmented; characterised by siloed strategies, short-term political cycles, and limited public engagement.

There are clear opportunities to improve alignment between national and local policies, embed measurable targets under the Good Food Nation Act, and integrate food more fully into net-zero strategies. Policy coherence is particularly lacking in areas such as dietary change, where targets, especially for meat reduction, are absent or politically sensitive.

Public procurement and food supply chain resilience require stronger alignment with sustainability priorities. Resistance to livestock reduction, driven by cultural, economic, and political factors, continues to constrain progress. Meanwhile, policy support for plant-based foods, oversight of emissions-intensive agriculture, and trade resilience post-Brexit, remain underdeveloped.

Improving citizen participation and learning from international best practice are also essential to ensure legitimacy and policy effectiveness. Overall, stronger strategic leadership and more integrated, inclusive policymaking are critical to enable a just transition in Scotland's food system.

For further detail and illustrative examples, see Appendix G.

5.2 PESTLE Economic dimension

This section outlines key economic enablers and constraints in Scotland's transition to a more sustainable and just food system. While the need for climate-compatible diets and resilient supply chains is increasingly recognised, economic policy and market structures remain poorly aligned with sustainability goals.

The analysis highlights persistent gaps in financial incentives for low-carbon agriculture, agroecology, and alternative proteins. Current financial support regimes continue to favour high-emission livestock production, while support for biodiversity and ecosystem services is limited. High upfront costs and infrastructure barriers also constrain farmers' ability to adopt sustainable practices.

Trade and supply chains add further complexity to the landscape. Import/Export policies risk carbon leakage and should go further to reflect Scotland's net-zero ambitions. Small producers face limited access to public procurement and mainstream markets, which are dominated by large retailers and multinationals.

A lack of stable, long-term funding also undermines urban agriculture, community food initiatives, and public food provision. Consumer incentives are misaligned; VAT law and pricing structures serve to limit the uptake of plant-based foods, while environmental and health costs remain externalised. Without targeted interventions, dietary shifts might also result in greater reliance on ultra-processed food or alternative animal products, with implications for health.

A clear transition strategy is needed to support rural economies, address workforce shortages, and align financial incentives, trade policies, and consumer support with Scotland's net-zero goals.

For further evidence and examples, see Appendix H.

5.3 PESTLE Social dimension

The next section explores the social factors that influence dietary behaviours, food access, cultural norms, and public engagement with food system sustainability in Scotland. While awareness of sustainable diets is growing, economic inequality, cultural barriers, and information gaps continue to limit equitable access to healthier and more climate-compatible food choices.

The analysis shows that low-income, rural, and marginalised groups face structural challenges to adopting sustainable diets, including affordability, limited access to healthy food options, and digital exclusion. Taxation policies, such as levies on red meat, may also disproportionately affect households with limited economic flexibility unless protections are in place. High energy costs, limited cooking facilities, and restricted access to healthy food outside the home reduce the feasibility of dietary shifts for many communities.

Consumer environments and behaviours present further challenges. Ultra-processed foods dominate many retail and foodservice settings, while alternative proteins remain scarce or poorly understood. Misperceptions, unclear labelling, and cultural or sensory barriers to meat alternatives reduce consumer confidence in plant-based foods. Public institutions, such as schools and hospitals, have been slow to integrate sustainability into procurement and meal provision, missing valuable opportunities to shape norms and access around sustainable food.

Cultural identity, health concerns, and trust also play a critical role in shaping diet. Intergenerational tensions, media confusion, and stigma around plant-based eating reinforce resistance to change. The term "sustainable diet" is understood in multiple ways, and guidance on nutritional adequacy, especially for meat reduction, remains limited. There is also a need to strengthen support for regenerative and culturally inclusive farming practices.

Crucially, the evidence highlights an over-reliance on individual responsibility for dietary change, which overlooks the need for supportive food environments and system-level shifts. Policies that reshape food environments, through procurement, pricing, education, and public messaging, are likely to be more effective and equitable in the longer term. More specifically, focusing on health-based messaging, trusted community voices, and social norm–based approaches would help build broader public support.

In summary, socially informed policies must address structural inequalities, cultural diversity, and behavioural dynamics to ensure a just transition toward sustainable diets. This includes improving affordability and access, embedding sustainability in public food settings, and aligning dietary policies with both climate and public health goals.

Further detail and evidence examples are available in Appendix I.

5.4 PESTLE Technological dimension

Technology plays a critical role in shaping the sustainability, efficiency, and resilience of Scotland's food system. The analysis highlights the lack of a comprehensive monitoring framework to evaluate the impact of dietary shifts on emissions, public health, food security, and biodiversity. Without clear indicators and centralised data systems, it is difficult to assess progress toward climate and health goals or ensure that dietary policies are evidence driven. Metrics for agroecological practices and sustainable diet transitions remain underdeveloped, impeding efforts to support and scale lower-impact farming approaches.

Digital infrastructure limitations, particularly poor rural broadband, continue to restrict the uptake of precision livestock farming and climate-smart technologies. Awareness of these tools remains low among producers, while Government support for adoption is often fragmented. Similarly, industry accountability is weakened by the absence of transparent data reporting and standardised carbon footprinting systems. Inconsistent greenhouse gas accounting methods, a lack of methane tracking at farm level, and the need for sector-specific targets for beef production further undermine emissions mitigation efforts.

Food system resilience also depends on improved technological capacity in supply chains. Current systems do not adequately support food origin tracking, nor do they account for high-emission foods in dietary data, weakening emissions attribution and policy precision. The sustainability impacts of emerging plant-based products remain poorly assessed, and infrastructure gaps limit the scaling of regional food systems and local supply chain technologies.

Digital tools could be used more effectively to promote sustainable consumer choices and increase transparency in food sourcing, animal welfare, and product quality. However, greater investment in infrastructure, digital literacy, and data coordination is required to unlock this potential.

In summary, a more technologically enabled food policy landscape in Scotland will require investment in data infrastructure, tailored emissions metrics, precision agriculture, and digital tools to support both consumer engagement and policy accountability. Doing so will help ensure that Scotland's net-zero, biodiversity, and health ambitions are underpinned by robust evidence and smart, scalable solutions.

Further detail and evidence examples are available in Appendix J.

5.5 PESTLE Legal dimension

With reference to the role of legal and regulatory frameworks, the PESTLE analysis reveals that Scotland currently lacks targeted legal mechanisms to incentivise low-carbon food production. Regulatory gaps and weak enforcement of environmental standards limit the transition to sustainable agriculture, while power imbalances in the supply chain, favouring large corporations over smaller producers, remain largely unaddressed. The Good Food Nation Act, though an important step forward, does not extend regulatory authority over retailers, large-scale producers, or food manufacturers, limiting its system-wide impact.

Other issues requiring attention exist in consumer protection and information. Weak regulation of unhealthy food marketing, especially in out-of-home settings, undermines

public health efforts. The continued reliance on voluntary reformulation agreements with industry, combined with the lack of mandatory carbon footprint labelling, limits consumers' ability to make informed dietary choices aligned with Scotland's climate and health goals. Meanwhile, the absence of mandatory nutritional fortification, such as for non-dairy milk products, can impede public health initiatives aimed at addressing nutritional deficiencies.

Legal and governance barriers also slow policy implementation. Complexities in devolved and UK-level responsibilities contribute to policy inconsistency, particularly on dietary and emissions targets. Additionally, legal risks around nutrient adequacy in meat and dairy reduction strategies may discourage more ambitious dietary guidance.

Within agriculture, current carbon audit schemes lack sufficient enforceable emissions targets and are perceived as bureaucratic, offering limited incentives for change. Unclear guidance on carbon markets and inconsistent rules on emissions reporting (including Scope 3 emissions from retailers) reduce transparency and slow investment in climate-smart farming.

In summary, legal reform is needed to strengthen regulatory levers across the food system, extending beyond the public sector to include retailers and industry, enforcing sustainability and nutrition standards, and improving consumer protections. Aligning governance frameworks, reducing administrative burdens, and embedding human rights principles into dietary policy are therefore needed to enable effective system-wide change.

Further detail and evidence examples are available in Appendix K.

5.6 PESTLE Environmental dimension

This final section examines the environmental factors affecting Scotland's transition to a sustainable food system. The evidence highlights that many community food initiatives and new entrants to agroecological farming face significant barriers, particularly in accessing secure land and financial support. Temporary land use agreements and bureaucratic processes can limit the growth of community food systems, despite existing policy. In some cases, unregulated forestry expansion can risk displacing agricultural land, with limited assessment of net carbon impacts or broader public interest outcomes.

Scotland's climate mitigation policies in agriculture remain focused on food-based emissions without addressing the wider transformation needed across the food system. Adaptation strategies for extreme weather, water resource management, and soil health are underdeveloped, leaving farmers vulnerable to increasingly unpredictable conditions. Localised environmental impacts of emissions-intensive farming are often overlooked in national-level emissions data, reducing policy responsiveness to regional ecological pressures.

The analysis also highlights the need for a more strategic approach to land use. With the majority of Scottish farmland classed as "Less Favoured"[2] and unsuitable for plant protein

[2] The 'Less Favoured Area' classification refers to areas where farming is naturally more difficult due to factors like poor soil, steep slopes, or challenging climates. See: Less

production, blanket approaches to livestock reduction may generate trade-offs for biodiversity, carbon sequestration, and rural livelihoods. Well-managed grazing land has shown potential to support biodiversity and store more carbon than forestry in some contexts, yet these contributions are not widely acknowledged in land-use planning.

From a consumption perspective, the environmental footprint of ultra-processed and highly standardised food products remains a concern, as do the resilience risks associated with crop monocultures and supply chain vulnerabilities. There is growing recognition that agricultural technologies, diversification, and the promotion of locally adapted crop varieties can play a role in building resilience, but these approaches require greater policy support and coordination.

In summary, delivering a climate-resilient and environmentally sustainable food system in Scotland will require integrated land-use and adaptation planning, support for agroecological transitions, and a shift toward more diverse and regionally appropriate production systems. Environmental priorities must be balanced with social and economic sustainability to secure long-term food system resilience.

Further detail and evidence examples are available in Appendix L.

5.7 Analysis of areas for policy development

We next move on to consider evidence linked to the foregoing PESTLE analysis. The PESTLE analysis of diet and climate areas for policy development in Scotland has revealed several critical evidence gaps that limit progress towards a sustainable, resilient, and equitable food system. This section summarises areas for development, evaluates the feasibility of addressing them through targeted initiatives, and prioritises areas for immediate and long-term action. A summary of identified areas for further policy development, feasibility of addressing issues, scope for collaboration, and suggested priority levels for each PESTLE dimension are set out in Table 4.1.1.1.

Disclaimer: While this report identifies multiple areas for policy development, it is acknowledged that various initiatives and programmes may already be addressing some of these areas to differing extents. The intention is not to overlook ongoing efforts, but to highlight where further action, coordination, or scaling may still be required.

1. Areas for further policy development: Political	
A. Key areas:	• Fragmentation of food policy across government sectors, limiting alignment between climate, health, and agricultural goals. • There is scope to improve coordination mechanisms between local, devolved, and UK-wide levels of government. • Absence of measurable targets for food-related emissions reductions, including dietary change.

Favoured Area Support Scheme (Scotland) Regulations 2001 (S.S.I. No. 50 of 2001). | FAOLEX

	• There remains scope to strengthen public engagement and participation in the development of food and climate policy. • Lack of robust mechanisms to evaluate the effectiveness of food policy interventions.
B. Feasibility options for development:	**Phase 1: Foundations**[3]: • Improve co-ordination of food policy across government by directing more resource to policy teams with this remit in Scottish Government. • Strengthen local-national policy integration mechanisms to align national food strategies with regional implementation. • The next statutory review of the Good Food Nation (Scotland) Act should focus on areas for stronger accountability measures. **Phase 2: Scaling and alignment**[4]: • Implement a policy impact assessment framework to track progress and identify necessary adjustments. • Work towards including clear sustainability and health targets in future Good Food Nation Act plans. • Implement a multi-stakeholder advisory body to ensure that industry, civil society, and local government perspectives are included in decision-making. **Phase 3: Structural reform**[5]: • Embed cross-sectoral policy alignment within Scotland's legislative framework through new statutory obligations.
C. Areas for collaboration:	• **Government:** Lead policy development and regulatory reform. • **Third Sector and Academia:** Provide research insights and advocate for evidence-based policymaking. • **Private Sector:** Engage in the development of sustainable business practices and supply chain transparency.
D. Priority level:	• Addressing governance and coordination gaps will be foundational to all other policy reforms.

[3] Initial steps that can be taken using existing structures or resources. Includes scoping, piloting, stakeholder engagement, and coordination-building activities.

[4] Actions that require broader collaboration, policy alignment across sectors, or formal programme development. Often builds on earlier pilots or evidence.

[5] Longer-term actions requiring legislative change, significant investment, or systemic redesign. These aim to embed lasting transformation.

2. Areas for further policy development: Economic	
A. Key areas for development:	• Limited evidence on the economic viability and scalability of regenerative and agroecological farming systems in Scotland. • Misaligned or insufficient financial incentives to support sustainable production, strengthen local food supply chains, and scale community-led food initiatives.[6] • Lack of robust analysis on the potential impacts of fiscal measures—such as red meat taxation or incentives for plant-based foods—on consumer behaviour, equity, and health outcomes.
B. Feasibility options for development:	**Phase 1: Foundations:** • Conduct an economic feasibility study on regenerative farming models and their potential integration into Scotland's agricultural sector. • Strengthen public procurement policies to better support local and sustainable food sourcing. **Phase 2: Scaling and alignment:** • Explore targeted financial incentives to support low-emission and nature-friendly farming approaches. • Launch pilot projects to evaluate the impact of sustainable farming financial incentives. • Develop fiscal policies (e.g., targeted payments, taxation, or incentives) to shift consumption toward sustainable diets. • Support supply chain infrastructure investments to improve local food distribution and processing. **Phase 3: Structural reform:** • Develop a comprehensive fiscal policy review to assess the potential impacts of taxation, support, and incentives. • Align agricultural support payment structures with climate and health objectives. • Establish a long-term funding strategy for sustainable food system transformation.
C. Areas for collaboration:	• **Government**: Develop fiscal incentives and financial mechanisms to support health and sustainability goals. • **Third sector and Academia**: Assess economic impacts of taxation and financial reforms. • **Private Sector**: Adapt business models to align with financial incentives for sustainability.

[6] Scotland's Agricultural Reform Programme, particularly through *greening payments* and conditional support mechanisms (e.g., environmental conditionality), does include some financial incentives intended to encourage more sustainable production.

D. Priority level:	• Economic barriers need to be addressed to facilitate sustainable production shifts.
3. Areas for further policy development: Social	
A. Key areas for development:	• Limited data on food affordability and access among low-income and rural communities. • Need for more meaningful engagement with diverse communities in shaping food policy and dietary guidance.
B. Feasibility options for development	**Phase 1: Foundations:** • Expand public engagement initiatives, including community-led research into dietary transitions. • Expand public engagement initiatives to address affordability and accessibility barriers. • Pilot community-led food initiatives targeting low-income areas. **Phase 2: Scaling and alignment:** • Conduct a national food accessibility and affordability survey. • Develop participatory policy design mechanisms to enhance local food governance. • Strengthen food education campaigns to promote healthier, more sustainable diets. **Phase 3: Structural reform:** • Embed participatory policy design mechanisms within Scotland's food governance structures. • Ensure that sustainable diets are embedded in national health and education policies.
C. Areas for collaboration:	• **Government**: Develop and fund inclusive food policies. • **Third Sector and Academia**: Engage in community outreach and public health research. • **Private sector**: Improve food affordability through fair pricing strategies.
D. Priority level:	• Important for equity and public buy-in but will require gradual integration.
4. Areas for further policy development: Technological	
A. Key areas for development:	• Absence of standardised methods for tracking food system emissions and sustainability impacts. • Limited integration of digital food labelling and consumer-facing sustainability information.
B. Feasibility options for development:	**Phase 1: Foundations:**

	• Support and shape the UK-wide Food Data Transparency Partnership to ensure Scotland's dietary and sustainability priorities are reflected.[7] **Phase 2: Scaling and alignment:** • Develop a digital food labelling initiative to improve transparency. • Expand precision agriculture technologies to improve farm efficiency. • Long-term: • Develop a data-driven food system policy framework that integrates real-time monitoring and reporting tools.
C. Areas for collaboration:	• **Government:** Implement data standardisation policies and invest in rural technology. • **Third Sector and Academia:** Conduct research on food system emissions and digital innovations. • **Private Sector:** Drive technological advancements in food production and retail.
C. Priority level:	• Essential for evidence-based policymaking and consumer engagement.
5. Areas for further policy development: Legal	
A. Key areas for development:	• Limited enforcement of supply chain transparency and sustainability regulations. • Gaps in legal frameworks for food labelling, marketing, and consumer information rights. • Uncertainty around the legal and nutritional implications of dietary transition policies.
B. Feasibility options for development:	**Phase 1: Foundations:** • Work with UK regulators[8] to strengthen food labelling frameworks, including clear nutritional and environmental indicators, while exploring Scotland-specific improvements in public-facing food information. • Implement supply chain due diligence requirements for major food retailers. **Phase 2: Scaling and alignment:** • Expand mandatory sustainability reporting for businesses in the food sector. • Align food regulations to reduce policy inconsistencies. **Phase 3: Structural reform:**

[7] Food Data Transparency Partnership - GOV.UK

[8] Food labelling is largely governed by UK-wide legislation.

	• Establish legal safeguards around dietary policy shifts, ensuring public health is protected. • Embed right-to-food principles in Scotland's food governance framework.
C. Areas for collaboration:	• **Government**: Strengthen regulatory frameworks and enforcement mechanisms. • **Third Sector and Academia**: Advocate for consumer protections and legal reforms. • **Private Sector**: Ensure compliance with evolving regulations.
D. Priority level:	• Important for transparency but requires multi-stakeholder cooperation.
6. Areas for further policy development: Environmental	
A. Key areas for development:	• Limited data on the environmental impacts of different livestock systems and land management approaches. • Lack of integrated policy guidance to balance food production, biodiversity, and climate priorities. • Under-developed integration of climate adaptation planning in agricultural policy and land use decisions.
B. Feasibility options for development:	**Phase 1: Foundations:** • Conduct a livestock emissions and sequestration study to refine policy targets. **Phase 2: Scaling and alignment:** • Develop a national food system biodiversity framework to guide sustainable land-use decisions. • Support the delivery of Scottish National Adaptation Plan (SNAP3)[9] commitments on agricultural adaptation, with a focus on extreme weather resilience, soil health, and sustainable land use. • Invest in local and diversified crop production to enhance resilience. **Phase 3: Structural reform:** • Embed climate resilience planning into Scotland's agricultural and food policies. • Establish long-term land use strategies balancing food security and biodiversity conservation.
C. Areas for collaboration:	• **Government:** Develop climate-aligned agricultural policies. • **Third Sector and Academia:** Oversee biodiversity and climate impact research.

[9] About the Scottish Government's National Adaptation Plan (SNAP3) - Adaptation Scotland

	• **Private Sector:** Support sustainable farming practices and emissions reduction initiatives.
D. Priority level:	• Important for aligning food production with Scotland's climate targets.

5.7.1.1 PESTLE evidence analysis of areas for further policy development

In summary, addressing areas for policy development identified through the evidence review would require a combination of more immediate actions, pilot initiatives, and longer-term policy reforms. Targeting governance and coordination should be prioritised as a foundation upon which to develop emissions tracking, economic incentives for sustainability, and environmental resilience strategies. Based on the analysis of evidence, addressing these areas through targeted research, cross-sector collaboration, and data standardisation would be essential for leveraging meaningful progress on sustainable diet transitions.

6 Conclusions and policy implications

Diet, climate, and public health intersect in complex ways with food systems, shaping both environmental sustainability and human well-being. Dietary patterns influence greenhouse gas emissions, biodiversity, and resource use, whilst also influencing non-communicable diseases and health risks. A transition to sustainable diets presents an opportunity to improve public health and reduce environmental impact, though significant barriers including affordability and accessibility must be tackled. In Scotland, the transition to sustainable diets is complicated by cultural and economic reliance on established food industries, particularly livestock farming. Whilst high red and processed meat consumption poses health and environmental concerns, economic dependencies, consumer habits, and social norms around food identity and tradition all contribute to resistance to change.

Crucially, policymakers must navigate inevitable trade-offs between economic stability and sustainability. The Scottish red meat sector supports jobs and rural economies, making policies to reduce meat consumption economically sensitive. Furthermore, plant-based diets remain costly due to supply chain and financial support structures, with change carrying the risk of exacerbating social inequalities. Balancing voluntary industry commitments with regulatory measures and fiscal policies is needed to drive change whilst minimising economic disruption.

This report has highlighted the complex connections between diet, climate, and public health in food systems, and the urgent need for integrated policy responses for sustainable diet transitions. The UK's 7th Carbon Budget (CB7) (Climate Change Committee, 2025) reinforces this urgency, proposing a substantial reduction in livestock numbers and a shift towards more sustainable dietary patterns. Scotland's food system has the potential to reduce greenhouse gas emissions while improving public health, yet fragmented policies, gaps in governance, and limited economic incentives inhibit meaningful progress. In line with CB7, this report underscores the importance of policy coherence, aligned with public engagement, agricultural and industry support, fiscal measures, and public health initiatives.

6.1 Informing next steps for policy development

Whilst significant strides have been made with policies like the Good Food Nation Act (Scottish Government, 2022a), further action is needed to strengthen accountability, set clear sustainability targets, and improve cross-sectoral collaboration. Managing the economic implications of dietary transitions is also crucial to ensuring a just transition—without targeted support, rural inequalities may deepen, and resistance to change may grow. Lessons from other countries have shown that a mix of financial incentives, public procurement reforms, and consumer engagement strategies can drive sustainable dietary shifts while maintaining economic stability.

Such goals require coordinated action across government, agriculture, the food industry, public health, and civil society. A whole-systems approach must ensure sustainability policies are both equitable and inclusive. Priorities could therefore include:

1. **Strengthening governance and policy coordination:** Develop a cross-sectoral food policy framework aligning climate, health, and agricultural objectives. Enhance local-national coordination for food system implementation. Establish clear emissions reduction targets for food production and dietary transitions and clarify the role of dietary transitions in meeting this target.
2. **Improving economic incentives for sustainable food systems:** Redirect agricultural support payments towards sustainable and regenerative farming. Explore the role for fiscal policies (e.g. support payments or taxation) to make sustainable food choices more affordable. Invest in local food infrastructure and supply chains to reduce dependence on imports.
3. **Addressing social and cultural barriers to dietary change:** Expand public, agricultural, and food system engagement and participation and leverage procurement opportunities to increase awareness and availability of climate-friendly diets. Improve policies regarding food affordability to ensure sustainable diets are accessible to all income groups. Develop culturally sensitive strategies for dietary shifts, considering food traditions.
4. **Investing in technology and data monitoring for food system resilience:** Support the development of a UK-wide standard for emissions tracking in food production and consumption, recognising the complexity of this task and the need for cross-jurisdictional coordination. Introduce digital food labelling to increase consumer awareness of sustainability impacts.
5. **Supporting legal and regulatory measures:** Enforce sustainability standards in food production and marketing. Align devolved and UK-wide dietary policies for consistency. Improve public procurement regulations to prioritise sustainable food sourcing.
6. **Integrating environmental considerations into food policy:** Develop land-use policies balancing food security, biodiversity, and climate goals. Strengthen climate adaptation strategies for Scottish agriculture. Explore the potential role of well-managed grazing land in supporting biodiversity and contributing to carbon sequestration, while recognising that evidence on sequestration benefits remains contested.

Scotland has an opportunity to lead in sustainable food policy by embedding climate and health goals into food system governance. A cross-sectoral, just transition approach is

essential to creating a food system that protects the environment, supports local economies, and enhances public health to secure long-term benefits for both people and the planet.

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Appendix A Diet & climate policy stakeholder identification and mapping methodology

7.1.1 Purpose and Scope

The stakeholder mapping exercise aimed to identify and understand the individuals and organisations who influence or are affected by climate and diet policies in Scotland. It was designed to support inclusive, evidence-informed policy review by incorporating a broad range of perspectives.

The mapping focused on ten key policy areas:

- Agriculture
- Food systems
- Public health
- Carbon emissions
- Land use and forestry
- Water use and pollution
- Economic and social impacts
- Food security
- Consumer behaviour and education
- Urban planning and food infrastructure

Stakeholders were assessed for their relevance to these areas and the potential for involvement in the policy process.

7.1.2 Methods

- **Desk research**: Systematic searches of government documents, NGO and advocacy websites, academic literature, and media reports to compile a draft list of stakeholders.
- **Expert consultation**: Meetings with policymakers, researchers, and advisors to validate the list and identify additional stakeholders.
- **Categorisation**: Stakeholders were grouped by type (e.g., government, academia, NGOs, industry, health, community, media, public).
- **Influence–Interest Mapping**: Stakeholders were classified based on their level of influence over, and interest in, diet and climate policy. A rubric guided the assignment of High, Medium, or Low categories for each.

7.1.3 Stakeholder Categories

Stakeholders were grouped into eight high-level categories:

1. Government bodies and regulators (e.g., Scottish Government, SEPA, Food Standards Scotland)
2. Research and academia (e.g., University research centres, think tanks)
3. NGOs and advocacy groups (e.g., Nourish Scotland, Friends of the Earth Scotland)
4. Agriculture and food industry (e.g., NFU Scotland, food producers, retailers)
5. Public health bodies (e.g., NHS Scotland, Public Health Scotland)
6. Community organisations (e.g., local sustainability hubs, rural associations)

7. Media and influencers (e.g., journalists, campaigners)
8. General public and citizen groups (e.g., low-income groups, consumer organisations)

7.1.4 Ongoing Adaptation

Stakeholder positions and influence are dynamic. The mapping process includes continuous review to respond to evolving policy priorities and to adapt engagement strategies accordingly.

Appendix B Findings from the stakeholder identification and mapping analysis

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
1	Defra	(1) Government bodies, agencies & regulators	(1a) UK Government bodies
2	UK Government	(1) Government bodies, agencies & regulators	(1a) UK Government bodies
3	UK Parliament	(1) Government bodies, agencies & regulators	(1a) UK Government bodies
4	HM Revenue and Customs	(1) Government bodies, agencies & regulators	(1a) UK Government bodies
5	Marine Scotland Directorate	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
6	Agriculture and Rural Economy Directorate	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
7	Diet and Healthy Weight Team	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
8	Good Food Nation Working Group	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
9	Health & Social Care Directorate	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
10	Population Health Directorate	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
11	Scottish Government	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
12	Food Security Unit	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
13	Future Environment Division	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
14	Energy and Climate Change Directorate	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
15	Scottish Government (SGRPID, Animal	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
	health) (dairy production)		
16	Environment and Forestry Directorate	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
17	Learning Directorate Support & Wellbeing Unit	(1) Government bodies, agencies & regulators	(1b) Scottish Government bodies
18	Scottish Labour Party	(1f) Scottish political parties	(1b) Scottish Government bodies
19	Food Standards Agency Scotland (FSAS)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
20	Decoupling Advisory Group	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
21	Resource Efficient Scotland	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
22	Scotland's Climate Assembly	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
23	Scotland's Futures Forum	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
24	Just Transition Commission	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
25	Scottish Environment Protection Agency (SEPA)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
26	NatureScot (SNH)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
27	Environmental Standards Scotland (ESS)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
28	Environment and Forestry Directorate	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
29	Scottish Forestry	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
30	Energy and Climate Change Directorate	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
31	Scottish Climate Intelligence Service	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
32	Scotland Farm Advisory Service (FAS)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
33	Adaptation Scotland	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
34	Agriculture and Rural Economy Directorate	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
35	Scottish Food Commission	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
36	Ministerial Working Group on Food	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
37	Good Food Nation Working Group	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
38	Environment, Climate Change and Land Reform	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
39	Economic Development and Fair Work	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
40	Agriculture and Horticulture Development Board	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
41	Scottish Government Rural Payments and Inspections Division	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
42	Scottish Natural Heritage	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
43	Scottish Water	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
44	Scottish Enterprise	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
45	Crown Estate	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
46	European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) (dairy production)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
47	Committee on Climate Change (CCC)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
48	Forestry Commission (FC)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
49	Scottish Science Advisory Council (SSAC)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
50	Science and Advice for Scottish Agriculture (SASA)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
51	Sustainable Development Commission	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
52	Climate Adaptation Team	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
53	SEA Gateway	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
54	Scottish Land Commission	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
55	Health Protection Scotland	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
56	Retail Industry Leadership Group (ILG)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
57	Agri-tourism Monitor Farm Programme	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
58	Education and Skills	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
59	Business Gateway	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
60	Highland and Islands Enterprise	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
61	Transport Authority	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
62	Revenue Scotland (leather sector)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
63	Forestry and Land Scotland	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
64	Historic Environment Scotland	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
65	Crofting Commission	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
66	Scottish Law Commission	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
67	Scottish Fiscal Commission	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
68	Scottish Funding Council (SFC)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
69	Scottish Human Rights Commission (SHRC)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
70	Scottish Council on Global Affairs (SCGA)	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
71	Policy Connect	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
72	Advisory Group on Economic Recovery	(1) Government bodies, agencies & regulators	(1c) Advisory agencies and regulators
73	City of Edinburgh Council	(1) Government bodies, agencies & regulators	(1d) Local councils
74	Highland Council	(1) Government bodies, agencies & regulators	(1d) Local councils
75	Scottish Borders Council	(1) Government bodies, agencies & regulators	(1d) Local councils

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
76	West Lothian Council	(1) Government bodies, agencies & regulators	(1d) Local councils
77	Angus Council	(1) Government bodies, agencies & regulators	(1d) Local councils
78	South Lanarkshire Council	(1) Government bodies, agencies & regulators	(1d) Local councils
79	East Ayrshire Council	(1) Government bodies, agencies & regulators	(1d) Local councils
80	Argyll and Bute Council	(1) Government bodies, agencies & regulators	(1d) Local councils
81	Convention of Scottish Local Authorities (CoSLA)	(1) Government bodies, agencies & regulators	(1d) Local councils
82	East Dunbartonshire Council	(1) Government bodies, agencies & regulators	(1d) Local councils
83	South Ayrshire Council	(1) Government bodies, agencies & regulators	(1d) Local councils
84	Aberdeen City Council	(1) Government bodies, agencies & regulators	(1d) Local councils
85	Dundee City Council	(1) Government bodies, agencies & regulators	(1d) Local councils
86	Inverclyde Council	(1) Government bodies, agencies & regulators	(1d) Local councils
87	East Lothian Council	(1) Government bodies, agencies & regulators	(1d) Local councils
88	East Renfrewshire Council	(1) Government bodies, agencies & regulators	(1d) Local councils
89	Glasgow City Council	(1) Government bodies, agencies & regulators	(1d) Local councils
90	Orkney Islands Council	(1) Government bodies, agencies & regulators	(1d) Local councils
91	Shetland Islands Council	(1) Government bodies, agencies & regulators	(1d) Local councils
92	Stirling Council	(1) Government bodies, agencies & regulators	(1d) Local councils

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
93	West Dunbartonshire Council	(1) Government bodies, agencies & regulators	(1d) Local councils
94	Scottish National Party	(1) Scottish political parties	(1e) Scottish Government bodies
95	Scottish Conservative Party	(1) Scottish political parties	(1e) Scottish political parties
96	Scottish Green Party	(1b) Scottish Government bodies	(1f) Scottish political parties
97	University of Edinburgh	(2) Research & academia	(2b) Academic institutions
98	University of Glasgow	(2) Research & academia	(2b) Academic institutions
99	University of Stirling	(2) Research & academia	(2b) Academic institutions
100	University of Dundee	(2) Research & academia	(2b) Academic institutions
101	University of Strathclyde	(2) Research & academia	(2b) Academic institutions
102	University of Aberdeen	(2) Research & academia	(2b) Academic institutions
103	Scotland's Rural College (SRUC)	(2) Research & academia	(2b) Academic institutions
104	Scottish School of Forestry	(2) Research & academia	(2b) Academic institutions
105	St Andrew's University	(2) Research & academia	(2b) Academic institutions
106	Royal Veterinary College	(2) Research & academia	(2b) Academic institutions
107	UHI Inverness	(2) Research & academia	(2b) Academic institutions
108	Glasgow Caledonian University	(2) Research & academia	(2b) Academic institutions
109	The Queen's Nursing Institute Scotland	(2) Research & academia	(2b) Academic institutions
110	Heriot-Watt University	(2) Research & academia	(2b) Academic institutions

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
111	Royal College of Nursing	(2) Research & academia	(2b) Academic institutions
112	Scottish Environment, Food and Agriculture Research Institutions (SEFARI)	(2) Research & academia	(2c) Research centres
113	James Hutton Institute	(2) Research & academia	(2c) Research centres
114	Sustainability Exchange	(2) Research & academia	(2c) Research centres
115	Centre for Ecology and Hydrology (NERC)	(2) Research & academia	(2c) Research centres
116	University of Edinburgh Climate Change Institute (ECCI)	(2) Research & academia	(2c) Research centres
117	Forest Research (FC)	(2) Research & academia	(2c) Research centres
118	Scottish Environment, Food and Agriculture Research Institutions (SEFARI)	(2) Research & academia	(2c) Research centres
119	Scotland Beyond Net Zero	(2) Research & academia	(2c) Research centres
120	Scottish Alliance for Food (SCAF)	(2) Research & academia	(2c) Research centres
121	Global Academy of Agriculture and Food Security, University of Edinburgh	(2) Research & academia	(2c) Research centres
122	Sea Mammal Research Unit (SMRU)	(2) Research & academia	(2c) Research centres
123	Biomathematics and Statistics Scotland (BioSS)	(2) Research & academia	(2c) Research centres

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
124	Centre for Climate Justice, Glasgow Caledonian University	(2) Research & academia	(2c) Research centres
125	Rowett Institute	(2) Research & academia	(2c) Research centres
126	British Geological Survey	(2) Research & academia	(2c) Research centres
127	British Geological Society (BGS)	(2) Research & academia	(2c) Research centres
128	University of Strathclyde Fraser of Allander Institute (FAI)	(2) Research & academia	(2c) Research centres
129	Nesta	(2) Research & academia	(2c) Research centres
130	Research Innovation Scotland	(2) Research & academia	(2c) Research centres
131	David Hume Institute	(2) Research & academia	(2c) Research centres
132	What Works Scotland	(2) Research & academia	(2c) Research centres
133	Research establishments	(2) Research & academia	(2c) Research centres
134	ScotCen Social Research	(2) Research & academia	(2c) Research centres
135	Pareto Consulting	(2) Research & academia	(2c) Research centres
136	Food Researchers in Edinburgh (FRIED)	(2) Research & academia	(2c) Research centres
137	Royal Society of Edinburgh	(2) Research & academia	(2d) Policy think tanks
138	Institute for Public Policy Research (IPPR) Scotland	(2) Research & academia	(2d) Policy think tanks
139	Green Alliance	(2) Research & academia	(2d) Policy think tanks
140	Reform Scotland	(2) Research & academia	(2d) Policy think tanks
141	Chatham House	(3) Third Sector & advocacy groups	(2d) Policy think tanks

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
142	Common Weal	(3) Third Sector & advocacy groups	(2d) Policy think tanks
143	Future Economy Scotland	(3) Third Sector & advocacy groups	(2d) Policy think tanks
144	Common Wealth	(3) Third Sector & advocacy groups	(2d) Policy think tanks
145	Food Ethics Council	(3) Third Sector & advocacy groups	(2d) Policy think tanks
146	Policy Exchange	(3) Third Sector & advocacy groups	(2d) Policy think tanks
147	Centre Think Tank	(3) Third Sector & advocacy groups	(2d) Policy think tanks
148	Conservative Environment Network	(3) Third Sector & advocacy groups	(2d) Policy think tanks
149	Capita	(3) Third Sector & advocacy groups	(2d) Policy think tanks
150	THEOS	(3) Third Sector & advocacy groups	(2d) Policy think tanks
151	The Badenoch and Strathspey Conservation Group (BSCG)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
152	Friends of the Earth Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
153	Stop Climate Chaos Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
154	Keep Scotland Beautiful	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
155	Creative Carbon Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
156	Scottish Environment LINK	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
157	Scottish Wildlife Trust	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
158	Scottish Wild Land Group	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
159	Trees for Life	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
160	RSPB Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
161	Environmental Rights Centre for Scotland (ERCS)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
162	Scottish Countryside Rangers' Associations	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
163	Action to Protect Rural Scotland (APRS)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
164	The Cairngorms Campaign	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
165	British Trust for Conservation Volunteers (BTCV)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
166	British Trust for Ornithology	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
167	The Scottish Conservation Projects Trust (SCPT)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
168	Plantlife International	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
169	The Wildfowl & Wetlands Trust	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
170	The British Trust for Ornithology (BTO)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
171	Zero Waste Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
172	Zero Waste Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
173	Groundwork Trusts	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
174	The National Biodiversity Network (NBN) Trust	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
175	The Botanical Society of the British Isles (BSBI)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
176	The Conservation Volunteers	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
177	Greenspace Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
178	Net Zero Nation	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
179	Green Action Trust	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
180	Environmental Protection Scotland (EPS)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
181	Uplift UK	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
182	Labour Climate and Environment Forum (LCEF)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
183	Climate Emergency UK	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
184	Tipping Point UK	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
185	Royal Scottish Geographical Society	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
186	Scotland The Big Picture	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
187	Sustainable Thinking Scotland (STS)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
188	Fishery Trusts	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
189	Greener Kirkcaldy	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
190	Sustainable Cupar	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
191	Energy Saving Trust	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
192	Esmee Fairbairn Foundation	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
193	Linlithgow Climate Challenge	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
194	Changeworks	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
195	Scottish Policy Group British Ecological Society	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
196	National Trust for Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
197	Scottish Farming and Wildlife Advisory Group (SCOTFWAG)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
198	John Muir Trust	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
199	Greenpeace UK	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
200	WRAP	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
201	The Woodland Trust	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
202	The British Ecological Society (BES)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
203	WWF Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
204	Sustainable Scotland Network (SSN)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
205	Sustain	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
206	Peers for the Planet	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
207	Nature Foundation	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
208	Fidra	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
209	FEL Scotland	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
210	Sustainable Wellbeing Environment Network	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
211	Party for the Animals	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
212	Marine Conservation Society	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
213	Four Paws UK	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
214	Scottish Communities Climate Action Network (SSCAN)	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
215	Earth In Common	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
216	World Animal Protection	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
217	OneKind	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
218	Open Seas	(3) Third Sector & advocacy groups	(3a) Environmental NGOs & advocacy groups
219	Edinburgh Community Food	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
220	Nourish Scotland	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
221	Soil Association Scotland	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
222	Scottish Food Coalition	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
223	Good Food Scotland	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
224	FareShare Scotland	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
225	Community Food and Health (Scotland)	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
226	Independent Food Aid Network UK (IFAN)	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
227	Eating Better	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
228	Nutrition Scotland	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
229	Plant-Based Food Alliance	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
230	The Food Foundation	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
231	Glasgow Community Food Network	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
232	Impatience Insiders	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
233	Propagate Scotland	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
234	One Planet Food	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
235	Food and Agriculture Stakeholder Taskforce (FAST)	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
236	Sustainable Food Places	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
237	Food Standards Agency	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
238	Food For Life Scotland (Soil Association)	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
239	British Nutrition Foundation	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
240	British Dietetic Association (BDA)	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
241	UK Food Group	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
242	Food Citizens Scotland	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
243	Climavore	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
244	Community Supported Agriculture Network UK (CSA)	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
245	Trussell	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
246	Food Train	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
247	Independent Food Aid Network	(3) Third Sector & advocacy groups	(3b) Food policy NGOs & advocacy groups
248	Young Scot	(3) Third Sector & advocacy groups	(3c) Community NGOs and advocacy groups
249	Scottish Women's Convention	(3) Third Sector & advocacy groups	(3c) Community NGOs and advocacy groups
250	Volunteer Scotland	(3) Third Sector & advocacy groups	(3c) Community NGOs and advocacy groups
251	Engender	(3) Third Sector & advocacy groups	(3c) Community NGOs and advocacy groups
252	Obesity Action Scotland	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
253	Scottish Obesity Alliance	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
254	Obesity Health Alliance	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
255	Health and Social Care Alliance Scotland	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
256	People's Health Trust	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
257	Voluntary Health Scotland	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
258	Centre for Sustainable Healthcare	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
259	Children's Health Scotland	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
260	Royal Environmental Health Institute of Scotland (REHIS)	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
261	UK Health Alliance on Climate Change	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
262	Cancer Research UK	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
263	Scottish Public Health Network (ScotPHN)	(3) Third Sector & advocacy groups	(3c) Health NGOs and advocacy groups
264	Scottish Youth Parliament (SYP Scot Youth)	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
265	Scottish Community Alliance	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
266	Involve UK	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
267	JustRight Scotland	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
268	Foundation Scotland	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
269	Eco-Congregation Scotland	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
270	Edinburgh Communities Climate Action Network (ECCAN)	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
271	Faith in Community Scotland	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
272	Good Law Project	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
273	Scottish Human Rights Commission	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
274	Another Way	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
275	Planning Democracy	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
276	Scottish Council for Voluntary Organisations (SCVO)	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
277	Transform Community Development	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
278	Community Development Lens (CoDeL)	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
279	Cyrenians	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
280	Eco Congregation Scotland	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
281	Environmental Rights Centre for Scotland (ERC)	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
282	Federation of City Farms and Community Gardens Scotland (FEL Scotland)	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
283	Get Growing Scotland	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
284	Worker Support Centre	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
285	Unite Scotland	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
286	UK Health Alliance on Climate Change	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
287	Social Farms & Gardens	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
288	Global Justice Now	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
289	Scottish Trade Union Congress	(3) Third Sector & advocacy groups	(3d) Community NGOs & advocacy groups
290	Compassion in World Farming (CIWIF)	(4) Agriculture & food industry	(4a) Agricultural organisations
291	Community Land Scotland	(4) Agriculture & food industry	(4a) Agricultural organisations
292	Nature Friendly Farming Network (NFFN)	(4) Agriculture & food industry	(4a) Agricultural organisations
293	Landworkers' Alliance	(4) Agriculture & food industry	(4a) Agricultural organisations
294	Rare Breeds Survival Trust (RBST) Scotland	(4) Agriculture & food industry	(4a) Agricultural organisations
295	Mossgiel Organic Farm	(4) Agriculture & food industry	(4a) Agricultural organisations
296	Association of Independent Crop Consultants	(4) Agriculture & food industry	(4a) Agricultural organisations
297	Basis Registration Ltd (BASIS	(4) Agriculture & food industry	(4a) Agricultural organisations
298	Scottish Quality Crops	(4) Agriculture & food industry	(4a) Agricultural organisations
299	Tenant Farming Association	(4) Agriculture & food industry	(4a) Agricultural organisations

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
300	Scottish Dairy Growth Board	(4) Agriculture & food industry	(4a) Agricultural organisations
301	Scottish DairyHub	(4) Agriculture & food industry	(4a) Agricultural organisations
302	Bovine genetics and reproductive services	(4) Agriculture & food industry	(4a) Agricultural organisations
303	The Scottish Dairy Cattle Association	(4) Agriculture & food industry	(4a) Agricultural organisations
304	Young Farmers	(4) Agriculture & food industry	(4a) Agricultural organisations
305	Scottish Organic Producers Association (SOPA)	(4) Agriculture & food industry	(4a) Agricultural organisations
306	National Farmers Union Scotland (NFUS)	(4) Agriculture & food industry	(4a) Agricultural organisations
307	The Country Landowners' Association	(4) Agriculture & food industry	(4a) Agricultural organisations
308	Scottish Water	(4) Agriculture & food industry	(4a) Agricultural organisations
309	Food, Farming and Countryside Commission (FFCC)	(4) Agriculture & food industry	(4a) Agricultural organisations
310	Crown Estate Scotland	(4) Agriculture & food industry	(4a) Agricultural organisations
311	Royal Highland and Agricultural Society of Scotland	(4) Agriculture & food industry	(4a) Agricultural organisations
312	Agricultural Industries Confederation	(4) Agriculture & food industry	(4a) Agricultural organisations
313	Advanced Plant Growth Centre (James Hutton Institute)	(4) Agriculture & food industry	(4a) Agricultural organisations

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
314	Scottish Agricultural Organisation Society (SAOS)	(4) Agriculture & food industry	(4a) Agricultural organisations
315	ADAS	(4) Agriculture & food industry	(4a) Agricultural organisations
316	Agricultural Industries Confederation	(4) Agriculture & food industry	(4a) Agricultural organisations
317	Agricultural Industries Confederation Scotland	(4) Agriculture & food industry	(4a) Agricultural organisations
318	Crop Protection Association	(4) Agriculture & food industry	(4a) Agricultural organisations
319	Linking Environment and Farming (LEAF)	(4) Agriculture & food industry	(4a) Agricultural organisations
320	National Farmers Union Scotland (NFUS)	(4) Agriculture & food industry	(4a) Agricultural organisations
321	Red Tractor	(4) Agriculture & food industry	(4a) Agricultural organisations
322	Ricardo (Future Farming Resilience Fund)	(4) Agriculture & food industry	(4a) Agricultural organisations
323	SRUC/SAC Consulting	(4) Agriculture & food industry	(4a) Agricultural organisations
324	Scottish Land and Estates	(4) Agriculture & food industry	(4a) Agricultural organisations
325	Scottish Rural College	(4) Agriculture & food industry	(4a) Agricultural organisations
326	Agriculture and Horticulture Development Board	(4) Agriculture & food industry	(4a) Agricultural organisations
327	DairyUK	(4) Agriculture & food industry	(4a) Agricultural organisations
328	Farm Quality Assurance Schemes	(4) Agriculture & food industry	(4a) Agricultural organisations

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
329	Assured Integrated Milk Supplier (AIMS)	(4) Agriculture & food industry	(4a) Agricultural organisations
330	Scottish Agricultural Organisation Society	(4) Agriculture & food industry	(4a) Agricultural organisations
331	Organic Soil Association	(4) Agriculture & food industry	(4a) Agricultural organisations
332	Dourie Farming Company Ltd	(4) Agriculture & food industry	(4a) Agricultural organisations
333	Scottish Land & Estates	(4) Agriculture & food industry	(4a) Agricultural organisations
334	Scottish Gamekeepers' Association	(4) Agriculture & food industry	(4a) Agricultural organisations
335	South of Scotland Regional Economic Partnership	(4) Agriculture & food industry	(4a) Agricultural organisations
336	Scottish Crofting Federation	(4) Agriculture & food industry	(4a) Agricultural organisations
337	National Association of Agricultural Contractors	(4) Agriculture & food industry	(4a) Agricultural organisations
338	UK Irrigation Association	(4) Agriculture & food industry	(4a) Agricultural organisations
339	Scottish Tenant Farmers Association	(4) Agriculture & food industry	(4a) Agricultural organisations
340	Bank of Scotland Business	(4) Agriculture & food industry	(4a) Agricultural organisations
341	Royal Bank of Scotland	(4) Agriculture & food industry	(4a) Agricultural organisations
342	Pasture for Life	(4) Agriculture & food industry	(4a) Agricultural organisations
343	Scottish Association of Meat Wholesalers	(4) Agriculture & food industry	(4b) Food production organisations
344	Scottish Ecological Design Association (SEDA)	(4) Agriculture & food industry	(4b) Food production organisations

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
345	Milk Supply Association (MSA)	(4) Agriculture & food industry	(4b) Food production organisations
346	Social Enterprise Scotland	(4) Agriculture & food industry	(4b) Food production organisations
347	Scotland Loves Local Campaign	(4) Agriculture & food industry	(4b) Food production organisations
348	Scotland the Bread	(4) Agriculture & food industry	(4b) Food production organisations
349	Circular Communities Scotland	(4) Agriculture & food industry	(4b) Food production organisations
350	Campbells Prime Meat	(4) Agriculture & food industry	(4b) Food production organisations
351	Packaging Recycling Group Scotland	(4) Agriculture & food industry	(4b) Food production organisations
352	Scotch Beef	(4) Agriculture & food industry	(4b) Food production organisations
353	Food and Drink Federation Scotland (FDF Scotland)	(4) Agriculture & food industry	(4b) Food production organisations
354	Scotland Food and Drink	(4) Agriculture & food industry	(4b) Food production organisations
355	British Meat Processors' Association	(4) Agriculture & food industry	(4b) Food production organisations
356	Quality Meat Scotland (QMS)	(4) Agriculture & food industry	(4b) Food production organisations
357	Food and Agriculture Organisation (FAO)	(4) Agriculture & food industry	(4b) Food production organisations
358	Marine Stewardship Council (MSC)	(4) Agriculture & food industry	(4b) Food production organisations
359	RSPCA	(4) Agriculture & food industry	(4b) Food production organisations
360	Scotch Whisky Association (SWA)	(4) Agriculture & food industry	(4b) Food production organisations

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
361	FoodDrinkEurope	(4) Agriculture & food industry	(4b) Food production organisations
362	Food and Drink Leadership Forum	(4) Agriculture & food industry	(4b) Food production organisations
363	Scotlean	(4) Agriculture & food industry	(4b) Food production organisations
364	UNISON Scotland	(4) Agriculture & food industry	(4b) Food production organisations
365	Scottish Wholesale Association	(4) Agriculture & food industry	(4b) Food production organisations
366	British Contract Manufacturers and Packers Association	(4) Agriculture & food industry	(4b) Food production organisations
367	The Packaging Federation	(4) Agriculture & food industry	(4b) Food production organisations
368	Scottish Fair Trade Forum	(4) Agriculture & food industry	(4b) Food production organisations
369	Resource Management Association Scotland (RMAS)	(4) Agriculture & food industry	(4b) Food production organisations
370	Consumer Scotland	(4) Agriculture & food industry	(4c) Supermarkets and retailers
371	Bute Produce	(4) Agriculture & food industry	(4c) Supermarkets and retailers
372	Remake Scotland	(4) Agriculture & food industry	(4c) Supermarkets and retailers
373	Scottish Grocers' Federation's Go Local programme	(4) Agriculture & food industry	(4c) Supermarkets and retailers
374	European Trade Union Federation of Textiles, Clothing and Leather (leather sector)	(4) Agriculture & food industry	(4c) Supermarkets and retailers

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
375	Product accreditation (leather sector)	(4) Agriculture & food industry	(4c) Supermarkets and retailers
376	Association of Convenience Stores (ACS)	(4) Agriculture & food industry	(4c) Supermarkets and retailers
377	British Retail Consortium (BRC)	(4) Agriculture & food industry	(4c) Supermarkets and retailers
378	Scottish Retail Consortium	(4) Agriculture & food industry	(4c) Supermarkets and retailers
379	Global markets (leather sector)	(4) Agriculture & food industry	(4c) Supermarkets and retailers
380	Scottish Grocers' Federation	(4) Agriculture & food industry	(4c) Supermarkets and retailers
381	Scottish Trades Union Congress (STUC)	(4) Agriculture & food industry	(4c) Supermarkets and retailers
382	ASDA Supermarket	(4) Agriculture & food industry	(4c) Supermarkets and retailers
383	Tesco	(4) Agriculture & food industry	(4c) Supermarkets and retailers
384	Morrison's	(4) Agriculture & food industry	(4c) Supermarkets and retailers
385	Sainsbury's	(4) Agriculture & food industry	(4c) Supermarkets and retailers
386	The Refillery Edinburgh	(4) Agriculture & food industry	(4c) Supermarkets and retailers
387	NHS Scotland	(5) Public health bodies	(5a) Public health bodies
388	Public Health Scotland	(5) Public health bodies	(5a) Public health bodies
389	NHS Borders	(5) Public health bodies	(5a) Public health bodies
390	NHS Lothian	(5) Public health bodies	(5a) Public health bodies
391	NHS Grampian	(5) Public health bodies	(5a) Public health bodies
392	NHS Forth Valley	(5) Public health bodies	(5a) Public health bodies

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393	Directorate of Health and Social Care	(5) Public health bodies	(5a) Public health bodies
394	Ministry of Public Health and Social Care	(5) Public health bodies	(5a) Public health bodies
395	Highlands and Islands Climate Hub	(6) Community organisations	(6a) Local food networks and sustainability hubs
396	Fife Communities Climate Action Network (FCCAN)	(6) Community organisations	(6a) Local food networks and sustainability hubs
397	North East Scotland Climate Action Resource Hub (NESCAN)	(6) Community organisations	(6a) Local food networks and sustainability hubs
398	Transition Black Isle	(6) Community organisations	(6a) Local food networks and sustainability hubs
399	Edinburgh Food Social	(6) Community organisations	(6a) Local food networks and sustainability hubs
400	Forth Valley Food Futures	(6) Community organisations	(6a) Local food networks and sustainability hubs
401	Highland Good Food Partnership	(6) Community organisations	(6a) Local food networks and sustainability hubs
402	Climate Hebrides	(6) Community organisations	(6a) Local food networks and sustainability hubs
403	Appetite for Angus Food & Drink Network	(6) Community organisations	(6a) Local food networks and sustainability hubs
404	Arran's Food Journey	(6) Community organisations	(6a) Local food networks and sustainability hubs
405	Ayrshire Food an' a that	(6) Community organisations	(6a) Local food networks and sustainability hubs
406	Bute Kitchen	(6) Community organisations	(6a) Local food networks and sustainability hubs
407	East Lothian Food and Drink	(6) Community organisations	(6a) Local food networks and sustainability hubs

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
408	Eat Drink Hebrides	(6) Community organisations	(6a) Local food networks and sustainability hubs
409	Eat SW Scotland	(6) Community organisations	(6a) Local food networks and sustainability hubs
410	Food from Argyll	(6) Community organisations	(6a) Local food networks and sustainability hubs
411	Food from Fife	(6) Community organisations	(6a) Local food networks and sustainability hubs
412	Forth Valley Food and Drink Network	(6) Community organisations	(6a) Local food networks and sustainability hubs
413	Great Perthshire	(6) Community organisations	(6a) Local food networks and sustainability hubs
414	Lanarkshire Larder	(6) Community organisations	(6a) Local food networks and sustainability hubs
415	North East Scotland Food & Drink Network	(6) Community organisations	(6a) Local food networks and sustainability hubs
416	Orkney Food and Drink	(6) Community organisations	(6a) Local food networks and sustainability hubs
417	A Taste of Shetland	(6) Community organisations	(6a) Local food networks and sustainability hubs
418	Glasgow Allotments Forum	(6) Community organisations	(6a) Local food networks and sustainability hubs
419	Abundant Borders	(6) Community organisations	(6a) Local food networks and sustainability hubs
420	Transition Edinburgh	(6) Community organisations	(6a) Local food networks and sustainability hubs
421	Edible Edinburgh	(6) Community organisations	(6a) Local food networks and sustainability hubs
422	Transition Stirling	(6) Community organisations	(6a) Local food networks and sustainability hubs
423	Moray Food Network	(6) Community organisations	(6a) Local food networks and sustainability hubs
424	Falkirk Food Futures	(6) Community organisations	(6a) Local food networks and sustainability hubs

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
425	Dundee Urban Orchard	(6) Community organisations	(6a) Local food networks and sustainability hubs
426	Fair Food Aberdeenshire	(6) Community organisations	(6a) Local food networks and sustainability hubs
427	Wester Hailes Growing Communities	(6) Community organisations	(6a) Local food networks and sustainability hubs
428	Scottish Rural Action	(6) Community organisations	(6b) Rural community associations
429	Countryside Alliance	(6) Community organisations	(6b) Rural community associations
430	Carbon Brief	(7) Media & influencers	(7a) Journalists and media outlets
431	The Grocer	(7) Media & influencers	(7a) Journalists and media outlets
432	The Scottish Farmer	(7) Media & influencers	(7a) Journalists and media outlets
433	The Scotsman	(7) Media & influencers	(7a) Journalists and media outlets
434	The Highland Times	(7) Media & influencers	(7a) Journalists and media outlets
435	The National	(7) Media & influencers	(7a) Journalists and media outlets
436	Health Food Business Magazine	(7) Media & influencers	(7a) Journalists and media outlets
437	Meat Management Magazine	(7) Media & influencers	(7a) Journalists and media outlets
438	HealthandCare.Scot	(7) Media & influencers	(7a) Journalists and media outlets
439	Laura Young ('Less Waste Laura'	(7) Media & influencers	(7b) Influencers & activists
440	Students Organising for Sustainability (SOS-UK)	(8) General public & citizens' groups	(8a) Vulnerable populations
441	Inclusion Scotland	(8) General public & citizens' groups	(8a) Vulnerable populations

#	Stakeholder name	Stakeholder primary category	Stakeholder sub-category
442	People and Planet	(8) General public & citizens' groups	(8a) Vulnerable populations
443	The Commitment	(8) General public & citizens' groups	(8a) Vulnerable populations
444	Scotland's Regeneration Forum (SURF)	(8) General public & citizens' groups	(8a) Vulnerable populations
445	Just Fair	(8) General public & citizens' groups	(8a) Vulnerable populations
446	Poverty Alliance	(8) General public & citizens' groups	(8a) Vulnerable populations
447	Citizens Advice Scotland	(8) General public and citizen groups	(8b) Consumer rights organisations

Appendix C Systematic literature review methodology

Two main citation indexes were used to systematically search for articles: Scopus (for published academic literature); and Publish or Perish (for unpublished 'grey' literature).

In addition, a set of non-systematically derived articles supplemented the main systematic literature review protocol and more detail can be found below.

For the systematic search protocol, search parameters comprised Title-Abstract-Keyword searches of articles published in English since 2015. Because of the breadth of the topic, no categories were excluded from the search parameters. As Publish or Perish searches Google Scholar records, articles were limited to the first 200 returns by relevance.

The SPICE framework (Booth, 2006) was used to configure the systematic review search string and incorporated the following framework:

- **Setting**: E.g. Scotland's policy environment and the social, economic, and environmental factors specific to Scotland.
- **Perspective**: E.g. policymakers, public groups, industry stakeholders, and other groups affected by diet and climate policies.
- **Intervention**: E.g. climate-related dietary policy actions, public health initiatives, economic incentives, or educational campaigns.
- **Comparison**: E.g. other regional or international diet and climate policies or scenarios where similar policy interventions are absent.
- **Evaluation**: E.g. outcomes in terms of emissions reductions, public health improvements, economic impacts, or stakeholder engagement effectiveness.

The Title-Abstract-Keyword citation indexes were searched using the following strings, which were adapted during pilot searches because of limitations to search capabilities across each index and to optimise returns:

Scopus: TITLE-ABS-KEY ((“scot*” OR “united kingdom” OR “wales” OR “england” OR “northern ireland”) AND (“diet*” OR “food”) AND (“climate” OR “carbon” OR “emissions” OR “environment*”) AND (“policy*” OR “regulat*” OR “strateg*” OR “lever*” OR “mechanism*”) AND (“behaviour*” OR “percept*” OR “attitud*” OR “consum*” OR “meat” OR “dairy” OR “vegan” OR “vegetarian” OR “plant-based” OR “nutrition” OR “health” OR “wellbeing” OR “equit*” OR “sustainab*” OR “adaptation” OR “mitigation” OR “resilien*” OR “biodiver*” OR “econom*” OR “cost” OR “agricultur*” OR “produc*” OR “process*” OR “retail*” OR “trade*” OR “import*” OR “export*”))

Publish or Perish: scot* AND diet* OR food AND climate OR carbon OR emissions OR environment* AND policy* OR regulat* OR strateg* OR lever OR mechanism* AND behaviour*

Search results from each index were imported into Zotero where duplicates were removed.

Titles/abstracts were screened for eligibility based on the following criteria:

- Inclusion criteria:
    - Publication language English
    - Published since 2020
    - Scotland, UK or other devolved policy contexts
    - Relevant to one or more of the five PESTLE dimensions

    - Availability of full text by 31/1/25
- Exclusion criteria:
    - Publication language not English
    - Published before 2020 or focused on policy contexts prior to 2015
    - Without direct or indirect relevance to Scottish, UK or other devolved policy contexts
    - Without relevance to at least one of the five PESTLE dimensions
    - Conference proceedings
    - Methodological papers and study protocols

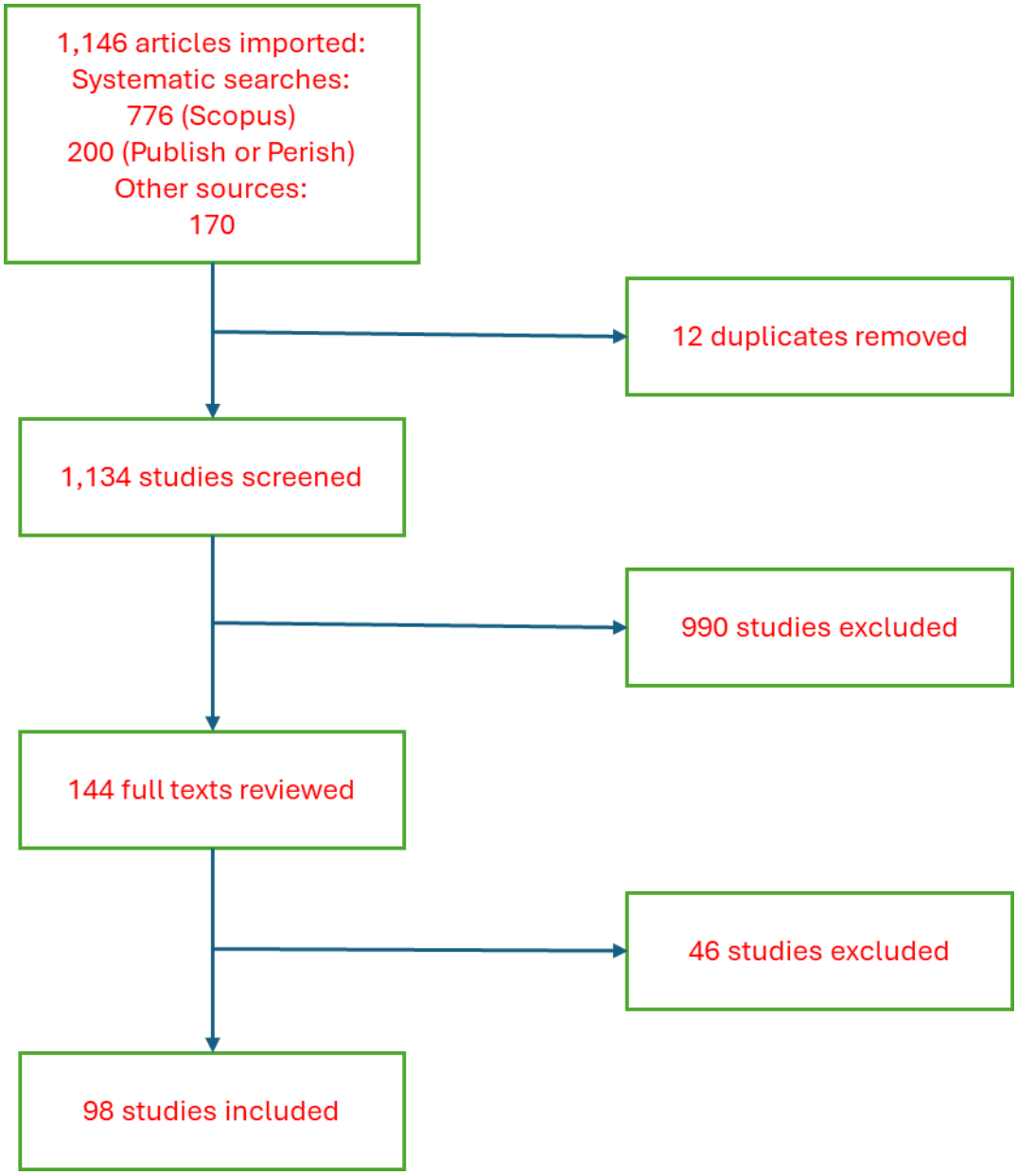
Each article was screened and assigned to one of three Zotero folders: Include; Exclude; Unsure. With reference to the latter, at the end of the initial screening these articles were re-examined and re-categorised to the Include or Exclude folder.

- The following data were extracted from all included articles:
    - Article title
    - Last name of first author
    - Year of publication
    - Article URL
    - Article type (e.g., empirical study, policy document)
    - Study context and Aims/Objectives
    - Results:
        - Key findings
        - Conclusions
        - Areas for policy development

In addition to the systematic literature review, relevant articles from a variety of other sources supplemented the review to ensure a comprehensive and contextually relevant analysis. Articles were identified through:

- **Stakeholder Contributions** – During stakeholder one-to-one discussions, participants suggested key reports, policy documents, and research papers that they considered highly relevant to the topic.
- **Citation Searches** – Both forward citation searches (identifying newer papers that cited key sources) and reverse citation searches (reviewing references cited within important papers) were conducted to expand the review.
- **General Web Searches** – Broader searches using Google were performed to capture relevant grey literature, media reports, and other non-peer-reviewed sources that may not be included in academic databases.
- **Targeted Website Searches** – Specific searches were conducted on Scottish Government, NGO, and stakeholder websites to access reports, policy briefings, and unpublished data relevant to the research focus.

Appendix D Systematic literature review flowchart



Appendix E Stakeholder meeting methodology

7.1.5 Purpose and Overview:

The one-to-one stakeholder meetings[10] were conducted to gather qualitative insights into Scotland's complex diet and climate policy landscape. These conversations were intended to complement the literature review and stakeholder workshops by eliciting the perspectives of individuals with practical experience and policy insight across relevant sectors of Government (supplemented by Third Sector and Academia).

7.1.6 Stakeholder Identification and Selection

Stakeholders were purposively selected based on their relevance to the intersecting themes of diet and climate policy, including specific expertise or engagement in areas such as emissions reduction, food security, policy development and advocacy, rural and environmental science, public health, environmental policy, agriculture, food production, and food insecurity. The selection process drew on:

- Expert recommendations from Scottish Government contacts and members of the research steering group.
- A stakeholder mapping exercise (see Appendices A and B).

7.1.7 Format and Approach

- A total of 14 semi-structured informal online meetings were conducted.
- Meetings followed a tailored topic guide to allow flexibility while covering core themes such as governance, policy coherence, barriers to implementation, and perceived gaps in evidence or support.
- Discussions typically lasted 30–60 minutes and were designed to be conversational, allowing participants to reflect on both strategic and operational aspects of policy and practice.
- Meetings were not recorded, but the researcher took detailed notes throughout.

7.1.8 Ethical Considerations and Data Management

- Ethical approval was obtained through the University of Bath.
- All participants were provided with information on the project and gave informed verbal consent.

7.1.9 Analytical Use

Insights from the stakeholder meeting notes were synthesised alongside the literature review and workshop outputs. They fed directly into the PESTLE analysis, helping to identify

[10] Meeting 14 involved a group meeting rather than a one-to-one meeting, in which multiple participants contributed to the conversation.

areas for policy development, clarify governance issues, and shape recommendations across the political, economic, social, technological, legal, and environmental dimensions.

7.1.10 Semi-structured meeting protocol

The following questions guided the meetings:

1. Understanding their role and work

- Can you tell me about your current role and your team's focus within the Scottish Government?
- Does your work intersect with diet policy in Scotland, and what are the key objectives your team is working towards in this area?

2. Stakeholder relationships and collaboration

- Who are the key stakeholders you collaborate with (e.g., other government departments, industry, civil society)?
- Are there any stakeholders or groups whose influence or involvement you feel is missing or underrepresented in this policy area?
- How would you describe the strength of your collaboration with other key stakeholders? Are there any gaps or challenges in communication or partnership?

3. Policy levers for diet change

- What policy levers do you believe are most effective for promoting dietary changes that would both improve public health and reduce environmental impact?
- In your view, are there particular dietary behaviours or food systems that should be prioritised for change in order to meet Scotland's climate and health goals?
- What challenges do you see in implementing these policies, either from a political, social, or logistical standpoint?

4. Identifying gaps in existing policy

- Do you think there are any gaps in current diet-related policies that hinder progress towards climate goals or healthier diets?
- Are there areas where more integration or alignment between climate and health policies could be beneficial?
- Where do you see the biggest opportunities for new or improved policies in this space?

5. Future policy directions and needs

- What emerging trends or issues do you think will have the biggest influence on future diet, and climate or health policy in Scotland?
- In what ways do you think Scottish diet policy could evolve to address both climate change and public health more effectively?

7.1.11 Meeting participants

The following table summarises details of meeting participants

#	Organisation	Policy Area
1	Academia	Diet & Climate
2	Third-Sector (Environment)	Emissions
3	Scottish Government	Food Security
4	Scottish Government	Diet
5	Scottish Government	Policy engagement
6	Scottish Government	Rural and environmental science
7	Academia	Diet policy perceptions
8	UK Government	Diet policy
9	Scottish Government	Health
10	Scottish Government	Environment
11	UK Government	Agriculture & Environment
12	Scottish Government	Food insecurity
13	Third Sector (Health)	Diet & Health
14	Scottish Government	Climate and Diet

Appendix F Stakeholder workshop protocols

7.1.12 Workshop Purpose

The workshops aimed to explore stakeholder perspectives on Scotland's diet and climate policy landscape, identify priority issues and gaps, and generate ideas for practical cross-sector solutions. These sessions supported the development of policy-relevant insights through collaborative, activity-based engagement. Stakeholders were identified based on the mapping exercise and consultations with Scottish Government colleagues to identify a range of interests and influence (including Government, third sector organisations, academics, agriculture and food producers, health, community, and environmental groups).

7.1.13 Workshop Formats

Three stakeholder workshops were delivered:

- One **in-person workshop** (full protocol detailed below)
- Two **online workshops**, which followed a shortened format with similar core activities

Time	Activity
10:00–10:30am	Arrival and tea/coffee
10:30–10:40am	Welcome and introduction
10:40–11:15am	Activity 1: Priority Mapping
11:15–11:25am	Break
11:25am–12:30pm	Activity 2: Policy Challenge Brainstorm
12:30–1:15pm	Lunch
1:15–2:00pm	Activity 3: Future Diet Scenarios
2:00–2:10pm	Break
2:10–3:00pm	Activity 4: Prioritisation, Feedback and Closing

In-Person Workshop Structure and Schedule

Time	Activity
10:00–10:15am	Introduction and opening remarks
10:15–11:00am	Activity 1: Priority Mapping
11:00–11:10am	Break
11:10–12:00pm	Activity 2: Policy Challenge Brainstorm
12:00–12:10pm	Break
12:10–12:45pm	Activity 3: Consolidating Priorities and Voting
12:45–1:00pm	Wrap-up and next steps

7.1.14 Online Workshop Structure and Schedule[11]

Participant Recruitment
Stakeholders were purposively recruited based on a preceding stakeholder mapping exercise. This mapping exercise identified relevant individuals and organisations across key sectors including Scottish Government, public health, agriculture, environment, food industry, third sector, and academia. The rationale for recruitment was guided by the segmentation of stakeholders within the mapping process, ensuring representation across high-interest and high-influence categories, as well as those with complementary or contrasting perspectives. All workshops included a cross-sector mix to support inclusive dialogue and the development of well-rounded policy insights.

Facilitation and Materials
Workshops were facilitated by a research team using a structured agenda and visual/interactive materials. In-person materials included A0 wall charts, colour-coded sticky notes, printed worksheets, and feedback forms. Online workshops used virtual whiteboards, editable templates, and polling tools to replicate similar participatory methods in a digital environment.

Core Activities (all formats)

- **Activity 1: Priority Mapping**
  Stakeholders identified sector-specific priorities, areas for policy development, and coordination needs using a structured mapping exercise. These inputs were categorised visually (in-person) or on a shared document (online) and discussed in plenary.
- **Activity 2: Policy Challenge Brainstorm**
  Mixed-sector groups tackled pre-defined policy challenges (e.g., reducing meat consumption, supporting farmers, addressing inequalities). Each group identified key barriers and proposed short-term policy solutions, then shared findings with the wider group.
- **Activity 3: Prioritisation and Feedback**
  Stakeholders reviewed the workshop's emerging priorities and selected the most important using voting dots (in-person) or virtual polling (online). This was followed by group discussion and final reflections.

[11] Note: The online workshops omitted the future scenarios activity due to time constraints but retained the same core activities and objectives.

Additional In-Person Activity

- **Future Diet Scenarios**
  Small groups considered hypothetical future policy scenarios for 2040 (e.g., localisation of food systems, technological innovation, policy-led dietary shifts). Discussions explored sector-specific impacts, challenges, opportunities, and future policy needs.

7.1.15 Data Collection and Follow-Up

Participant contributions were captured via workshop artefacts (e.g., sticky notes, templates, whiteboards), discussion summaries, and anonymised feedback forms. An optional follow-up survey was distributed by email. Thematic analysis of all outputs informed policy insights and recommendations.

To support co-production and refine the emerging findings, we incorporated iteration loops for feedback. Formative workshop outputs were shared with participants and relevant stakeholders following the sessions, and feedback was actively invited to validate interpretations, identify omissions, and strengthen final conclusions.

7.1.16 Participating stakeholders

Workshop	Format	Stakeholders
1	In-person	Food Standards Scotland.
		Nourish Scotland
		Public Health Scotland
		Soil Association Scotland
		Nature Friendly Farming Network
		Rowett Institute, University of Aberdeen.
		University of Edinburgh
		Scottish Government (Tobacco, Gambling, Diet and Healthy Weight Unit).
		Scottish Government (Policy)
		CoDeL/Scottish Rural Action
		Glasgow Allotments Forum
3[12]	Online	Climate Change Committee

[12] NB: Workshop 2 was cancelled the day before it was due to take place because of Storm Eowyn.

Workshop	Format	Stakeholders
		Quality Meat Scotland
		Scottish Tenant Farmers' Association
		Scottish Government (Diet Policy)
		University of Edinburgh
		Four Paws UK
4	Online	Scottish Food Commission
		Scottish Crofting Federation
		Public Health Scotland
		Scottish Communities Climate Action Network
		Eating Better
		CLIMAVORE CIC
		Abundant Borders

Appendix G Extended Political analysis: Areas for further policy development and supporting evidence

Key theme	Area For Policy Development
1. Governance and Structural Issues in Food Policy Coordination	
Establish a coordinated and coherent food policy framework	Food policies operate in silos, with opportunities to strengthen cross-sectoral collaboration. Informal policy structures can limit transparency and efficiency.
Supporting evidence: Literature review	Effective policy implementation requires cross-departmental collaboration and a holistic approach, addressing both supply and demand aspects of the food system. Currently, policies in Scotland are fragmented, with limited integration across health, agriculture, and environmental sectors. (Tregear, Morgan, Spence et al., 2024).
Supporting evidence: Stakeholder meetings	Fragmented governance across Government divisions, leading to disjointed approaches to diet, climate, and health policies (Stakeholder Meeting 3).
Supporting evidence: Workshops	"Greater cross ministry coordination between environment, net zero, health and housing needed to all recognise the link between industrial livestock production and emissions." (Workshop 4).
Align food policy with national climate targets	Food system policies should better align with net-zero targets by integrating climate action and dietary change into Scotland's Good Food Nation objectives.
Supporting evidence: Literature review	Integrating national food strategies with climate change mitigation is crucial. Highlight Scotland's leadership in establishing sustainable food policies aligned with net-zero. (Boyle, Jenneson, Okeke-Ogbuafor et al., 2024).
Supporting evidence: Stakeholder meetings	The focus on reducing meat and dairy emissions creates political sensitivities, with sustainable diets seen as contentious. (Stakeholder Meeting 14).

Key theme	Area For Policy Development
Supporting evidence: Workshops	"Within Scottish Government: Make climate & diet part of a Good Food Nation objective. Include dietary change as one of Scotland's climate goals. Work for better join up across policy areas, work against narrowness. Make this a priority for multiple departments." (Workshop 4).
Promote long-term, systemic approaches in food policy	Short-term political cycles and reactive policymaking impact long-term food system transformation.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Short term thinking- panic politics! Prevents reliable engagement and constant churn Just in time production and unequal power balance between food producers, wholesalers, and retailers Framework contracts for catering are constantly tightened while tied into commercial" (Workshop 1).
Enhance strategic leadership to drive dietary change	A clearer strategic vision could support sustainable dietary change. Industry influence (e.g., food advertising) shapes food choices, and Government could play a stronger role.
Supporting evidence: Literature review	A lack of visible, strategic political leadership to unify and implement health, environment, and food equity changes was highlighted as a major deficit. (Food Farming & Countryside Commission, 2023).
Supporting evidence: Stakeholder meetings	Absence of formal leadership and cross-departmental coordination, leading to fragmented efforts (Stakeholder Meeting 14).
Supporting evidence: Workshops	"A lack of political will and leadership from politicians and the leaders of the wider food movement to take on the opportunities of dietary change, with an over-reliance on the free market to fix food." (Workshop 1).
Develop and implement a comprehensive national food strategy	A more holistic, integrated and strategic approach to food and diet across climate, health, and agriculture would strengthen policy coherence.

Key theme	Area For Policy Development
Supporting evidence: Literature review	Food system governance in the UK is multi-layered, involving numerous regulatory bodies and policies across sectors. This fragmentation complicates efforts to address system-wide issues like environmental sustainability and public health (Hasnain, Green, Williams et al., 2020).
Supporting evidence: Stakeholder meetings	Misalignment between climate, health, and food policies. Current policy frameworks lack coherence, creating conflicting objectives (Stakeholder Meeting 13).
Supporting evidence: Workshops	"There is a tendency to think about different aspects of food systems links to health, missing thinking about the totality of the links between food and health- through benefits of health from employment, improved air quality, reduced pollution, better nutrition, visibility and access to green spaces, encouragement of physical activity etc. understanding food system the complexities and feedback loops of a complex system (also consideration of impact of climate change effects locally and globally on food security)." (Workshop 1).
Improve alignment of food policy across governance levels	Ensuring national and local policies work in tandem would improve implementation and outcomes.
Supporting evidence: Literature review	National food policies tend to prioritise large-scale, industrial supply chains, often at the expense of supporting local and regional food systems. This emphasis can marginalise smaller producers, reduce community resilience, and limit opportunities for sustainable, place-based approaches to food production and distribution. Strengthening policy support for local food networks could enhance food security, shorten supply chains, and contribute to environmental and public health goals. (Witheridge & Morris, 2016).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Local & national level joining up of food policies." (Workshop 3).

Key theme	Area For Policy Development
Strengthen policy coherence between national and local food initiatives	National dietary targets could better account for local food sovereignty and self-sufficiency, ensuring global dietary goals align with Scotland's food systems.
Supporting evidence: Literature review	Insufficient consideration of how global dietary targets may intersect with local food sovereignty and autonomy. (EAT, n.d.).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Define clear and measurable targets under the Good Food Nation Act	Establishing measurable goals for emissions, biodiversity, and dietary shifts would provide greater long-term direction.
Supporting evidence: Literature review	No specific targets or indicators. The Act does not set clear, measurable targets for emissions reduction, biodiversity conservation, or dietary shifts. Leaves flexibility to future governments, which may slow progress. (Brennan, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
2. Just Transition and Resilient Food Systems	
Ensure a just transition in the food system	Stronger policy support is needed to help farmers, food workers, and consumers transition to sustainable practices while ensuring fairness and inclusivity.
Supporting evidence: Literature review	Weak link between food production and Just Transition principles. The document emphasises a Just Transition for farmers and crofters but does not sufficiently address how food system workers, small-scale producers, and consumers will be supported in adapting to more sustainable food systems. (Scottish Government, 2022b).
Supporting evidence: Stakeholder meetings	-

Key theme	Area For Policy Development
Supporting evidence: Workshops	"Just transition." (Workshop 1).
Align public procurement with sustainability and dietary targets	Align procurement policies with environmental and dietary goals across public institutions (e.g. schools, hospitals). Improve coordination between health boards and local authorities. Strengthen oversight and accountability to ensure sustainability outcomes.
Supporting evidence: Literature review	Public Sector Procurement Oversight. The document does not discuss whether public sector food procurement (e.g., schools, hospitals, government catering) will align with these dietary goals. A mandatory framework for institutional food policies (e.g., requiring plant-forward meals in public settings) is missing. (Scottish Government, 2013).
Supporting evidence: Stakeholder meetings	Public procurement policies have untapped potential to support local, sustainable food systems while stimulating the green economy. (Stakeholder Meeting 8).
Supporting evidence: Workshops	"There is a gap in current public procurement accessing enough sustainable products." (Workshop 1).
Strengthen resilience in food supply chains	Increased investment in infrastructure, including capital support and processing facilities, would improve food system resilience.
Supporting evidence: Literature review	No Specific Strategy for Food System Resilience. The Act does not address supply chain vulnerabilities (e.g., extreme weather events, trade disruptions). (Brennan, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Supply chains-capital support-processing." (Workshop 3).

Key theme	Area For Policy Development
Enhance policy support for local and regional food systems	Policies could better integrate local food production into supply chains, enhancing resilience to global disruptions. Small-scale initiatives play a key role but require stronger policy backing. Strengthening regional coordination between producers, supply chains, and consumers, especially in remote areas, could enhance resilience and sustainability.
Supporting evidence: Literature review	Barriers to Local Food Growth: Access to land for community growing remains an issue despite policies like the Community Empowerment (Scotland) Act 2015. Infrastructure gaps: Rural and island areas face transport and distribution challenges, making it harder to get food to markets. (Scottish Government, 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"There is a gap of a localised/regional joined up application of sustainable food systems encompassing primary food production, supply chain and consumer. Scottish islands and some other areas around Scotland's coast are very vulnerable to e.g. food access and affordability. Applying a bespoke sustainable food system would tick a lot of boxes and offer research opportunities and questions still to be asked." (Workshop 3).
Invest in infrastructure for sustainable and local meat processing	Expanding access to slaughter facilities, particularly in remote areas, would support local farmers and streamline processing.
Supporting evidence: Literature review	Processing capacity is limited: Lack of small abattoirs and local processing facilities hinders small farmers from scaling up. Scottish Government, 2024).
Supporting evidence: Stakeholder meetings	-

Key theme	Area For Policy Development
Supporting evidence: Workshops	"Need to support slaughterhouses due to lack of availability for farmers, especially in remote areas, and issues with accessing facilities, especially on the West Coast. Having slaughter hubs rather than individuals accessing/identifying farms (do paperwork before lorries enter premises." (Workshop 3).
Develop a food systems approach tailored to Scotland's context	Policies should reflect Scotland's unique rural and cultural contexts, including land-use trade-offs and food traditions.
Supporting evidence: Literature review	Advocates for transforming the UK food system using a systems-based approach to address interconnected challenges such as unhealthy diets, environmental degradation, and food system inefficiencies. However, it is UK-wide and lacks Scotland-specific insights, such as its distinct agricultural systems (e.g., crofting) or cultural preferences in food. Fails to account for Scotland's devolved responsibilities in areas like agriculture and environment, which require more tailored solutions. (Bhunnoo, & Poppy, 2020).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Address urban-rural inequities in food security and access	A more integrated approach is needed to address food security challenges in urban areas while supporting rural agricultural priorities.
Supporting evidence: Literature review	Urban-Rural Divide: Highlights Scotland's diversity in land use but does not fully address the challenges of urban food security in comparison to rural production priorities. (Gill, Fowler & Scott, 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Advance implementation of the 10-minute neighbourhood model	Improve planning and spatial access. Connecting communities with local producers and using technology to improve food accessibility could support stronger local food systems.

Key theme	Area For Policy Development
Supporting evidence: Literature review	Exploratory study on the feasibility of 10-minute neighbourhoods in Edinburgh, noting that food accessibility is a key factor in their successful implementation. The research suggests utilising technology (such as online food hubs and delivery platforms) to connect consumers with local producers. (van der Horst, Lane, Creasy et al., 2021).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"10 minute neighbourhood-bringing the local food system to see where it's needed and linking it to local producers. Creating greater closeness to system Opportunities for technologies to help with that." (Workshop 1).
Integrate urban agriculture into food policy and planning	Urban agriculture could play a greater role in production methods supporting plant-based diets and lowering carbon footprints.
Supporting evidence: Literature review	Analysis of the climate impact of food consumed in Scotland, identifying urban agriculture as a crucial strategy for lowering carbon emissions and promoting plant-based diets. The research suggests that increasing urban food production can offset some of Scotland's imported food emissions, which currently contribute significantly to the nation's carbon footprint. (Jaacks, Frank, Vonderschmidt et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Develop a national strategy for climate-compatible red meat supply	A clearer plan is needed to ensure red meat supply security amid potential future shortages.

Key theme	Area For Policy Development
Supporting evidence: Literature review	Impact of labour shortages on food availability and safety in the UK, with a focus on Scotland's red meat sector. The study finds that geographical challenges and post-Brexit labour shortages increase supply risks. The paper calls for contingency planning in Scotland's red meat processing sector to ensure long-term supply security. McAreavey, Choudhary, Obayi et al., (2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
3. Aligning Food Policy with Climate, Health, and Nutrition Goals	
Align production and consumption policies for a sustainable food system	Current policies emphasise food production over dietary behaviour, missing opportunities to address both sustainability and consumer choices.
Supporting evidence: Literature review	Food supply chain sustainability is prioritized over dietary sustainability in Scottish policy discussions. They advocate for more emphasis on consumer choices, food accessibility, and reducing food waste. (Leat, Revoredo-Giha, & Lamprinopoulou, 2011).
Supporting evidence: Stakeholder meetings	Production vs. diet change focus: Policy emphasis on production over dietary behaviour misses opportunities for integrated approaches. (Stakeholder Meeting 6).
Supporting evidence: Workshops	-
Strengthen national nutrition strategies to support dietary change	Policies lack structured plans for ensuring nutritional adequacy in plant-based diets, including fortification of alternatives to meat and dairy.
Supporting evidence: Literature review	The report points out that many plant-based alternatives lack fortification with essential nutrients like calcium, vitamin B12, and iodine, identifying a gap in nutritional standards for these substitutes. Comrie, Wilson, Nneli, et al., 2024).
Supporting evidence: Stakeholder meetings	Poor health outcomes and dietary patterns in Scotland may worsen if red meat reduction strategies do not account for suitable nutritional replacements. (Stakeholder Meeting 11).

Key theme	Area For Policy Development
Supporting evidence: Workshops	-
Establish clear and measurable targets for reducing meat consumption	No official population targets exist for reducing meat consumption (e.g., 20% by 2030), limiting policy integration with sustainability and health goals.
Supporting evidence: Literature review	Discussion of future food policy challenges in Scotland, emphasizing that the country still does not have official set targets for reducing red meat consumption. The study suggests that integrating dietary changes into net-zero policies could improve policy coherence and sustainability outcomes. Lambe, Weitz, Hilgert, et al., (2025).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Absence of government policy: Scottish Government doesn't currently aim to reduce meat by 20% by 2030. Government has cross-cutting national food policy and food plans, but this goal isn't embedded within these plans. A big missed opportunity - perhaps because diets are perceived as too personal". (Workshop 4).
Integrate methane reduction measures into food and agricultural policy	There are no specific methane reduction targets for livestock, creating gaps in investment and emission mitigation strategies. Policies could balance methane reduction with food security and rural livelihoods.
Supporting evidence: Literature review	Setting clear methane reduction targets Scotland currently lacks a specific methane reduction target for livestock, unlike New Zealand, which aims for a 10% reduction by 2030 and 24-47% by 2050. A formal methane target could drive investment and farmer participation. (Jenkins, Herold, de Mendonça et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-

Key theme	Area For Policy Development
Develop policies to reduce emissions across the entire food supply chain	Greater attention is needed on emissions from food transportation and storage, with investment in supply chain infrastructure.
Supporting evidence: Literature review	Highlights the need for investment in Scotland's supply chain infrastructure to reduce emissions from food transportation and storage. The study suggests that targeted investments in cold chain logistics and sustainable transport can significantly lower carbon footprints in the Scottish food system. Pultar & Ferrier, 2024).
Supporting evidence: Stakeholder meetings	The industry favours low-volume, high-value, resource-intensive convenience foods, and inefficient transportation, reducing sustainability. (Stakeholder Meeting 11).
Supporting evidence: Workshops	-
Bridge gaps between diet-related and public health policy frameworks	Policies could better integrate dietary guidance with efforts to reduce health inequalities and poverty.
Supporting evidence: Literature review	Poor diet as both a cause and consequence of poverty in Scotland, stressing the need for more proactive policy interventions to integrate nutritional guidance with poverty reduction strategies. Hunt, Pettinger & Wagstaff, 2023).
Supporting evidence: Stakeholder meetings	There remains a disconnect between health inequality and poverty-related dietary issues, highlighting the need for more nuanced and targeted policy interventions. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
Update dietary guidance to reflect both health and climate priorities	While CCC carbon budgets support the transition to more sustainable and healthier diets in Scotland, they often lack specific guidance on reducing consumption of high-emission foods such as red and processed meats.

Key theme	Area For Policy Development
Supporting evidence: Literature review	A scenario-based approach to emissions reduction targets in Scottish agriculture emphasises that dietary changes could significantly contribute to emissions reductions, but Scotland lacks specific food-related emissions policies targeting red and processed meats. Eory, Topp, Rees et al., 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Diet is about balance (rather than individual products being high/low) Climate impact." (Workshop 1).
Embed animal welfare considerations within public health and food policy	Animal welfare could be recognised within a sustainable welfare framework, linking it to zoonotic disease risks and food system sustainability.
Supporting evidence: Literature review	Examines Scotland's Good Food Nation Act, noting that animal welfare policies remain part of a fragmented approach to food system policy. The study suggests that food policy should explicitly include welfare considerations. (Brennan, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Animal welfare currently considered an ethical issue but not a priority issue vs public health. Lack of connectedness between One Health / One Welfare approach to food and farming systems and the associated zoonotic risk and prevalent emergence from intensive systems e.g. swine flu, bird flu." (Workshop 4).
4. Economic and Political Barriers to Food System Change	
Develop targeted policies and interventions for high meat consumers	Current policies do not sufficiently target high meat consumers or sub-groups, limiting effectiveness in driving dietary change. There is no clear government policy to encourage or incentivise reduced red and processed meat consumption, and existing strategies lack structured approaches to ensuring nutrient adequacy in plant-based alternatives.

Key theme	Area For Policy Development
Supporting evidence: Literature review	Study indicates that if high consumers of red and processed meat (>70g/day) reduced their intake to the Scottish Dietary Goal (70g/day), a 16% reduction in total meat consumption would be achieved. This targeted reduction approach could help lower colorectal cancer risks, BMI, cardiovascular disease, and Type 2 diabetes cases. Policy Gap: There is no clear government policy specifically encouraging or incentivizing reductions among high meat consumers, such as: Public health campaigns targeting high meat eaters. Incentives for shifting to plant-based or lower-meat diets. Differentiated policies for groups at higher health risk from high meat consumption. (Food Standards Scotland (FSS), 2024).
Supporting evidence: Stakeholder meetings	There are tensions surrounding blanket meat reduction policies, with a focus on targeting high consumers of meat to achieve incremental emissions reductions being seen as more effective. (Stakeholder Meeting 9).
Supporting evidence: Workshops	"Lack of tailored approach targeting red meat over-consumers in Scotland." (Workshop 1).
Shape future dietary patterns through integrated policy and public engagement	Without stronger Government intervention, major food manufacturers and retailers may dominate with unhealthy and unsustainable options. Policies do not directly address the reduction of ultra-processed foods linked to poor health and environmental harm.
Supporting evidence: Literature review	Climate-focused food-based dietary guidelines in other countries advocate for reduced consumption of UPFs due to their high environmental impact. The Scottish dietary guidelines do not yet emphasise avoiding these foods to the same degree, which could be an area for development (Tregear, Morgan, Spence et al., 2024).
Supporting evidence: Stakeholder meetings	Absence of formal leadership and cross-departmental coordination, leading to fragmented efforts. (Stakeholder Meeting 3).

Key theme	Area For Policy Development
Supporting evidence: Workshops	"Bear in mind that diets are changing - the status quo will drive a worsening of diets. If government are absent, then big food industry players will fill the vacuum with unhealthy / unsustainable food." (Workshop 4).
Support the development of the plant-based food sector	Business opportunities for plant-based products could be strengthened by ensuring consistency in agricultural and horticultural policies.
Supporting evidence: Literature review	need to review possible solutions that will replace and improve on the Common Agricultural Policy, in terms of environmental goods for both the industry and wider society. They recommend stabilising policy incentives to ensure better support for sustainable food production. (Lampkin, Shrestha, Sellars et al., 2021).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Support for the market that focuses on plant-based food - to drive business opportunities. Government consistency on the Agricultural and Horticultural Development board (industry advocacy?) - DEFRA co-ordinated." (Workshop 3).
Build the economic case for food system transformation	The financial unsustainability of the current food system remains under-examined as a driver for policy change, with climate and health arguments alone proving insufficient.
Supporting evidence: Literature review	Highlights ways Scotland can reform its food economy to become more self-sufficient and resilient. It offers insights into where investments and support may be needed to enhance domestic pro- duction and promote a resilient and sustainable food system Their study suggests that policy shifts should prioritize local food production and reduce reliance on imports. (Rathnayaka, Revoredo-Giha & de Roos, 2024).
Supporting evidence: Stakeholder meetings	-

Key theme	Area For Policy Development
Supporting evidence: Workshops	"Health economics view on the cost of our current dysfunction! Can we convince people by showing them that it's not financially feasible to continue as we are (whether at local authority or national level) where just climate or health outcomes have perhaps not convinced." (Workshop 4).
Balance regulation with industry compliance and capacity to adapt	Reliance on voluntary industry commitments rather than enforceable regulations limits the effectiveness of climate and food system policies.
Supporting evidence: Literature review	Inadequate Governance: Few policies include clear accountability structures or measurable goals for implementation and evaluation. Many approaches rely on voluntary industry compliance, reflecting neoliberal frameworks that prioritise individual responsibility over systemic change. (Lee, Cullerton & Herron, 2020).
Supporting evidence: Stakeholder meetings	Strong lobbying from agricultural and rural stakeholders affects policy decisions on livestock emissions. (Stakeholder Meeting 4).
Supporting evidence: Workshops	-
Manage post-Brexit trade policy to protect food standards and sustainability	Policy challenges arise from post-Brexit trade disruptions and economic uncertainties, requiring stronger food system resilience.
Supporting evidence: Literature review	Discusses how Brexit has disrupted food governance in Scotland, leading to policy uncertainty in sustainable agriculture and food security. They highlight that Scotland needs a more independent policy framework to maintain sustainability goals post-Brexit. (Attorp & Hubbard, 2022).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Balancing trade tensions, concerns as a fallout from e.g., Brexit." (Workshop 1).
5. The Role of Technology, Trade, and Environmental Considerations in Food Policy	

Key theme	Area For Policy Development
Strengthen regulation and oversight of intensive agricultural practices	A clearer policy framework is needed to address the environmental and animal welfare impacts of intensive farming.
Supporting evidence: Literature review	Argues that Scotland's reliance on intensive farming practices negatively impacts biodiversity, soil health, and emissions. The report recommends strengthening agricultural policies to incorporate nature-based solutions and reduce chemical dependency in intensive farming. (Brodie, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Scottish Government policies must be more joined up with a clear goal to reduce the amount of meat and dairy produced in industrial farming systems." (Workshop 1).
Reevaluate the role of food miles in sustainability metrics	The contribution of food miles to total emissions is often overstated, highlighting the need for a more holistic sustainability discussion.
Supporting evidence: Literature review	Analysis of the impact of food miles and carbon footprint, showing that overemphasizing local production can exaggerate its sustainability benefits while ignoring production efficiency and food system integration. (Vittersø, Torjusen, Laitala et al., 2019).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Food miles as an unhelpful concept due to its disproportionately small impact (equal to or less than 5% of total emissions)." (Workshop 1).
Assess the environmental and social sustainability of emerging food technologies	Emerging production methods (e.g., vertical farming) require evaluation of energy use, labour, and environmental impact to ensure long-term sustainability.
Supporting evidence: Literature review	Analyses energy use, labour demand, and environmental sustainability in Scottish vertical farming. They highlight high energy costs due to artificial lighting and climate control but note potential labour efficiency gains. (Briggs, Tallontire & Dougill, 2019).

Key theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Vertical farms/greenhouse tomatoes- what are environmental impacts of production? Depends on production methods-and extent to which energy and labour is required." (Workshop 1).
Leverage product reformulation to support health and sustainability	Reformulating processed food products over time can reduce environmental impacts and improve health.
Supporting evidence: Literature review	Analyses the potential of reducing processed meat in Scottish food systems through reformulation strategies. They highlight environmental benefits, including lower greenhouse gas emissions, and health co-benefits. (Spiro, Hill, & Stanner, 2024).
Supporting evidence: Stakeholder meetings	Incremental reformulation of processed food products can contribute to sustainability goals by reducing resource use and environmental impacts over time. (Stakeholder Meeting 14).
Supporting evidence: Workshops	"Encourage reformulation of processed foods and move consumers towards wholefoods." (Workshop 1).
Fully integrate environmental sustainability into economic frameworks for food policy	Economic and social considerations often take precedence over environmental sustainability in food, agriculture, and public health strategies. Greater policy focus is needed on agroecology to support low-input farming models.
Supporting evidence: Literature review	Lack of Integration into Agricultural Policy: Scotland's agricultural subsidies still favour high-input conventional farming, with no clear financial support for agroecology. No explicit policy targets for agroecology within Scotland's Land Use Strategy or Climate Action Plan. (Lozada & Karley, 2022).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
6. Evidence, Modelling, and Policy Implementation Issues	

Key theme	Area For Policy Development
Enhance coherence across food-related policies and strategies	Stronger integration of research evidence and interlinked policy areas is needed to improve decision-making and coordination across food systems.
Supporting evidence: Literature review	Need for coordinated, holistic policy approaches: The report notes that effective policy implementation requires cross-departmental collaboration and a holistic approach, addressing both supply and demand aspects of the food system. Currently, policies in Scotland are fragmented, with limited integration across health, agriculture, and environmental sectors. (Tregear, Morgan, Spence et al., 2024).
Supporting evidence: Stakeholder meetings	Limited use of evidence in policymaking (Stakeholder Meeting 8).
Supporting evidence: Workshops	"Bureaucracy-Business/Retail/Economics tape etc causing delays from evidence to policy." (Workshop 3).
Improve modelling of food systems and emissions pathways	Existing models do not fully capture the link between livestock production, dietary change, and emissions, leading to flawed policy assumptions. More precise emissions accounting is needed, recognising farming's role in carbon sequestration.
Supporting evidence: Literature review	Argues that current emissions models oversimplify the role of livestock production by not accounting for regional variations, land-use differences, and dietary shifts. They claim policy assumptions based on these models often lead to misleading conclusions about sustainable diets and livestock impact. (Houzer & Scoones, 2021).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Always use net not gross emissions when modelling the environmental impact of meat. Farming is one of the few industries that sequesters carbon." (Workshop 1).
Strengthen the role of evidence in food policy development	Policymakers sometimes prioritise political feasibility over scientific recommendations, limiting evidence-based dietary policy development.
Supporting evidence: Literature review	-

Key theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	Policymakers sometimes lack awareness of dietary evidence or prioritise political feasibility over scientific recommendations. (Stakeholder Meeting 10).
Supporting evidence: Workshops	"Knowledge-evidence-people." (Workshop 1).
Identify and address barriers to effective policy implementation	Regulatory and economic constraints slow the translation of research into policy action, affecting food business and retail sector participation.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Bureaucracy-Business/Retail/Economics tape etc causing delays from evidence to policy." (Workshop 1).
Boost research and innovation support for sustainable food systems	Greater investment in sustainable food technology research and industry collaboration is needed to support emissions reduction, dietary shifts, and agricultural innovation.
Supporting evidence: Literature review	Scotland must enhance investment in food research and technology to support the shift toward sustainable diets. The study emphasises integrating food technology research with industry-led sustainability initiatives. Bellamy, Furness, Mills et al., 2023).
Supporting evidence: Stakeholder meetings	There is limited emphasis on emerging technologies such as precision agriculture, alternative proteins, and sustainable farming practices, which could significantly reduce environmental impacts. (Stakeholder Meeting 2).
Supporting evidence: Workshops	"Industry Research- small scale workshops and population interventions." (Workshop 4).
Shift policy focus from food supply to average consumption patterns	Policies based on average meat consumption may overlook disparities in consumption patterns across different population groups.

Key theme	Area For Policy Development
Supporting evidence: Literature review	Examines variations in meat consumption patterns across different socioeconomic groups in Scotland. The study finds that lower-income groups have limited access to plant-based alternatives, which affects dietary shifts. Policies addressing sustainability should consider economic disparities in meat consumption trends. (McBey, McCormick, & Hussain, 2024).
Supporting evidence: Stakeholder meetings	Current policies tend to focus on average consumption metrics, which may not adequately address disparities in meat consumption patterns. (Stakeholder Meeting 2).
Supporting evidence: Workshops	-
Improve data collection and metrics for agroecological practices	The lack of monitoring on agricultural practices limits the development of evidence-based policies supporting agroecological change.
Supporting evidence: Literature review	Highlights gaps in monitoring agroecological practices in Scotland, particularly in assessing improving rural livelihoods through social and economic outcomes (as well as environmental outcomes). The study calls for better data collection and policy support to enhance agroecological implementation. (Lozada & Karley, 2022).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Lack of data. Need to look at what is the actual impact of farming on climate in Scotland - what are the negatives we currently have and then learning from best practise to bring others on that journey. using real Scottish data to drive change. it should go wider than GHGs. it's about biodiversity, habitat and plant protection and ecosystem, water use and flood management, soil quality, animal welfare etc. baselining standards - over 170 farms there are some that are already at net zero, or close." (Workshop 3).
Address knowledge gaps in red meat production and consumption	Policy must better account for the diversity in red meat production systems and improve public understanding of meat reduction strategies.

Key theme	Area For Policy Development
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Taking a nuanced approach to what has been called "red meat production" here: a farm with 1000 cattle fed on supplements and held indoors is not the same as a croft, a micro diary, or an integrated agroforestry system with 20 cows. Whilst some forms of red meat production will perfectly align with climate and nature restoration targets and score high on all these elements others will not." (Workshop 3).
Understand and overcome barriers to reducing meat consumption	Research is needed to identify the challenges consumers face when shifting away from meat consumption.
Supporting evidence: Literature review	Barriers included food neophobia, identity incongruence, habitual behaviour and practical difficulties. Strategies should focus on meat reduction, not exclusion, as completely removing meat from the diet was unpopular. As barriers and drivers differed with stage, we call for specialized campaigns. Consumers not intending to reduce meat intake could potentially be persuaded by climate awareness campaigns, and by promotion of small adaptations to familiar meals. Consumers intending to reduce meat intake may be prompted to do so by health awareness campaigns, changes to the choice architecture and increased availability of meatless meals. (Hielkema & Lund, 2021).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Research on why meat consumption changes are so hard for consumers." (Workshop 3).
Strengthen understanding of local food yields and market potential	Addressing the lack of data on community food production, informal markets, and small-scale retail contributions is necessary for better policy decisions.
Supporting evidence: Literature review	-

Key theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"What do we know about yield from community production versus supermarkets? Western Isles (Eriskay; Berneray) has 3 Co-ops and 5 independents- egg sales likely down because of local informal markets." (Workshop 1).
Integrate food culture and heritage into policy design and evaluation	More effective ways to measure and incorporate food culture into policy are needed, as current frameworks lack clear metrics.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Food culture not a "SMART" target. These concepts aren't measurable and risk being overlooked by more measurable items." (Workshop 1).
Embed climate and sustainability audits into food policy frameworks	A stronger link between climate impact assessments and food taxation policies could improve sustainability outcomes.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Climate audit based on production; food tax-importing food from other countries." (Workshop 1).
Scale up support for agricultural innovation at farm and system levels	A clearer strategy for financing and scaling precision and regenerative farming would accelerate climate-smart practices.

Key theme	Area For Policy Development
Supporting evidence: Literature review	No clear mechanism for scaling up climate-smart technologies. The text highlights the importance of innovation (e.g., precision farming, regenerative agriculture) but lacks detail on: How new technologies will be funded and adopted at scale. Which technologies will be prioritized for investment. How knowledge transfer will be ensured across different farm sizes and regions. Policy Gap: The government lacks a clear investment and implementation strategy for scaling up climate-smart agriculture technologies. Policy Need: Establish a national climate-smart agriculture fund and technology adoption grants for farmers. (Scottish Government, n.d.a).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
7. Policy resistance and political sensitivities	
Develop strategies to manage resistance to livestock reduction policies	Ministers and industry stakeholders resist policies targeting livestock reduction due to economic concerns and public sensitivities. Addressing political tensions and developing strategies to gain support for dietary shifts remains a challenge.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Ministers and stakeholders resist policies due to economic concerns and public sensitivity. (Stakeholder Meeting 4).
Supporting evidence: Workshops	"Red meat industry is one of the most profitable industries in Scotland-tensions, how do we sell this to Government to implement?" (Workshop 1).
Political reluctance to introduce directive diet policy regulations	Concerns about public acceptability have made policymakers cautious about introducing more directive dietary regulations.
Supporting evidence: Literature review	-

Key theme	**Area For Policy Development**
Supporting evidence: Stakeholder meetings	Political reluctance to enforce "Nanny-State" (*sic*) measures. Concerns over public backlash make policymakers hesitant to impose strict dietary regulations (Stakeholder Meeting 1).
Supporting evidence: Workshops	-
Strengthen policy framing to improve public and stakeholder acceptance	The way policies are framed affects public and political acceptance, with resistance often tied to perceived losses.
Supporting evidence: Literature review	Discusses meat reduction policy framing more generally. Fewer than half this UK-representative sample supported meat reduction policies. Framing measures as benefitting health vs. the environment did not change support. Policies targeting meat were less supported than policies targeting unhealthy food. Many respondents had no decided views about the acceptability of policies on meat. (Pechey, Reynolds, Cook et al., 2022).
Supporting evidence: Stakeholder meetings	Gains vs. losses framing influences policy acceptance: How policies are framed influences their acceptance, with resistance often linked to perceived losses. (Stakeholder Meeting 1).
Supporting evidence: Workshops	-
Ensure fairness and equity in dietary policy design	Universal approaches may not account for cultural and socioeconomic diversity. Gradual adjustments to the food environment may ease resistance.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	There are tensions surrounding blanket meat reduction policies, with a focus on targeting high consumers of meat to achieve incremental emissions reductions being seen as more effective. (Stakeholder Meeting 13).
Supporting evidence: Workshops	"Not a blanket approach-gradually edit the food environment." (Workshop 1).

Key theme	Area For Policy Development
Create integrated policies linking agriculture, public health, and emissions reduction	Farmers may view their primary role as focused on food production, creating resistance to dietary and environmental policies. Stronger integration between agriculture, health, and climate policy is needed.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Farmers often do not consider public health issues within their scope, influencing resistance to health-driven dietary policies. (Stakeholder Meeting 9).
Supporting evidence: Workshops	"Linking farmers and public health bodies e.g., local authorities." (Workshop 4).
Address ideological resistance to reducing red and processed meat consumption	Deep-rooted cultural norms and traditions contribute to differing perspectives on dietary change, particularly in rural communities.
Supporting evidence: Literature review	Cultural reluctance to consume plant-based foods and reduce meat consumption will slow progress and likely negatively feedback to changes in the food environment. There are positive findings as well, the increased declared willingness to change and the recent uptick in media coverage suggest that the transition to sustainable diets could accelerate, but whether it will happen in time will be a matter of enhanced interaction between policymakers, the media, and public. (Cleland, McBey, Darlene et al., 2025).
Supporting evidence: Stakeholder meetings	Strong cultural attachments to traditional diets, particularly in rural communities, create barriers to dietary change. (Stakeholder Meeting 9).
Supporting evidence: Workshops	-
Overcome cultural and historical barriers to agricultural transition	Farming is deeply embedded in Scottish identity, with many farmers viewing themselves as stewards of the land. Historical events such as the Highland Clearances continue to shape land use patterns and influence perceptions of food and farming policy today

Key theme	Area For Policy Development
Supporting evidence: Literature review	Explores how animal agriculture (salmon farming) is deeply embedded in Scottish cultural identity, emphasising its historical, economic, and symbolic significance. (Rubio Ramon, 2024).
Supporting evidence: Stakeholder meetings	Farming is deeply embedded in cultural identity, often viewed as a birthright. (Stakeholder Meeting 11).
Supporting evidence: Workshops	-
Resolve conflicts between climate policy and current farming priorities	Farmers primarily focus on food production and traditional practices, often leading to conflicts with environmental policies aimed at sustainability and emissions reduction.
Supporting evidence: Literature review	Farmer attitudes towards sustainable farming actions in rural Wales: Key barriers included time and cost to implement sustainable farming actions, availability of long-term financial valuation for ecosystem services, occurrence of extreme weather events, and presence of tenanted land. (Follett, Davis, Wilson et al., 2024).
Supporting evidence: Stakeholder meetings	There is an ongoing tension between environmental policies focused on sustainability and emissions reduction, and farmers' primary focus on food production and maintaining traditional agricultural practices. (Stakeholder Meeting 11).
Supporting evidence: Workshops	-
Address the practical and political challenges of fiscal measures (e.g., taxes, payments)	Discussions on taxation policies, such as a red meat tax, remain controversial due to concerns over fairness, public acceptability, and potential economic impacts on vulnerable populations.
Supporting evidence: Literature review	-

Key theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	Discussions around implementing fiscal measures, such as a red meat tax, have emerged as potential levers for influencing dietary change. While some fiscal levers, such as taxes on red meat, are being debated, their design requires careful attention to fairness, public acceptability, and economic implications. (Stakeholder Meeting 5).
Supporting evidence: Workshops	"Unpopularity of taxes on any foods." (Workshop 1).
Embrace and integrate diverse stakeholder perspectives in policy development	Scottish Government and policymakers should engage constructively with disagreement and differing evidence bases among stakeholders.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Conveners (e.g. Scottish Government) need to get more comfortable with disagreement, different evidence bases among stakeholders." (Workshop 4).
8: Public involvement in sustainable food policy	
Strengthen citizen engagement in food policy development	Public consultation mechanisms, including in the Good Food Nation (Scotland) Act, provide limited opportunities for meaningful citizen participation beyond advisory input, particularly among younger people. Existing public engagement structures in food and farming policy are weak, reducing community influence in decision-making.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Limited youth inclusion in policy discussions: Limited institutional mechanisms exist to incorporate youth perspectives into food and climate policy discussions, despite high climate awareness among younger populations. (Stakeholder Meeting 4).
Supporting evidence: Workshops	-

Key theme	**Area For Policy Development**
Enhance local empowerment and participation in food system governance	Addressing the disconnect between policy and practice by streamlining local empowerment mechanisms, improving access to timely funding, and learning from crofting practices to support sustainable food systems.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Disconnect between areas and policy - big issue. The mechanism to provide the leavers for local empowerment is tedious and complicated. Must be simplified and shortened in terms of time. Need access to funding straight away when opportunities arise. This would avoid silos and increase connectivity e.g. land reform policy. Need community to take on land and community need funding to do so. There is something about learning from crofting practices in the context of a sustainable food system. Some challenges are related to the free market and the crofting regulation, the right to buy and the lack of regulation." (Workshop 4).
9. Scotland in the global policy landscape	
Incorporate global best practices into Scottish food policy	Further examining successful international policies could offer valuable insights for Scotland's approach to meat reduction and sustainable diets.
Supporting evidence: Literature review	Analysis of successful policies aimed at reducing meat consumption in Denmark, Sweden, Germany, the Netherlands, and the UK. Key findings: Meat taxes and subsidy removals were effective in reducing meat consumption without major public resistance. Public acceptability increased when revenues from meat taxes were reinvested into sustainable food systems. Combining fiscal measures with consumer awareness campaigns led to more effective dietary shifts. (Kmetkova, Zverinova, Scasny et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-

Appendix H Extended Economic analysis: Areas for further policy development and supporting evidence

Key Theme	Area For Policy Development
1: Financial Incentives and Risk Mitigation for Sustainable Food Production	
Strengthen financial incentives for low-carbon food production	Policies lack regulatory and financial mechanisms to support low-carbon food production, scale up innovative technologies, and integrate climate adaptation strategies. Current financial support favours emissions-intensive farming, and financial relief programs for extreme weather risks are absent.
Supporting evidence: Literature review	No explicit agroecology support in agricultural payments The Scottish farm payment system does not prioritise agroecological transitions. Unlike the EU's Farm-to-Fork Strategy, Scotland lacks clear pesticide reduction, soil health improvement, or biodiversity restoration targets linked to financial incentives. (Lozada, & Karley, 2022).
Supporting evidence: Stakeholder meetings	
Supporting evidence: Workshops	"Not regenerative food production happening. Take Edinburgh - there is Lauriston community farm - a 100acre site. It would take 200 of these farms to produce enough food for population of Edinburgh…Identify key sites for more food production and increase awareness of the risks to our food sector. Increase resources put towards the issue." (Workshop 1).
Compensate farmers for delivering ecosystem services	Financial incentives for biodiversity and climate protection remain underdeveloped, limiting green investment and market development.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Examines how financial incentives for biodiversity and climate protection in Scotland remain inadequate, limiting farmer participation in sustainability initiatives. Financial incentives under the CAP have been insufficient to encourage widespread adoption of biodiversity-supporting measures. Farmers prioritize economic viability over environmental incentives, leading to low engagement in voluntary sustainability schemes. Scotland lags behind other EU countries, such as Austria and the Netherlands, in providing effective support and financial rewards for climate-friendly farming. (Brown, Kovacs, Zinngrebe et al, 2019).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Need to pay producers and farmers for the non-food products they produce - no financial incentive to help protect biodiversity and climate. does seem to be demand for this, biodiversity net gain, or green investment the financial model doesn't work yet for woodland carbon code is not accessible for commercial projects anymore there was a boom for carbon measure bio net gain, but no longer, markets have not developed yet certainly in Scotland." (Workshop 3).
Scale up the use of alternative proteins in animal feed	Microbial proteins, insect- and hemp-based animal feeds lack commercial scaling support, restricting their ability to replace imported soy and improve sustainability.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Limited support for scaling alternative protein animal feeds. Microbial proteins and insect-based feeds remain niche due to insufficient commercial scaling to reduce reliance on imported soy and enhance sustainable feed alternatives. (Scottish Government, 2023). Many countries across Europe and Asia have updated their legal frameworks to capitalise on the significant benefits that industrial hemp offers. In contrast, development of the hemp sector in Scotland has been slow, largely due to restrictive regulations. Industrial hemp can sequester more carbon dioxide than many conventional crops, enhance soil biodiversity, remove toxins through phytoremediation, and act as a natural insecticide and pesticide. It is also a valuable source of protein, dietary fibre, essential micronutrients, and bioactive phytochemicals. (Dogbe, Revoredo-Giha & Russell, 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Support farmers in transitioning to agroecological and climate-resilient practices	Farmers face financial and technical challenges in transitioning to sustainable agricultural systems. High upfront costs prevent the adoption of key technologies such as biochar application and precision livestock farming tools.
Supporting evidence: Literature review	Slow adoption of low-emission farming practices: Farmers face high upfront costs for adopting new technologies, such as animal sensors and biochar application. Targeted financial incentives or support could improve uptake. (Scottish Government, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Promote economic and agricultural equity across the food system	Addressing the regressive nature of food taxes by redirecting financial resources toward more sustainable farming practices.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Implementing both tax policies and using the resulting revenue to subsidise consumers—particularly low-income households—can create a more equitable and less regressive public policy approach. By redistributing income through targeted payments or support schemes, this strategy helps mitigate the financial burden on vulnerable groups while still incentivising healthier and more sustainable food choices. (Nneli, Dogbe & Revoredo-Giha, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Taxes are regressive-redirect subsidies to more sustainable farming." (Workshop 1).
Address perceptions surrounding the economic viability of sustainable farming choices	Enduring perception that beef farming is more profitable than vegetable crop production, influencing farmer choices and limiting opportunities for community wealth-building.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"For farmers: cows are more profitable than cabbage, so beef farming might be better for (e.g.) community wealth building." (Workshop 4).
Reform agricultural financial support to align with sustainability goals	Current financial support continues to prioritise high-emission livestock farming, without clear incentives for climate-friendly production or crop diversification.
Supporting evidence: Literature review	Scotland's agricultural subsidies continue to favour high-emission livestock farming, with no clear mechanisms in the Good Food Nation Act to incentivise climate-friendly farming, diversify toward low-carbon crops, or enhance carbon footprint labelling for consumers. (Brennan, 2023).
Supporting evidence: Stakeholder meetings	-

Key Theme	Area For Policy Development
Supporting evidence: Workshops	-
Assess and recognise the economic value of grazing land	Despite Scotland's extensive grazing land, concerns remain about the economic efficiency of meat production relative to its high cost.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Economic value of grazing land: Despite abundant grazing land in Scotland and the UK, the relatively high cost of meat raises concerns about economic efficiency. (Stakeholder Meeting 8).
Supporting evidence: Workshops	-
Manage the rural economic impacts of reducing livestock numbers	Reducing livestock farming without strategic policy support could threaten the financial stability of meat producers and contribute to rural depopulation.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Impact of livestock reduction on rural communities: Livestock reduction policies may exacerbate rural depopulation due to economic reliance on agriculture. (Stakeholder Meeting 6).
Supporting evidence: Workshops	-
Address price dynamics in meat and dairy markets	Higher red meat prices can sometimes drive increased production, complicating efforts to lower consumption.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Price dynamics and production response: Increases in red meat prices can lead to higher production levels, complicating efforts to reduce consumption. (Stakeholder Meeting 14).
Supporting evidence: Workshops	-

Key Theme	Area For Policy Development
Improve the affordability and accessibility of meat and dairy alternatives	High prices for plant-based alternatives, driven by supermarket pricing and financial support structures, limit consumer accessibility.
Supporting evidence: Literature review	Price is a major factor preventing Scottish consumers from switching to plant-based meat. Subsidising plant-based alternatives or taxing meat products were ranked as potential solutions. (McBey, Sánchez, McCormick et al., 2024).
Supporting evidence: Stakeholder meetings	Higher markup on plant-based food in retail: Plant-based foods often carry a premium price, limiting affordability for many consumers. (Stakeholder Meeting 2).
Supporting evidence: Workshops	"We assess that there is currently a price-premium on especially convenience alternatives to meat and dairy. This has many reasons, but people are clear that it will need to be addressed." (Workshop 3).
2. Trade and Supply Chain Misalignment with Climate Goals	
Align trade and supply chains with climate goals	Scotland's food trade policies do not fully integrate net-zero ambitions, increasing the risk of offshoring environmental impacts. Expanding sustainable supply chains requires investment in skills, infrastructure, and collaborative mechanisms.
Supporting evidence: Literature review	Export Dependencies: Highlights risks of offshoring emissions by reducing local production but offers limited strategies for linking domestic production to dietary transitions. (Thomson, Moxey & Hall, 2021).
Supporting evidence: Stakeholder meetings	Food imports and emissions: Import reliance complicates carbon accounting and weakens domestic economic resilience. (Stakeholder Meeting 2).
Supporting evidence: Workshops	"Offsetting/Offshoring of emissions." (Workshop 1).
Address procurement barriers for local and small-scale producers	Large multinational suppliers dominate public contracts, limiting opportunities for local and sustainable food producers.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Current public procurement policies favour large multinational suppliers, making it difficult for local producers to compete for contracts. This limits market access for regional food systems and reduces opportunities to support sustainable, locally sourced food. (Scottish Government, 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Strengthen livestock supply chain infrastructure	Transport, distribution, and processing capacity shortages, including a lack of small abattoirs, create challenges for small-scale farmers.
Supporting evidence: Literature review	Rural and island regions face transport and distribution challenges, making it less efficient to get food to markets. Processing capacity is limited: Lack of small abattoirs and local processing facilities hinders small farmers from scaling up. (Scottish Government, 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Encourage consumer support for domestic agriculture	Strengthening links between primary producers and public-sector buyers can improve market access and resilience.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Links between primary producers and public sector…Opportunities for local producers to supply public sector." (Workshop 1).

Key Theme	Area For Policy Development
Enhance school meals by funding local and sustainable procurement	Initiatives like Food for Life have the potential to improve the quality and sustainability of school food. However, uptake is often limited by financial constraints at the local authority level, where budgets are already stretched and competing priorities make it difficult to invest in more sustainable food procurement.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Using school dinners for quality Much better now in terms of options. E.g., food for life in East Ayrshire- but financial pressures has been hammered. Transferring circa £10 million from agriculture budget to school food budget to support local procurement policies." (Workshop 1).
Balance business influence in food policy decisions	Food policy decision-making often prioritises business interests over sustainability and inclusivity. The limited integration of industry sustainability commitments weakens efforts to reduce food system emissions.
Supporting evidence: Literature review	Decision-making processes privilege the business sector, sidelining civil society concerns and limiting democratic participation in food policy development (Food Farming & Countryside Commission (FFCC), 2023).
Supporting evidence: Stakeholder meetings	Challenges in engaging food retailers: Difficulty in engaging with retailers and industry stakeholders hinders sustainable food practices. (Stakeholder Meeting 8).
Supporting evidence: Workshops	"The role of the food industry: their involvement in research, funding of research… Industrial lobbying is strong." (Workshop 4).
Expand market access for agroecological and small-scale producers	Small-scale agroecological producers face challenges accessing mainstream markets dominated by large retailers.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Limited financial incentives: Most environmental incentive schemes do not explicitly support agroecological transitions. Many agroecological farmers self-fund their practices, creating financial vulnerability. (Lozada & Karley, 2022).
Supporting evidence: Stakeholder meetings	Linking producers and consumers: Policies and markets often fail to effectively connect producers with consumers, limiting market efficiency. (Stakeholder Meeting 3).
Supporting evidence: Workshops	-
Minimise emissions from imported food products	Policies targeting dietary change may drive increased food imports, undermining local sustainability. In general, meat from countries with high deforestation or intensive farming may have a higher footprint than Scottish-produced meat.
Supporting evidence: Literature review	This case study applied a carbon displacement framework to hypothetical carbon policies affecting UK beef production. It found that financial pressure to cut emissions could force some UK producers out of business, potentially leading to increased beef imports from countries with higher emissions, thereby raising global emissions. While modest emission reductions are possible through cost-effective practices, deeper cuts would likely require greater financial and technical support. The findings suggest further analysis of UK beef production is needed. (Department for Food, Rural and Environmental Affairs (Defra), 2024).
Supporting evidence: Stakeholder meetings	Consumption-focused policies risk increasing imports rather than reducing global emissions. Policies targeting consumption may inadvertently increase imports, undermining local sustainability. (Stakeholder Meeting 2).
Supporting evidence: Workshops	-
Balance demand-side and supply-side strategies in food policy	Over-reliance on demand-side measures without sufficient supply-side interventions limits systemic change in sustainable food systems.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Overemphasis on demand-side strategies: Insufficient focus on supply-side measures weakens the resilience of sustainable food systems. (Stakeholder Meeting 11).
Supporting evidence: Workshops	-
Balance domestic food standards with pressures from import competition	High food standards increase production costs, but low-cost imports undermine sustainability efforts. Trade strategy should prevent lower-welfare imports from undercutting UK farmers.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Cost of produce will increase with greater standards and requirements, and then we see imports coming in that are favoured for being cheap, not just meat but cereals too. when supply chains get too long, its harder to see where its coming from… e.g. horse meat scandal need shorter supply chain and more locally produced food." (Workshop 3).
Address the impacts of resource-intensive food production	The food industry prioritises high-value convenience foods with inefficient transportation systems, reducing sustainability.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Resource-intensive convenience food production: The industry favours low-volume, high-value, resource-intensive convenience foods, and inefficient transportation, reducing sustainability. (Stakeholder Meeting 11).
Supporting evidence: Workshops	-
Enhance food system resilience to global and domestic shocks	Structural vulnerabilities in food imports, land control, and export distribution impact local food security and community wealth-building.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Chatham House report - Choke points identified in red/amber/green rating. Current barrier is imported food. It seems we have enough land to address our vulnerability, but the control of the land is an issue. This includes food for animals and fertilizers and exported goods not going to local areas which might not contribute to community wealth building." (Workshop 4).
Manage carbon leakage risks in livestock trade and production	Carbon taxes on livestock risk increasing imports and causing carbon leakage without complementary trade adjustments.
Supporting evidence: Literature review	There is a significant risk of carbon leakage resulting from import substitution, where domestic efforts to reduce emissions in meat production may inadvertently lead to increased imports from countries with more carbon-intensive farming practices. Currently, there is no clear mitigation strategy in place to address this issue, which could undermine national climate targets and shift environmental impacts abroad rather than reducing them overall. (Scottish Parliament, n.d.b).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Promote sustainable practices in supermarket and retail food supply	Since most food decisions are made in supermarkets, responsible retail practices are crucial for shifting consumer demand toward sustainability.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Sustainability-oriented retailers can use innovative behavioural tools to promote healthier and climate-friendlier foods (such as vegetables) while meeting the "triple bottom line". A real-life supermarket trial in Denmark tested if multi-layered nudges can increase the purchase of fruit and vegetables. The intervention led to small increases in sales. These findings showcase the possibility that supermarkets, in principle, have agency and ability to nudge consumers towards more sustainable diets. (Bauer, Aarestrup, Hansen, et al., 2022).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Supermarkets are where vast majority of decisions are made so we need to get that side of retail right." (Workshop 3).
Develop sustainable supply chain partnerships	Strengthening collaborations for key crops and improving processing infrastructure can enhance food system sustainability.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Supply chains for human consumption- SAOS-Bere Barley; processing facilities-peas and beans." (Workshop 1).
Align market demand with sustainable food choices	Consumer preferences, such as demand for sweeter apples, shape market dynamics and need to be considered in food system planning.
Supporting evidence: Literature review	Found that of the three perceptions measured, consumers derive the most utility out of how they perceive a product's taste, rather than how healthy or safe they believe the product to be. (Malone & Lusk, 2017).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Demand-market wants sweeter apples." (Workshop 1).

Key Theme	Area For Policy Development
3. Funding Gaps for Food Systems	
Ensure stable funding for urban agriculture	Urban agriculture development is constrained by unstable, short-term funding, limiting its potential contribution to sustainable diets and climate goals.
Supporting evidence: Literature review	Urban agriculture (UA) currently relies heavily on short-term or temporary funding streams, which can limit its capacity to scale and sustain operations. This lack of stable, long-term investment undermines its potential to contribute meaningfully to long-term dietary change, local food security, and climate resilience. A more consistent and strategic funding approach is needed to unlock the full benefits of UA as part of a sustainable food system. (White & Bunn, 2017).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Secure long-term food budgets in public institutions	Dedicated, ring-fenced funding is needed for food provision in schools and hospitals to support quality and sustainability.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Promoting plant-based menus through procurement: Public procurement policies offer significant opportunities to promote plant-based menus in public institutions such as schools, hospitals, and government offices. Effectively leveraging these regulations could support sustainability goals and encourage healthier dietary habits. (Stakeholder Meeting 1).
Supporting evidence: Workshops	"Budget and funding Food budgets not ring fenced in schools/hospitals" (Workshop 1).
Strengthen support for community-based food initiatives and the third sector	Long-term funding is needed to sustain community-led food programs, address health inequalities, and support vulnerable groups. Over-reliance on overstretched third-sector organisations risks undermining their role in strengthening local food networks.
Supporting evidence: Literature review	-

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Lack of long-term funding for community/voluntary organisations." (Workshop 1).
Subsidise public dining to promote health and community wellbeing	Affordable, healthy meals outside the home can encourage better eating habits, inspire home cooking, and foster social dining spaces.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Lack of nutritional and environmental standards for out-of-home food: There is a lack of comprehensive regulations governing the nutritional and environmental standards of food sold in restaurants, cafes, and takeaway services. This regulatory gap limits the effectiveness of policy interventions aimed at fostering healthier and more sustainable dietary habits. (Stakeholder Meeting 13).
Supporting evidence: Workshops	"Education - aspects of bringing nutritious food into schools as well as teaching children about healthy foods Public diners - we subsidise everything else! So why do we not subsidise food. Work with culture around eating out of the home to provide healthy and affordable meals for everyone. May support inspiring people re cooking at home, as well as providing a social space." (Workshop 4).
4. Consumer-Focused Fiscal Policies and Incentives	
Address VAT disparities for plant-based foods	Some plant-based meat alternatives (processed or prepared products such as hot takeaway food) are subject to VAT. Extending VAT exemptions could encourage meat reduction.
Supporting evidence: Literature review	Some plant-based meat alternatives are not VAT-exempt. This disparity in fiscal treatment creates a financial barrier to choosing more sustainable and lower-emission protein sources. Extending VAT exemptions or other financial incentives to plant-based meat alternatives could encourage greater consumer uptake, support dietary shifts aligned with climate and health goals, and promote market growth in the plant-based sector. (Kennedy, Clark, Stewart et al., 2025).

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Reduce economic dependence on alcohol and processed food sectors	Scotland's food system is heavily reliant on the economic contributions of alcoholic beverages and processed foods, raising concerns about long-term sustainability.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Food systems are linked to economic opportunities for people in Scotland - but our food industry is heavily tied to alcoholic drinks and processed foods." (Workshop 4).
Internalise environmental and health costs within the food system	The current food system externalises costs like healthcare burdens from poor diets and environmental degradation onto society, rather than incorporating them into economic policies.
Supporting evidence: Literature review	
Supporting evidence: Stakeholder meetings	Externalisation of costs: The current food system externalises many economic costs, such as healthcare expenses linked to poor diets and environmental degradation costs, which are not adequately accounted for in economic policies. (Stakeholder Meeting 11).
Supporting evidence: Workshops	-
Manage dietary shifts resulting from red meat reduction policies	Reducing red meat consumption may lead to increased demand for white meat and dairy, with potentially conflicting environmental and health outcomes. Negative perceptions of plant-based alternatives could also limit dietary shifts.
Supporting evidence: Literature review	-

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	Substitution of red meat and perceptions of plant-based alternatives: Red meat reduction policies may unintentionally drive demand toward other meat products, such as white meat, due to negative perceptions of the healthiness of plant-based alternatives. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
Prevent over-reliance on ultra-processed foods in sustainable diet transitions	Moving away from fresh meat could increase reliance on ultra-processed alternatives, posing health and sustainability concerns.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"There's a risk that moving away from fresh meat means to a turn to ultra-processed food." (Workshop 4).
Balance growth in the plant-based sector with sustainability objectives	There is a risk that increased plant-based food demand could lead to more industrial production while factory farming persists.
Supporting evidence: Literature review	Increasing demand for plant-based diets in the UK, including Scotland, may drive industrialized food production rather than promoting sustainable agriculture. As plant-based food demand rises, major food corporations may scale up industrial production, leading to more monoculture farming and intensification. (Rhymes, Stockdale & Napier, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Risk that promoting plant-based food leads to an increase in industrial production of plant-based foods alongside continued factory farming." (Workshop 4).
5. Structural and Social Barriers in Agricultural transition	

Key Theme	Area For Policy Development
Assess the viability of agroecological farming models	Limited research on the financial and social sustainability of agroecology prevents evidence-based policymaking.
Supporting evidence: Literature review	There is currently no comprehensive cost-benefit analysis comparing agroecological farming with conventional agricultural systems in the Scottish context. This lack of evidence limits policymakers' and producers' ability to make informed decisions about transitioning to more sustainable practices. In particular, there is a need for robust financial models that capture the long-term economic, environmental, and social resilience benefits of agroecology, including reduced input costs, improved soil health, biodiversity gains, and greater climate adaptability. Addressing this evidence gap is essential for supporting policy development and encouraging wider adoption of agroecological approaches. (Lozada & Karley, 2022).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Strengthen support for rural and agricultural workers	Inadequate policies limit rural workers' access to land, resources, and affordable housing, creating barriers to sustainable food system employment.
Supporting evidence: Literature review	Current policies fall short in addressing structural barriers faced by rural agricultural workers, particularly in relation to secure access to land, essential resources, and affordable housing. These challenges limit opportunities for participation in sustainable food production and contribute to rural inequality. To support a just transition in the food system, policies must more effectively promote equitable access and create enabling conditions for rural livelihoods, especially for new entrants and marginalised communities. (Centre for Climate and Social Transformations (CAST), 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-

Key Theme	Area For Policy Development
Develop economic transition strategies for the livestock sector	A clear economic transition strategy is needed to support industries affected by reduced red meat and dairy consumption. Triple Win economic models could help guide policy by capturing co-benefits across community wellbeing, public health, and cost savings.
Supporting evidence: Literature review	Triple win economic models are frameworks or strategies designed to deliver simultaneous benefits (or "wins") across three key domains—usually economic, environmental, and social outcomes. These models are particularly popular in sustainability, public policy, and development sectors. (Ellis & Tschakert, 2019).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"There is a gap in the development of triple win economic modelling which policy and decision makers can rely on and inform how the money best should be spent. An example is a study made in England on "broken pavements", the cost claims by people, the cost avoidance of the council not being held accountable against the claims against the total cost implication for NHS i.e. NHS had to pick up the cost because of people hurt by damaged pavement. Community growing and the cost avoidance of seeking health care services is missing." (Workshop 1)
Support new entrants to farming and food production	Rising land costs and financial barriers make it difficult for new farmers to secure land and adopt sustainable practices.
Supporting evidence: Literature review	Limited financial incentives: Most environmental incentive schemes do not explicitly support agroecological transitions. Many agroecological farmers self-fund their practices, creating financial vulnerability. Access to land tenure and financial support is a major barrier for new entrants, despite them being more likely to adopt agroecology. Lozada & Karley, 2022).
Supporting evidence: Stakeholder meetings	Land ownership and affordability issues: Competition and rising land costs are pricing out farmers, limiting opportunities for sustainable agricultural transitions. (Stakeholder Meeting 1).

Key Theme	**Area For Policy Development**
Supporting evidence: Workshops	-
Build a resilient and skilled workforce across the food sector	To address labour shortages in the food sector, policies should improve migration pathways, expand skills development, and offer incentives to attract and retain workers.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Workforce strategies, skills development and incentives to overcome labour shortages and create attractive career opportunities." (Workshop 1).

Appendix I Extended Social analysis: Areas for further policy development and supporting evidence

Key Theme	Area For Policy Development
1. Food Access and Affordability Inequalities	
Ensure equitable access to sustainable and healthy diets	Lower-income, rural, and marginalised groups face financial and logistical barriers to adopting sustainable diets. Existing policies and financial support do not adequately ensure food affordability, while tax-based approaches like red meat levies lack protections for vulnerable households.
Supporting evidence: Literature review	Public awareness of sustainable diets and their environmental impacts has increased over the past decade, but this growth is uneven across socioeconomic groups. Higher-deprivation (HD) groups face greater barriers, including availability and access, cost concerns and scepticism about health and environmental benefits, limiting their willingness to adopt sustainable dietary practices. (Food Standards Scotland (FSS), 2021a).
Supporting evidence: Stakeholder meetings	Low-income and rural communities face higher food costs, limited access to affordable healthy food, and reduced resilience to economic shocks. (Stakeholder Meeting 4).
Supporting evidence: Workshops	"Food insecurity also discussed - cost of healthy food as a barrier, and food banks often do not allow a healthy diet." (Workshop 4, Group 2).
Enhance inclusion and participation in local food systems	Food systems should be designed to accommodate diverse needs, including time constraints, geographic location, and preferred access points.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Suggests attending to a range of consumer-related changes: Medium-term actions: The nature of consumer demand and its capacity to adjust to social and cultural expectations in the light of market realities and policy priorities. The national, devolved, regional, local dimensions of food and its role as a determinant of identity. The desired consumer outcomes including the nature of a sustainable diet. The role of regulation, 'consumer choice editing' and marketing in shaping consumer choice A description of the EU/UK's 'sustainable consumer diet'. The development of communication and education strategies to engage the public on key food issues. (Ambler-Edwards, Bailey, Kiff et al., 2009).
Supporting evidence: Stakeholder meetings	Consumers may not feel fully in control of their dietary choices due to economic, social, and cultural constraints. (Stakeholder Meeting 9).
Supporting evidence: Workshops	"How do people want to interact with this system? Time poor, etc. Geography, Creating the spaces that people want to access the food they need at their location." (Workshop 1).
Increase the availability of affordable, healthy food options outside the home	Policies insufficiently address affordability and accessibility of healthier out-of-home food choices, disproportionately affecting lower-income consumers.
Supporting evidence: Literature review	There is a persistent gap in policy and practice regarding the affordability and accessibility of healthier food options in out-of-home (OOH) settings, such as restaurants, cafés, takeaways, and workplace canteens. While public health initiatives emphasise the importance of nutritious diets, current policies often fall short in ensuring that healthier choices are both financially viable and widely available across different socioeconomic groups. Food Standards Scotland (FSS), 2023).

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	There is a lack of comprehensive regulations governing the nutritional and environmental standards of food sold in restaurants, cafes, and takeaway services. This regulatory gap limits the effectiveness of policy interventions aimed at fostering healthier and more sustainable dietary habits. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
Improve access to cooking facilities, skills, and food literacy	Households with limited cooking equipment, high energy costs, or inadequate storage face difficulties in preparing sustainable meals.
Supporting evidence: Literature review	The study investigates how residents in energy-efficient, affordable housing in Scotland experience their kitchen environments. With a national push toward low-carbon housing, the paper explores whether energy-efficient designs support or constrain occupants in their daily cooking and living practices. Architectural Design, Building Services & Energy Use, fixtures and storage affected diet and had social and psychological impacts. (Foster & Poston, 2024).
Supporting evidence: Stakeholder meetings	Households with limited access to proper cooking equipment, affordable energy, or sufficient food storage options face challenges in preparing healthy, sustainable meals. (Stakeholder Meeting 8).
Supporting evidence: Workshops	"Appeal: Social and cultural barriers/appeal of healthy food Including skills and knowledge and time poor Less links with food production and consumption Place of food in society (value not just cost)." (Workshop 1).
Address the psychological, cultural, and economic barriers influencing food choices	Financial stress, mental health challenges, and economic insecurity impact the ability to make sustainable food choices, with food often serving as a coping mechanism.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	The study identified links between kitchen environments and unintended consequences of their design on occupants. These included architectural issues such as draughts, limited natural light, noisy or ineffective ventilation systems, non-opening kitchen windows, and difficulties in placing appliances. Not all findings were exclusive to low-energy homes, highlighting the need for targeted research to explore these issues further. A deeper understanding is required to assess whether tenants' adaptive behaviours may influence their diet and affect their respiratory, physical, and mental health. (Foster & Poston, 2024).
Supporting evidence: Stakeholder meetings	Mental health, stress, and economic precarity influence people's ability to make sustainable food choices, with food often used as a coping mechanism in challenging circumstances. (Stakeholder Meeting 1).
Supporting evidence: Workshops	-
2. Availability of Healthier and Sustainable Food Options	
Expand access to alternative proteins in mainstream food environments	The availability of meat-free options remains low in common food products, with only 12% of ready-to-eat sandwiches in the UK being meat-free.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	The food service sector is leading change by rapidly expanding meat-free sandwich options—34% of its range is now meat-free, with half of those being plant-based. In contrast, major food retailers are falling behind, with some even reducing their meat-free offerings since 2019. Notably, alternative proteins as fillings have risen by 620% since 2019, reflecting increased investment in this area. Among the big supermarkets, Sainsbury's has improved its plant-based range, while Tesco, Morrisons, and Asda have scaled back. Vegetarian sandwiches have seen a 22% drop across retailer ranges. Overall, meat and cheese still dominate, and most high salt or fat sandwiches contain meat, limiting healthy and sustainable choices. Despite growth, plant-based sandwiches remain the most expensive, making them less accessible—especially during a cost-of-living crisis. (Eating Better, 2022). The availability of meat-free alternatives, especially for popular items like sandwiches, remains low, with only 12% of ready-to-eat sandwiches in the UK being meat-free. (Stewart, Runions, McNeill, et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Lead by example: public sector organisations and institutions to move to offering balanced, plant-based diets. this would make it more of a norm." (Workshop 4).
Address urban food swamps and improve access to healthy food	Many urban areas suffer from an overconcentration of fast food and ultra-processed options, requiring targeted policy interventions.
Supporting evidence: Literature review	Geographical and socioeconomic inequalities limit access to healthy and sustainable food, leading to "food deserts." (Mitev, Portes, Osman et al., 2023).
Supporting evidence: Stakeholder meetings	Urban areas face "food swamps," characterised by the prevalence of fast food and ultra-processed foods, which require targeted interventions. (Stakeholder Meeting 1).

Key Theme	Area For Policy Development
Supporting evidence: Workshops	"Planning to support healthier environments Support local food and production initiatives e.g., to support those in urban areas and food deserts Opportunities- GFN and implementing local plans including procurement." (Workshop 1).
Improve consumer information and transparency through food labelling	Consumers lack clear sustainability information on takeaway and restaurant food, limiting informed choices. Honest food labelling should ensure transparency on welfare standards, environmental impact, and product origins.
Supporting evidence: Literature review	Consumers often feel uninformed about the sustainability of food choices when dining out or ordering takeaways, limiting their ability to make environmentally conscious decisions. (Food Standards Scotland (FSS), 2021a).
Supporting evidence: Stakeholder meetings	Awareness campaigns should address how consumer choices are manipulated by food marketing strategies. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
Reduce the consumption of ultra-processed foods	Despite high levels of ultra-processed food consumption in the UK, policies do not promote shifts toward minimally processed, locally sourced foods.
Supporting evidence: Literature review	The report highlights that the UK has high levels of ultra-processed food consumption. There is an opportunity for policies that encourage dietary shifts towards minimally processed locally sourced foods through public awareness campaigns and incentives. Hasnain et al (2020).
Supporting evidence: Stakeholder meetings	Ultra-processed foods, such as those offered by large fast-food chains (e.g., Domino's Pizza), are often inconsistent with the principles of a sustainable food culture due to their high environmental footprint. (Stakeholder Meeting 11).
Supporting evidence: Workshops	-
Overcome negative perceptions of plant-based meat alternatives	Concerns over food standards post-Brexit and perceptions of plant-based meat alternatives (PBMAs) as ultra-processed discourage consumer adoption.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	
Supporting evidence: Stakeholder meetings	Red meat reduction policies may unintentionally drive demand toward other meat products, such as white meat, due to negative perceptions of the healthiness of plant-based alternatives. (Stakeholder Meeting 13).
Supporting evidence: Workshops	"Public perception will be challenging, fear of Frankenfood." (Workshop 1).
Integrate sustainable food practices into social and public environments	While schools promote healthy meals, there is little policy support for sustainable food options in fast food outlets and other social settings.
Supporting evidence: Literature review	Support for social contexts: Encourage sustainable food options in fast food outlets and social settings, addressing the cultural importance of such spaces for young people. (McBey, Rothenberg, Cleland et al., 2024).
Supporting evidence: Stakeholder meetings	There is a lack of comprehensive regulations governing the nutritional and environmental standards of food sold in restaurants, cafes, and takeaway services. This regulatory gap limits the effectiveness of policy interventions aimed at fostering healthier and more sustainable dietary habits. (Stakeholder Meeting 13).
Supporting evidence: Workshops	"Local planning systems - don't currently have levers to determine what food outlets are available in a local area." (Workshop 4).
Address sensory and aesthetic barriers to alternative protein adoption	The taste, texture, and unfamiliarity of plant-based foods, along with the "disgust factor" of lab-grown meat and edible insects, limit their acceptance.
Supporting evidence: Literature review	The appeal of plant-based diets is often hindered by unfamiliar flavours, textures, and food neophobia, making them less enticing for some consumers. Additionally, perceived sensory drawbacks and the "disgust factor" present major obstacles to the acceptance of novel protein sources such as edible insects and lab-grown meat, limiting their mainstream adoption. (Food Standards Agency (FSA), 2022).

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	Red meat reduction policies may unintentionally drive demand toward other meat products, such as white meat, due to negative perceptions of the healthiness of plant-based alternatives. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
3. Cultural, Health, and Equity Considerations	
Ensure cultural equity in dietary policy	Policies promoting meat reduction must consider cultural dietary practices, such as Halal diets, to ensure equitable food access.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	The intersection of cultural dietary practices (e.g., Halal diets in Glasgow) with meat reduction policies raises equity considerations. (Stakeholder Meeting 4).
Supporting evidence: Workshops	"Risk of culturally appropriate food." (Workshop 1).
Assess health impacts of meat reduction and provide targeted guidance	The Scottish Dietary Goals include a general recommendation to limit red and processed meat intake to 70g per day, but they do not offer specific or targeted guidance for individuals who consume high levels of meat.
Supporting evidence: Literature review	Scottish Dietary Goals do not include specific guidelines to support high consumers of red and processed meat in transitioning to healthier, lower-emission diets, limiting the effectiveness of dietary and sustainability interventions. There is a need for guidelines that help high consumers of red and processed meat transition toward healthier, lower-emission diets, which are currently missing from Scottish Dietary Goals. (Comrie et al., 2024).
Supporting evidence: Stakeholder meetings	Poor health outcomes and dietary patterns in Scotland may worsen if red meat reduction strategies do not account for suitable nutritional replacements. (Stakeholder Meeting 13).

Key Theme	Area For Policy Development
Supporting evidence: Workshops	"Price, affordability, and accessibility of food that is recommended in the dietary goals. People rely on ultraprocessed food to plug the gap in their diets due to affordability of healthier or more sustainable items such as locally grown fruit, veg, or meat. From an education perspective, people know what they should be doing, but it is not possible to do this for many people - need to stop focusing on information, and instead focus on improving provision. We are worsening inequalities by asking people to buy more fruit and vegetables but not making this available equally to them." (Workshop 4).
Expand the focus of dietary policy beyond individual health	Policy approaches should move beyond solely focusing on meat reduction messaging and instead integrate messaging that promotes increased consumption of fibre, fruit, and vegetables. Given the limited success of standalone meat reduction campaigns, a more holistic and positive framing may be more effective.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Focus seems to be on meat reduction when it could be on fibre/ F+V increase." (Workshop 3).
Overcome misperceptions and structural barriers to healthier eating	Many Scots mistakenly believe they meet dietary guidelines, while strong taste preferences create resistance to reformulated foods. Early education and culturally sensitive messaging are needed.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Many Scottish adults believe their diet meets guidelines, but in reality, most do not. 70% of people consuming high-salt foods (e.g., ready meals, processed meats) believe they are eating within or below the recommended limits. 66% of people consuming confectionery and biscuits frequently think they are within sugar guidelines. Awareness of unhealthy consumption remains a key issue, suggesting that consumer education and product reformulation could play a crucial role in closing this gap. (Food and Drink Federation Scotland (FDF), 2020).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Address misconceptions around healthy diets - raise awareness that current dietary patterns (on average, across the country) are unhealthy, and that a meat reduction would in fact be healthy for many people. This should also present plant-based foods as a sustainable option, not just a trend / fad. This could start with early years and be incorporated into the curriculum. It should take account of varied cultures and traditions, and acknowledge how massively the Scottish population has changed." (Workshop 4).
Build public trust in agriculture and dietary recommendations	Greater transparency and engagement are needed to rebuild consumer trust in agricultural institutions. Conflicting media narratives have fuelled public distrust in dietary recommendations.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Significant issue in policies aimed at rebuilding trust in agricultural institutions through transparency and community engagement, particularly in the context of transitioning from meat and dairy to plant-based agriculture. Meat as the Default: Many Scots see meat as an essential part of a meal, making plant-based alternatives feel unnatural. Scepticism About Health Claims: People distrust health recommendations due to conflicting messages in the media. Limited Awareness of Environmental Impact: Most consumers do not link meat consumption to climate change. Price and Convenience: Many participants perceived plant-based options as expensive, inconvenient, or unfamiliar. (McBey, Watts & Johnstone, 2019).
Supporting evidence: Stakeholder meetings	Media narratives can contribute to the negative depictions of farmers, influencing public perceptions and stakeholder relationships. (Stakeholder Meeting 1).
Supporting evidence: Workshops	"Public perception will be challenging, fear of Frankenfood." (Workshop 1).
Address the social stigma associated with plant-based diets	The perception of plant-based diets as elitist or judgmental discourages dietary shifts, requiring reframing to improve acceptance.
Supporting evidence: Literature review	Found that some participants expressed frustration with what they viewed as urban-centric or moralising narratives around veganism, which they felt overlooked the realities of Scottish rural and farming communities. For example, one participant criticised "vegan warriors" who aggressively promote veganism without understanding rural food systems, labelling such activism as unhelpful and antagonistic. (Brett, 2022).
Supporting evidence: Stakeholder meetings	Social stigma affects dietary shifts, with plant-based diets sometimes perceived as elitist or judgmental. (Stakeholder Meeting 11).
Supporting evidence: Workshops	"The terms "plant-based" and "vegan" as negative connotations-threats to identity of farmers." (Workshop 1).

Key Theme	Area For Policy Development
Shape media narratives around farmers and sustainable diets	Media portrayals can contribute to negative depictions of farmers, influencing public perceptions and policy debates.
Supporting evidence: Literature review	Discusses how Scottish farmers are judged by urban-centric standards, where cultural capital is eroded by media-fuelled stereotypes (e.g., greedy landowners, climate change deniers). Explores how these portrayals undermine rural social cohesion and farmer legitimacy. (Sutherland & Burton, 2011).
Supporting evidence: Stakeholder meetings	Media narratives can contribute to the villainisation of farmers, influencing public perceptions and stakeholder relationships. (Stakeholder Meeting 6).
Supporting evidence: Workshops	-
Clarify the definition of "plant-based" in policy and markets	The term "plant-based" carries different meanings for different stakeholders, creating confusion in communication and labelling.
Supporting evidence: Literature review	Found that meat substitutes were interpreted differently in terms of nutrition, cost, convenience, etc. (McBey, Watts & Johnstone, 2019).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Plant-based-what does it mean? Something different to everyone." (Workshop 1).
Improve knowledge and support for regenerative agricultural practices	Raising awareness and providing policy support for regenerative farming practices can improve adoption and sustainability outcomes.
Supporting evidence: Literature review	Leadership, coherence and commitment to align policy implementation and delivery with the Scottish Government's vision, targets, and ambitions for agriculture, nature recovery, net zero vision and a Just Transition, and to avoid a reinvention – or worse, a watering down, of the status quo (i.e., the CAP), and outline 17 steps towards regenerative agriculture (Brodie, 2023).

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	Insufficient subsidies and grants to support diversification into sustainable agriculture. (Stakeholder Meeting 6).
Supporting evidence: Workshops	"Few examples available of successful regenerative practices." (Workshop 4).
Strengthen dialogue and cooperation among producers	Improving communication and collaboration among agricultural producers can support coordinated and sustainable food production.
Supporting evidence: Literature review	Building trust and engagement with the farming, crofting, and land management sector — including its representative bodies and media — is essential for increasing the uptake of nature-based solutions (NbS). Recommendations for the Scottish Government: Clearly communicate what is expected from the sector under the Agricultural Reform Programme (ARP), and by when. Current uncertainty is contributing to inertia and resistance to change. Frame communications around the business benefits of adopting NbS — such as improving resilience to economic and climate-related shocks, supporting food production, and boosting profitability. Messaging should directly counter sector narratives that portray NbS as peripheral or burdensome. Share compelling, real-world examples of farmers and land managers who have successfully embedded NbS into their core operations, and promote these stories through sector media outlets like The Scottish Farmer and Landward. Ensure that individuals with direct experience in farming, crofting, and land management are actively involved in the design and testing of ARP policy. Their input is vital to ensure credibility, practicality, and sector buy-in. (Brodie, 2023).
Supporting evidence: Stakeholder meetings	Scotland's agricultural vision emphasizes sustainable and regenerative farming practices, aiming to improve land management, enhance biodiversity, and promote long-term environmental viability. (Stakeholder Meeting 14).
Supporting evidence: Workshops	"Dialogue between producers-agriculture cooperation." (Workshop 3).

Key Theme	Area For Policy Development
Restore cultural connections to food and farming traditions	Addressing the legacy of industrial food production by fostering appreciation for food origins, sustainability, and health impacts.
Supporting evidence: Literature review	Explores the strong consumer attachment to locally produced food in Scotland, highlighting how this loyalty is often associated with perceptions of sustainability, trust, and quality. It notes that local origin is frequently seen as a proxy for environmentally responsible and healthier food choices, even when this may not always reflect the full environmental impact. Recommends enhancing consumer education to improve understanding of food origin, sustainability credentials, and health claims. This includes raising awareness about how production methods, supply chains, and labelling affect environmental and health outcomes—helping consumers make more informed, evidence-based choices. (Leat, Revoredo-Giha & Lamprinopoulou, 2011).
Supporting evidence: Stakeholder meetings	Consumers often lack awareness of food provenance, challenging narratives around food sovereignty. (Stakeholder Meeting 11).
Supporting evidence: Workshops	"Improve relationship with food. Industrial farming/food production to overcome hunger in late 19th/early 20th centuries has altered how we understand and interact with food. Need to improve relationship with food, bringing back cultural elements and also an appreciation of where food comes from, how it is grown/processed, and how it affects our planet and our health." (Workshop 4).
Promote sustainable meat reduction in culturally significant meals	Policies overlook opportunities to encourage lower meat intake in culturally significant meals, while social traditions make plant-based alternatives feel unfamiliar or unnatural.
Supporting evidence: Literature review	This study conducted focus groups across Scotland to assess attitudes toward reducing meat in familiar dishes. Explored acceptance of plant-based alternatives to staple meat-based meals. Participants expressed mixed reactions, with older and rural Scots more resistant to replacing meat in "staple" meals. (McBey, Watts & Johnstone, 2019).

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	Strong cultural attachments to traditional diets, particularly in rural communities, create barriers to dietary change. (Stakeholder Meeting 3).
Supporting evidence: Workshops	"Traditions, habits, and culture: Cultural traditions around ways of living - needing food to fuel a physical working day. A meat industry has grown around that - the fish industry hasn't grown in the same way / as strong. These traditions, which have started in childhood, when people see food being produced, carry those habits into school and beyond." (Workshop 4).
Enhance cultural sensitivity in policy design and public messaging	Campaigns should consider cultural, regional, and social differences to avoid alienating certain groups.
Supporting evidence: Literature review	Existing studies on barriers to, and enablers for, reducing meat consumption largely focus on the general population or students. Found that social norms, fear of stigmatisation and availability and price of meat and meat alternatives appear to be key factors. These differ significantly between subgroups within the population, influenced by factors such as age, gender, culture and socio-economic status. (Spiro, Hill & Stanner, 2024).
Supporting evidence: Stakeholder meetings	The intersection of cultural dietary practices (e.g., Halal diets in Glasgow) with meat reduction policies raises equity considerations. (Stakeholder Meeting 4).
Supporting evidence: Workshops	-
Support farmer-to-farmer knowledge exchange and peer learning	Expanding opportunities for sustainability-focused peer learning and knowledge sharing among farmers.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Transformation in agricultural land management is critical to achieving Scottish Government's aims of mitigating climate change, addressing the biodiversity crisis, and achieving a just transition for land and agriculture. Providing advice and collaborative learning opportunities through the Farm Advisory Service (FAS) is the key mechanism to deliver behaviour change in the agricultural sector. The Scottish Government is seeking to better integrate the FAS into an agricultural knowledge and innovation system (AKIS) for Scotland. AKIS is a system of innovation which links organisations, institutions, incentives and funding. This research comprises an evidence review and options appraisal for an agricultural knowledge and innovation system (AKIS) for Scotland. (Sutherland, Banks, Boyce et al., 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Address generational tensions in dietary transitions	In Scotland, younger generations tend to be more climate-conscious in their attitudes toward diet, with greater openness to reducing meat consumption and considering environmental impacts. However, actual behaviour may not always align with these intentions. Resistance from older family and community norms can also create barriers to change.
Supporting evidence: Literature review	A 2024 survey by Consumer Scotland found that 85% of individuals aged 16-24 expressed concern about climate change, compared to 76% of the general population. This heightened awareness among younger Scots is influencing their dietary choices. For instance, a 2023 report by Food Standards Scotland revealed that 45% of 16-24-year-olds reported reducing their meat or fish consumption, a higher proportion than in older age groups. Additionally, the same report noted that 30% of individuals over 65 years would not consider eating less meat or fish, indicating a generational difference in attitudes towards meat consumption. (Cotton, Gosschalk, Gray et al., 2024).

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	Younger generations tend to be more environmentally conscious in their dietary choices, often favouring sustainable and plant-based options. However, their efforts to adopt climate-friendly eating habits frequently encounter resistance rooted in longstanding traditions, cultural expectations, and dietary norms upheld by older family members and the broader community. These intergenerational tensions can pose significant barriers to meaningful change. (Stakeholder Meeting 4).
Supporting evidence: Workshops	"Carbon labelling on foods - WHO suggests young people more likely to change their diet because of climate concerns than health concerns - I think this links with young people's climate anxiety etc." (Workshop 4).
Improve access to mental health support for farmers	Financial stress, environmental uncertainties, and policy changes contribute to high mental health burdens among farmers, requiring targeted interventions.
Supporting evidence: Literature review	Poor mental health is an increasing concern within the farming sector. This article examines the adaptability of "landscapes of support" — a term used to describe the range of mental health support available to farmers, including services provided by government bodies, non-profits, and community organisations. Focusing on the UK, the study draws on a literature review, interviews with 22 support providers, surveys of 93 support actors and 207 farmers, and a concluding workshop. The findings reveal that while many organisations adapted during the COVID-19 pandemic by using digital tools and expanding media outreach, they also faced significant barriers, including funding shortfalls, limited training, staff burnout, and poor rural connectivity. The article identifies opportunities to strengthen these support systems to ensure they are more resilient in the face of future crises. (Shortland, Hall, Hurley et al., 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
4. Digital and Seasonal Food	

Key Theme	Area For Policy Development
Address digital inequalities in food access	Rural and lower-income consumers face barriers to accessing food delivery technologies, creating disparities in digital food system participation.
Supporting evidence: Literature review	Policy interventions must account for unequal access to digital tools and platforms, particularly among rural populations and lower-income households. These groups may face barriers such as limited broadband connectivity, lack of digital literacy, or affordability issues, which restrict their ability to engage with online food systems, including grocery delivery, meal planning apps, or sustainability-focused platforms. Addressing these disparities is essential to ensure equitable participation in emerging food technologies and digital food environments. (Scottish Government, 2023).
Supporting evidence: Stakeholder meetings	Digital tools (e.g., benefit calculators) depend on reliable internet access and digital literacy, potentially excluding vulnerable populations with poor dietary outcomes. (Stakeholder Meeting 12).
Supporting evidence: Workshops	-
Ensure equity in seasonal diet transitions	A shift toward seasonal diets should not exacerbate existing social and economic disparities in food access.
Supporting evidence: Literature review	Local produce often needs long-term storage (e.g. apples, onions, potatoes, cabbage) to remain available year-round. Storage leads to nutrient degradation, especially for vitamin C and antioxidants. Frozen local foods preserve better but require energy-intensive processing (e.g., blanching), which can also reduce nutrients like B vitamins. No studies yet published have considered the overall health benefits of eating a wholly local diet compared to a similar diet produced non-locally. (Edwards-Jones, 2010).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Shift towards seasonality, but this could amplify existing inequalities." (Workshop 1).
5: Consumer Education and Behavioural Change	

Key Theme	Area For Policy Development
Enhance consumer education on sustainable diets	Without targeted behavioural support, most people in Scotland struggle to align their diets with the Eatwell Guide, limiting progress toward CCC targets.
Supporting evidence: Literature review	The research finds that most people in Scotland do not follow the Eatwell Guide, making meat and dairy an important source of nutrients. This suggests that simply recommending dietary shifts without supporting consumer behavior change will be ineffective. Policy Gap: Absence of strong public awareness campaigns to help consumers transition to healthier, more sustainable diets, such as: Educational initiatives on how to replace meat and dairy with nutrient-rich plant-based foods. Supermarket incentives or labeling schemes to highlight healthier, climate-friendly food choices. (Food Standards Scotland (FSS), 2024).
Supporting evidence: Stakeholder meetings	Meat consumption trends in Scotland suggest an increase, highlighting the challenge of shifting dietary habits toward sustainability. (Stakeholder Meeting 6).
Supporting evidence: Workshops	"Dietary guidance- Eatwell Plate- if we followed it emissions would be reduced e.g., high volume of red meat eaters Which metrics are we using e.g., chicken (low carbon?) People don't pay attention to dietary guidance." (Workshop 1).
Clarify nutritional guidance for dietary transitions	Policies fail to provide comprehensive public education on suitable dietary substitutions and the potential risks of reducing meat and dairy consumption.
Supporting evidence: Literature review	Micronutrient Risks: The report highlights that reducing meat and dairy consumption can lead to decreased intakes of certain key nutrients (e.g., calcium, iron, vitamin B12), especially without careful substitutions. Groups with existing low nutrient intakes are at heightened risk under scenarios of reduced meat and dairy intake. Policies to enhance public understanding of appropriate dietary substitutions and potential nutrient risks associated with reduced meat and dairy are limited, suggesting an opportunity for educational initiatives. (Comrie et al., 2024).

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	The recommended 70g per day of red meat is often seen as a dietary requirement rather than a maximum limit, affecting efforts to normalise lower meat consumption. (Stakeholder Meeting 2).
Supporting evidence: Workshops	-
Strengthen consumer connections to sustainable and local food systems	A disconnect between modern food habits and local food traditions reduces demand for low-carbon, locally produced foods.
Supporting evidence: Literature review	Better and bolder communication is needed to overcome a disconnect between what people buy and how they consume food and the production processes that have negative environmental impacts. Issues around food production and land use, and the links to food consumption need to be addressed. (Centre for Climate Change and Social Transformations (CAST), 2024).
Supporting evidence: Stakeholder meetings	disconnection between people, nature, and food systems weakens public engagement with sustainable diets. (Stakeholder Meeting 11).
Supporting evidence: Workshops	"Local and community action around education and reconnecting to the land. Promoting interconnectedness between producers and consumers. This will look different depending on the setting - urban and rural environments will look different in the nature available to them and how they connect with nature. Requires input from local authorities, education institutions, local business/producers/suppliers to work together." (Workshop 4).
Define and communicate what constitutes a 'sustainable diet'	The term "sustainable diet" is interpreted in varying ways, from affordability to environmental impact, complicating policy communication and engagement.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Public understanding of what constitutes a "sustainable diet" is often diverse and inconsistent. For some, the concept is primarily linked to environmental impact, such as reducing carbon emissions or minimizing food waste. For others, it may be more closely associated with affordability, food security, or simply ensuring access to enough food to meet basic nutritional needs. This variation in interpretation highlights the need for clearer public communication and education around the multiple dimensions of sustainable diets—including environmental, economic, cultural, and health-related factors—to build a shared understanding and support informed decision-making. (Cleland, McBey, Darlene et al., 2025).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Improve dietary messaging for young people	Adolescents are aware of environmental issues but lack understanding of the impact of meat consumption. Stronger educational initiatives and trusted voices are needed to clarify dietary choices.
Supporting evidence: Literature review	Adolescents were generally knowledgeable about the basic principles of sustainable diets but lacked familiarity with the term itself. Environmental impacts of food, such as packaging and transportation (food miles), were more commonly understood than the broader sustainability of diets, such as reducing meat consumption. Many young people prioritized other environmental actions, such as reducing plastic waste and air travel, over dietary changes. (McBey, Rothenberg, Cleland et al., 2024).
Supporting evidence: Stakeholder meetings	Limited institutional mechanisms exist to incorporate youth perspectives into food and climate policy discussions, despite high climate awareness among younger populations. (Stakeholder Meeting 4).
Supporting evidence: Workshops	"Messaging - who are the trusted messages? Social media - young people and protein, influencers - do we need to recruit these people?" (Workshop 3).

Key Theme	Area For Policy Development
Raise public awareness of the links between diet and climate change	Many consumers do not associate meat consumption with climate change, reducing engagement with sustainable dietary changes. Clear communication is needed about the pathway to net zero and the role of diets.
Supporting evidence: Literature review	Research found that many consumers lack awareness of the connection between meat consumption and climate change. Meat is often viewed primarily through the lens of taste, tradition, or nutrition, with little consideration given to its environmental footprint. As a result, the role of meat production in contributing to greenhouse gas emissions, land use, and biodiversity loss is not widely understood. This highlights the need for targeted public education campaigns to bridge the knowledge gap and promote more climate-conscious dietary choices. (McBey, Watts & Johnstone, 2019).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"We advocate strongly for the government to be very clear what the most impactful household choices are that people can take to reduce emissions and being clear that an average reduction of meat and dairy consumption is part of it." (Workshop 3).
Address misconceptions about alternative proteins	Widespread misconceptions about lab-grown meat and edible insects hinder their public acceptance as sustainable protein options.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Consumer Confidence in Safety and Regulation A significant number of consumers express hesitation toward novel food products—particularly lab-grown meat and edible insects—due to concerns about their safety and how they are regulated. Recommended policy response: Strengthen regulatory frameworks, enhance transparency in production processes, and improve public communication to build trust and reassure consumers about the safety of these emerging food technologies. Cultural Acceptance and Public Perception Deep-seated cultural attitudes and the "disgust factor" continue to pose major barriers to the acceptance of edible insects and lab-grown meat. Addressing these perceptions through culturally sensitive education and engagement is key to improving public receptivity. (Food Standards Agency Scotland (FSAS), 2022).
Supporting evidence: Stakeholder meetings	Red meat reduction policies may unintentionally drive demand toward other meat products, such as white meat, due to negative perceptions of the healthiness of plant-based alternatives. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
Provide practical support for individuals undergoing dietary change	While policies encourage sustainable diets, they do not provide practical tools like meal plans, recipes, or visual guides to aid consumer transitions.
Supporting evidence: Literature review	Recommends creating accessible tools—such as recipes, meal plans, visual guides, and infographics—to help translate dietary guidelines into practical, everyday actions. These resources can support individuals in making informed, sustainable food choices by demonstrating how to implement the guidelines in realistic and appealing ways. (Culliford, Bradbury & Medici, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-

Key Theme	Area For Policy Development
Use health-focused messaging to promote sustainable dietary change	Policies focus on environmental messaging, but emphasising health benefits could be a more effective motivator for dietary shifts.
Supporting evidence: Literature review	Integrate sustainability into education and school food programmes: Revise school curricula to incorporate up-to-date evidence on sustainable diets, emphasising the connections between food choices, climate action, and health outcomes. Complement this by implementing sustainable and nutritious school meal programs that model environmentally responsible eating habits, helping to normalize healthy, climate-friendly diets from an early age. (McBey, Rothenberg, Cleland et al., 2024).
Supporting evidence: Stakeholder meetings	Co-benefits of policy alignment: Opportunities exist to align health and sustainability goals, particularly through meat reduction strategies (Stakeholder Meeting 9).
Supporting evidence: Workshops	"To ensure that an average reduction in meat and dairy consumption is compatible with healthy diets and ideally ensure positive impacts on health and nutrition." (Stakeholder Workshop 4).
Tackle misinformation about diet and climate impacts	Many people doubt that reducing meat consumption is an effective climate action, believing other behaviours (e.g., reducing plastic use) are more impactful. Improved communication and avoiding oversimplification are needed.
Supporting evidence: Literature review	Increased awareness: Over the last decade, public awareness of sustainable diets and their environmental impacts has grown. However, this increase is uneven across different socioeconomic groups. Persistent barriers: Despite increased awareness, barriers to reducing meat consumption—such as cultural norms, cost, and scepticism about meat alternatives—persist. Dietary change resistance: Many still perceive actions like reducing meat consumption as less impactful compared to other actions (e.g., reducing plastic use). (Cleland, McBey, Darlene et al., 2025).
Supporting evidence: Stakeholder meetings	-

Key Theme	Area For Policy Development
Supporting evidence: Workshops	"Misinformation in terms of the public health impacts of changing diets. Communication needs to be clearer. Nuance around processing being seen as unhealthy and organic as healthy." (Workshop 3).
Reframe public understanding of protein needs	Public understanding of protein needs is often skewed, reinforcing resistance to reducing meat consumption.
Supporting evidence: Literature review	Across all stages of the family lifecycle, continued meat consumption was frequently justified by the belief that individuals require nutrients found in meat, such as iron and protein. These nutritional reflections were typically not grounded in scientific evidence but were instead based on ingrained beliefs shaped by social upbringing, rather than informed by alternative or external sources of information. (Kemper, 2020).
Supporting evidence: Stakeholder meetings	Overemphasis on protein requirements contributes to resistance against reducing meat consumption. (Stakeholder Meeting 2).
Supporting evidence: Workshops	-
Strengthen consumer awareness of food provenance	Many consumers are unaware of where their food comes from, weakening narratives around food sovereignty and local sourcing.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Consumers often lack awareness of food provenance, challenging narratives around food sovereignty. (Stakeholder Meeting 11).
Supporting evidence: Workshops	-
Empower consumers to make sustainable food choices	Providing consumers with the right information and tools can support the adoption of more sustainable eating habits.
Supporting evidence: Literature review	-

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	Encouraging consumers to make informed dietary choices can enhance their ability to adopt sustainable eating habits. (Stakeholder Meeting 1).
Supporting evidence: Workshops	-
Strengthen proactive public engagement in dietary change efforts	Providing early, transparent information to shape public discourse and build informed support for food system changes.
Supporting evidence: Literature review	Reviews research on how providing information about the impact of meat consumption and the benefits of meat substitutes positively affects respondents in China and the US. This information increases their intentions to support meat reduction policies, including more costly measures like a meat tax. (Bryant, Couture, Ross, et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Inoculation-plant information ahead of public debate." (Workshop 1).
Strengthen public health and policy support for sustainable dietary shifts	Public health campaigns and food policies lack coordinated efforts to actively promote widespread transitions to sustainable diets.
Supporting evidence: Literature review	Policy Coordination: Highlights regional land use planning but provides limited discussion on integrating dietary policy into broader climate and health strategies. (Reay, Warnatzsch, Craig, et al., 2020).
Supporting evidence: Stakeholder meetings	Misalignment between climate, health, and food policies. Current policy frameworks lack coherence, creating conflicting objectives. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
Balance individual responsibility with systemic food system change	Policies often overemphasise personal responsibility for diet change, while systemic food environment shifts are more effective and less stigmatising.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Challenges the overemphasis on individual behaviour change as the primary solution to sustainability and public health issues. Instead, it advocates for a shift toward structural and policy-driven approaches that facilitate collective action and address the root causes embedded in social, economic, and environmental systems. By focusing on systemic transformation, such as changes in food infrastructure, regulation, and institutional practices, this approach underscores the need for environments that enable and sustain more equitable and widespread change beyond individual responsibility. (Meyerricks & White, 2021).
Supporting evidence: Stakeholder meetings	Policies often overemphasize individual responsibility for dietary choices, while structural food environment changes are more effective and less stigmatizing. (Stakeholder Meeting 13).
Supporting evidence: Workshops	"Current resilience strategies rely on individuals to be able to prepare themselves, rather than creating a robust food system within Scotland." (Workshop 1).
Encourage social norm-based approaches to dietary change	Policies do not leverage peer influence to normalise reduced meat consumption and encourage widespread dietary shifts.
Supporting evidence: Literature review	Reviews interventions aimed at reducing meat consumption, categorising them into personal, socio-cultural, and external factors. Personal interventions include educational campaigns, emotionally framed messages, and skill-building (e.g., vegetarian cooking courses). Socio-cultural factors involve changing social norms and addressing cultural resistance to plant-based diets. Opportunities for promoting social norms around sustainable diets through public campaigns and community programmes. (Kwasny, Dobernig & Riefler, 2022).
Supporting evidence: Stakeholder meetings	Gender norms influence dietary choices, with meat consumption often associated with masculinity, creating barriers to plant-based diets. (Stakeholder Meeting 1).
Supporting evidence: Workshops	"Need to make climate-friendly diets the norm? Need long term changes." (Workshop 1).

Key Theme	Area For Policy Development
Improve understanding of the long-term impacts of dietary shifts	Most studies focus on short-term dietary changes without exploring the effectiveness of multi-pronged interventions over time.
Supporting evidence: Literature review	Explores the nutritional and behavioural implications of substituting plant-based proteins for animal proteins in Scotland, using household purchase data. Identifies price sensitivity as a driver of dietary change but does not address long-term behavioural adoption or resistance. (Dogbe, Wang & Revoredo-Giha, 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Address the prioritisation of cost and convenience over sustainability in food choices	Sustainability concerns are often secondary to cost and convenience when consumers make food choices.
Supporting evidence: Literature review	Examined the effects of decreasing meat and dairy intake on nutrient consumption and disease risk among Scottish adults. Although many individuals express genuine concern for sustainability and environmental impact, these values are often compromised by practical considerations, particularly cost and convenience. In everyday decision-making, affordability and ease of access tend to take precedence, revealing a gap between environmental awareness and actionable behaviour. This highlights the need for policies and systems that make sustainable choices more accessible, affordable, and integrated into daily life. (Food Standards Scotland (FSS), 2022).
Supporting evidence: Stakeholder meetings	-

Key Theme	Area For Policy Development
Supporting evidence: Workshops	"Inability to pay for things- poverty in working population Hard to get to nutrition when you have long term challenge Need for equipment for prep; time-knowledge-cost No freedom of choice in these circumstances Good food is very inaccessible to those with nothing (not home and skills)." (Workshop 1).
Normalise reduced meat consumption in everyday diets	The recommended limit of 70g per day for red and processed meat in Scotland is often misinterpreted as a dietary requirement rather than a maximum, which can undermine efforts to normalise lower meat consumption.
Supporting evidence: Literature review	It is important to emphasise that the UK recommendation of a maximum of 70g/day on average is a recommendation for individuals, not a population average, and a wide range of intakes for red and processed meat has been reported, for example, a range of 0–208g/day in men aged 19–64 years. (Spiro, Hill & Stanner, 2024).
Supporting evidence: Stakeholder meetings	The recommended 70g per day of red meat is often seen as a dietary requirement rather than a maximum limit, affecting efforts to normalise lower meat consumption. (Stakeholder Meeting 4).
Supporting evidence: Workshops	"We also find that people are often not very clear about health benefits of a reduction especially in red meat consumption and the role of protein etc…. This is further confused by the NHS recommendation of 70g red meat, which can be misunderstood as a required minimum, rather than a maximum." (Workshop 3).
Assess the effectiveness of dietary behaviour change campaigns	Large-scale dietary campaigns often fail to drive change, with community-based, trusted sources being more impactful.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Examined how often people seek, trust, and rely on 22 different sources of diet and nutrition information when making dietary changes. While sources like health websites, internet searches, and diet books were most frequently consulted, participants reported the highest trust in nutrition scientists, professionals, and scientific journals. This highlights a disconnect between popularity and trustworthiness. Trust, more than frequency of use, was a stronger predictor of influence on dietary change. Sources deemed less trustworthy were less likely to be relied upon, and seeking information alone didn't always lead to effective dietary shifts. These patterns varied across sources. (Ruani, Reiss & Kalea, 2023).
Supporting evidence: Stakeholder meetings	Blanket dietary change campaigns are often ineffective and challenging to evaluate. For greater impact, information should come from trusted, community-based sources. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
Evaluate the relative impacts of different behavioural interventions on food choices	Strategies like calorie labelling have shown limited effectiveness in driving significant dietary change.
Supporting evidence: Literature review	There are currently no plans to introduce a mandatory eco-labelling scheme, nor is the government set to endorse any existing or new framework. This decision reflects the limited evidence to date that eco-labels significantly influence consumer or business behaviour at the point of sale (Defra, 2024). Nonetheless, similar to the role nutrition labelling has played, eco-labelling could potentially encourage some level of product reformulation by manufacturers. (Spiro, Hill, & Stanner, 2024).
Supporting evidence: Stakeholder meetings	Behavioural interventions like calorie labelling have limited impact on dietary habits. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-

Key Theme	Area For Policy Development
Shape food environments to promote healthier and more sustainable choices	Addressing the knowledge-action gap through nudging strategies and food system interventions.
Supporting evidence: Literature review	Behavioural nudges, such as making vegetarian options the default choice on menus, have been shown to significantly reduce meat consumption, with studies reporting reductions ranging from 20% to as high as 85%. These strategies work by subtly reshaping consumer choice environments, making plant-based selections more accessible and socially normative without restricting individual freedom. (Mitev, Portes, Osman et al., 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Food environments, choice, nudging?..."Knowledge-action gap." (Workshop 3).
Promote sustainable everyday eating habits	Promote practical, habitual dietary shifts that are sustainable and health-supportive over the long term.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Encouraging consumers to make informed dietary choices can enhance their ability to adopt sustainable eating habits. (Stakeholder Meeting 1).
Supporting evidence: Workshops	"Healthy "enough" (vis-à-vis everyday diets)." "Habits of eating." (Workshop 1).
Rethink policy approaches to dietary change	Shifting from fear-based, top-down behaviour change strategies to more effective and inclusive policy tools.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Examines the comparative evolution of rural development policies and Local Action Groups (LAGs) within a multi-level governance (MLG) framework. It focuses on two UK cases (Argyll and the Islands in Scotland; Coast, Wolds, Wetlands and Waterways in England) and two Italian cases (Delta 2000 in Emilia-Romagna; Capo Santa Maria di Leuca in Puglia). Findings highlight how LAGs' mechanisms, outcomes, and partnerships vary, but consistently demonstrate that while EU funding and policy frameworks provide critical support, it is the bottom-up leadership of local actors that most significantly drives success in rural development initiatives. (Gargano, 2021).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"The tools and language of policy Behaviour change is top-down using fear" (Workshop 1).

Appendix J Extended Technological analysis: Areas for further policy development and supporting evidence

Key Theme	Area For Policy Development
1: Data Gaps and Infrastructure for Policy Monitoring	
Develop a comprehensive monitoring framework for sustainable diets	There is no structured system to track the effects of dietary shifts on emissions, health, food security, biodiversity, and sustainability, limiting policy effectiveness.
Supporting evidence: Literature review	Lack of Clear Enforcement Mechanisms for Emission Reductions The 30% agricultural emissions reduction target (by 2032) is ambitious, but the text does not specify: How reductions will be enforced (e.g., penalties for non-compliance vs. voluntary incentives). Sector-specific targets for beef, sheep, dairy, and arable farming. How progress will be measured and verified beyond voluntary reporting. Policy Gap: Scotland lacks a detailed, binding framework for ensuring compliance with emission reductions in agriculture. Policy Need: Develop a carbon budgeting system for farms with clear compliance measures, incentives, and accountability mechanisms. Scottish Government, n.d.).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Lack of data. Need to look at what is the actual impact of farming on climate in Scotland - what are the negatives we currently have and then learning from best practise to bring others on that journey. using real Scottish data to drive change. it should go wider than GHGs. its about biodiversity, habitat and plant protection and ecosystem, water use and flood management, soil quality, animal welfare etc. baselining standards - over 170 farms there are some that are already at net zero, or close." (Workshop 3).
Establish a standardised data infrastructure to support policy integration	The lack of a unified system to collect, share, and analyse food system data hinders the integration of climate, health, and sustainability goals into policy decisions.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Emissions Estimation Uncertainty: The report notes significant variability in greenhouse gas (GHG) emissions estimates for food consumed in Scotland, partly due to differences in accounting for land use change and specific food consumption patterns. Improved data accuracy, especially for children and region-specific consumption, could strengthen policy targeting emissions from specific food groups. Data Gaps in Food Production Origins: The report identifies a need for detailed information on the origins of foods consumed in Scotland. This information is essential for accurately attributing emissions, particularly as some Scottish produce is processed outside Scotland before being reimported for local consumption. Policy could address this by improving traceability in food supply chains Integration of Post-Retail Emissions: Only some models account for emissions from consumer actions, such as energy used in cooking or food waste. Policy could incentivize behaviours that reduce these post-retail emissions, such as promoting energy-efficient cooking practices and reducing food waste at home. (Jaacks, Frank, Vonderschmidt et al., 2024).
Supporting evidence: Stakeholder meetings	Data for policy tracking: Robust data systems are needed to inform policy decisions and track their effectiveness over time. (Stakeholder Meeting 13).
Supporting evidence: Workshops	"Within Scottish Government: Make climate & diet part of a Good Food Nation objective. Include dietary change as one of Scotland's climate goals. Work for better join up across policy areas, work against narrowness. Make this a priority for multiple departments." (Workshop 4).
Set clear targets and indicators for sustainable diet policies	The absence of effective metrics makes it difficult to evaluate the impact of policies on health, emissions reduction, and food system sustainability.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	No Specific Emissions Targets for Dairy Farming Scotland has national climate targets but lacks dairy-specific GHG reduction goals. Policy intervention: Develop dairy sector-specific emissions reduction targets tied to efficiency improvements. Infrastructure and Data Challenges Limited data collection on methane emissions at the farm level makes tracking improvements difficult. Policy intervention: Expand research funding and create national livestock emissions databases. (Ferguson, Bowen, McNicol et al., 2024).
Supporting evidence: Stakeholder meetings	Measuring dietary change**:** Identifying effective metrics to measure progress in dietary change is a key challenge. (Stakeholder Meeting 2).
Supporting evidence: Workshops	-
Enhance monitoring and metrics for agroecological practices	The absence of clear indicators for assessing agroecology's environmental, economic, and social performance limits its policy integration, while the lack of systematic data collection prevents evidence-based policymaking for sustainable farming transitions.
Supporting evidence: Literature review	Limited Research on the Economic Viability of Agroecology No comprehensive cost-benefit analysis of agroecological farming vs. conventional farming in Scotland. Need for financial models that demonstrate the long-term resilience benefits of agroecology. Set Clear Targets for Sustainable Diets and Agriculture Introduce climate-aligned dietary guidelines, including reduced red meat and dairy consumption. Support horticulture expansion to increase domestic fruit, vegetable, and pulse production. Align agroecology with Scotland's Circular Economy and Net-Zero strategies (Lozada & Karley, 2022).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Lots of local producers-just not captured in the figures. Recognising the informal sectors e.g., farm shops, allotments." (Workshop 1).

Key Theme	Area For Policy Development
Improve industry accountability through transparent data reporting	The absence of clear industry accountability frameworks hinders progress toward aligning food production and retail practices with dietary and sustainability targets.
Supporting evidence: Literature review	Data and Accountability: The need for robust, accessible data and transparent mechanisms to hold stakeholders accountable is underdeveloped in policy. (Scottish Government, 2024).
Supporting evidence: Stakeholder meetings	Data for policy tracking: Robust data systems are needed to inform policy decisions and track their effectiveness over time. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
Develop robust metrics for tracking dietary change and emissions reduction	The absence of standardised indicators makes it difficult to assess the climate impact of dietary shifts and monitor progress toward emissions reduction goals.
Supporting evidence: Literature review	Variability in Emissions Estimates Across food based dietary guidelines (FBDGs): Highlights the wide range of emissions reductions attributed to different dietary guidelines, which vary due to methodological differences across models. This variability can make it challenging to establish standardized or widely accepted climate benchmarks within FBDGs, which may complicate Scotland's efforts to adopt clear, evidence-based climate targets. (Tregear, Morgan, Spence et al., 2024).
Supporting evidence: Stakeholder meetings	Measuring dietary change: Identifying effective metrics to measure progress in dietary change is a key challenge. (Stakeholder Meeting 2).
Supporting evidence: Workshops	-
Expand broadband access to enable precision agriculture	Poor broadband connectivity in rural areas restricts the adoption of connected animal sensors and precision farming technologies, reducing agricultural efficiency.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Connectivity and Infrastructure Barriers to Digital Agriculture: Many rural areas lack broadband access, preventing the adoption of connected animal sensors and precision agriculture. Investment in rural digital infrastructure is essential. (Scottish Government, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
2: Agricultural Emissions and Climate Reporting	
Improve agricultural emissions reporting and accountability	Existing reporting mechanisms do not adequately integrate climate-smart farming technologies, reducing accountability and hindering emissions tracking.
Supporting evidence: Literature review	Monitoring and Accountability: Annual progress reporting on agricultural emissions reductions must be strengthened. Policies should integrate climate-smart farming technology adoption into monitoring frameworks. (Scottish Government, n.d.)
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Establish a standardised carbon footprinting and emissions tracking system	The inconsistent use of carbon calculators and the absence of methane emissions data at the farm level, combined with inconsistent GHG emissions calculation methods, make it difficult to assess and mitigate agricultural emissions effectively.
Supporting evidence: Literature review	Developing a standardised carbon footprinting tool Farmers currently use multiple, inconsistent carbon calculators. Recommendation: Create a universal farm carbon calculator, integrated with existing farm software and databases. Nourish Scotland (2021).
Supporting evidence: Stakeholder meetings	-

Key Theme	Area For Policy Development
Supporting evidence: Workshops	
Reassess methane accounting methods and livestock emissions data	Methane calculations should be reviewed due to methane's short atmospheric half-life. There is also a need to ensure fair assessments of emissions from lamb and beef production, particularly in extensive grazing systems.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Need to review data that exists e.g. lamb emission data - lamb is just below beef in terms of emissions, which is unusual as they are the most extensively reared. Environmental impact takes into account amount of land you are using and in NZ where herd size is bigger but they are confined to smaller areas and use hard feed, and somehow they are more emission friendly? it seems Scotland is penalised for highland roaming. i think we need to get a new calculation for this." (Workshop 3).
Define specific emissions reduction goals for beef production	While Scotland has national emissions targets, it lacks sector-specific goals for beef production, a major contributor to agricultural emissions.
Supporting evidence: Literature review	No Sector-Specific GHG Reduction Targets for Beef Farming While Scotland has national emissions targets, no specific reduction goals exist for beef production. Policy intervention: Develop beef-sector-specific climate goals, aligning with methane reduction strategies. (McNicol, Bowen, Ferguson et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-

Key Theme	Area For Policy Development
Develop a centralised database for methane efficiency traits in livestock	Unlike Ireland's cattle breeding data system, Scotland lacks an integrated tool to track genetic progress in methane reduction, limiting breeding efficiency. [13]
Supporting evidence: Literature review	Scotland lacks a centralised database for methane traits in livestock, like the Irish Cattle Breeding Federation (ICBF). Integration with existing breeding tools like ScotEID and EGENES is needed to track genetic progress, alongside cross-country collaboration to enhance data sharing and breeding efficiency (Jenkins, Herold, de Mendonça et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Increase farmer awareness and uptake of precision livestock farming (PLF) technologies	Many farmers do not view PLF tools as effective for reducing greenhouse gas emissions, limiting their adoption despite proven environmental benefits.
Supporting evidence: Literature review	Many farmers do not perceive PLF tools as effective greenhouse gas (GHG) reduction strategies, despite their proven benefits, limiting adoption. Policy intervention: Increase extension services, training programs, and peer-to-peer learning initiatives. (Ferguson, Bowen, McNicol et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-

[13] Integrated cattle breeding data systems allow the tracking of genetic traits of livestock over time. This can include feed efficiency and methane emissions. By linking performance data to genetic profiles, these systems support selective breeding for lower-emission animals. Without such a tool, it is more difficult to monitor and accelerate genetic progress toward reducing methane emissions from cattle in a coordinated and efficient way.

Key Theme	Area For Policy Development
Enhance technological capacity for supply chain resilience against climate disruptions	The potential of technology to improve the resilience of food supply chains against climate-related disruptions remains underutilised.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Technology for Supply Chain Resilience: The potential of emerging and existing technologies to strengthen the resilience of food supply chains in the face of climate-related disruptions remains significantly underexplored and underutilised. Digital tools, data analytics, automation, and innovations offer opportunities to improve monitoring, forecasting, and responsiveness across the supply chain. However, their application in building climate resilience is still limited, and greater attention is needed to scale up these solutions and integrate them into policy and practice. (Stakeholder Meeting 8).
Supporting evidence: Workshops	-
3. Food Consumption and Emissions Attribution Issues	
Improve food consumption data accuracy for policy evaluation	High-emission foods like meat and dairy are often underreported in dietary assessments, limiting the accuracy of policy evaluations.
Supporting evidence: Literature review	Recognising underreporting issues, especially for high-emission foods like meat and dairy, could guide improvements in dietary assessment methods Underreporting in Food Consumption Data: Recognizing underreporting issues, especially for high-emission foods like meat and dairy, could guide improvements in dietary assessment methods. Policies might encourage better data collection and reporting to ensure more accurate emissions assessments and tailored dietary interventions. (Jaacks, Frank, Vonderschmidt et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Enhance food origin tracking for accurate emissions attribution	The absence of comprehensive tracking for imported and processed Scottish foods makes it difficult to develop precise climate policies.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Need for comprehensive information on the origins of foods consumed in Scotland to improve emissions accounting. The absence of detailed data, particularly for Scottish produce that is processed abroad and reimported, hinders accurate emissions attribution and the development of effective climate policies. (Jaacks, Frank, Vonderschmidt et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Scottish solutions and data are needed to tackle climate change in Scotland. We need national data and should stop using international data for GHGE and water use for our modelling." (Workshop 1).
Increase the granularity of Scotland's net-zero emissions data	Scotland's emissions tracking system focuses on high-level data without accounting for regional variations, reducing policy precision.
Supporting evidence: Literature review	Need for comprehensive information on the origins of foods consumed in Scotland to improve emissions accounting. The absence of detailed data, particularly for Scottish produce that is processed abroad and reimported, hinders accurate emissions attribution and the development of effective climate policies Data Gaps in Food Production Origins: The report identifies a need for detailed information on the origins of foods consumed in Scotland. This information is essential for accurately attributing emissions, particularly as some Scottish produce is processed outside Scotland before being reimported for local consumption. Policy could address this by improving traceability in food supply chains. (Jaacks, Frank, Vonderschmidt et al., 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Assess the sustainability impacts of plant-based alternatives	Clear methodologies are required to compare the sustainability of plant-based meat alternatives with traditional meat products.
Supporting evidence: Literature review	-

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	Assessing Sustainability of Plant-Based Alternatives: Robust and transparent methodologies are urgently needed to assess the sustainability of plant-based meat alternatives in comparison to conventional meat products. Current assessment approaches often vary widely in scope and metrics, making it difficult to draw consistent conclusions about environmental, nutritional, and socio-economic impacts. Developing standardised frameworks would enable clearer comparisons, guide consumers and policymakers, and support innovation in the alternative protein sector. (Stakeholder Meeting 13).
Supporting evidence: Workshops	-
Use digital tools to promote local, ethical, and sustainable food choices	Encourage consumers to connect with local suppliers and assess animal welfare and product quality through observable online rating systems.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Use digital shopping to encourage people to find and use local suppliers of animal produce and check welfare/quality - like a Tripadvisor score." (Workshop 1).
Expand infrastructure and technical support for local food systems	There is inadequate policy support for expanding infrastructure and providing technical assistance to scale up local and regional food production.
Supporting evidence: Literature review	There is currently a lack of dedicated funding mechanisms or targeted incentives to support the scaling up of low-carbon technologies within food production and processing. This gap limits the widespread adoption of innovations that could significantly reduce greenhouse gas emissions across the sector. Without strategic investment and policy support, many promising technologies remain at the pilot or early adoption stage, limiting their potential to contribute to national climate goals and a more sustainable food system. (Sovacool, Bazilian, Griffiths et al., 2021).

Key Theme	**Area For Policy Development**
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-

Appendix K Extended Legal analysis: Areas for further policy development and supporting evidence

Key Theme	Area For Policy Development
1. Regulatory Gaps in Sustainable Food Systems and Supply Chains	
Strengthen regulation and incentives for low-carbon food production	There are no targeted resources, tax benefits, or regulatory measures to encourage low-carbon food production, limiting sustainability efforts.
Supporting evidence: Literature review	Lack of specific policies to incentivise low-carbon food production or regulate high-emission food products. The absence of targeted subsidies, tax benefits, or regulatory measures limits the transition to more sustainable food systems and weakens efforts to reduce the environmental impact of food production and consumption. (Milner, Green, Dangour et al. (2015).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Enhance the polluter-pays principle and support for sustainable farming	Inadequate enforcement of environmental accountability and limited financial support for farmers transitioning to sustainable practices slow climate-resilient food system reforms.
Supporting evidence: Literature review	Enforcement of the polluter-pays principle[14] remains inadequate, with limited financial incentives and regulatory measures to ensure industry accountability. Additionally, there is insufficient support for farmers transitioning to environmentally sustainable practices, limiting progress toward a more climate-resilient food system. (Food Farming & Countryside Commission (FFCC), 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-

[14] An environmental policy principle stating that those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment.

Key Theme	Area For Policy Development
Ensure fair and transparent supply chains	Weak regulations allow power imbalances between large corporations and small producers to persist, reinforcing supply chain inequalities and environmental harm. Regulating supply chains avoids the barrier of relying on voluntary behaviour change.
Supporting evidence: Literature review	Regulatory gaps constrain efforts to ensure fairness and transparency in supply chains, particularly in addressing power imbalances between large corporations and small producers. Weak enforcement of fair practices within the food supply chain sustains inequalities and contributes to environmental harm. (Food, Farming and Countryside Commission (FFCC), 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Expand the reach of the Good Food Nation (Scotland) Act	The GFN Act primarily governs public sector food policies but lacks mechanisms to regulate supermarkets, food manufacturers, and large-scale agricultural producers.
Supporting evidence: Literature review	Limited Leverage Over the Private Sector: The GFN Act focuses primarily on public sector food policy but does not impose obligations on supermarkets, food manufacturers, or large-scale agricultural producers. Without mandatory private sector participation, major food system emissions and supply chain issues may remain unaddressed. (Brennan, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Clarify the role of carbon markets in agriculture	Farmers struggle to engage in carbon markets due to unclear regulations, unstable pricing, and a lack of standardised methodologies.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Scottish farmers have limited engagement with carbon markets due to a lack of standardised methodologies, clear regulations, and stable pricing mechanisms. This uncertainty prevents broader participation, reducing opportunities for farmers to benefit financially from carbon sequestration efforts and limiting the agricultural sector's contribution to climate mitigation. (Baker, Conquest & Moxey, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Enhance retailer accountability in a sustainable food system	Retailers are not required to report Scope 3 emissions from the products they buy and sell, limiting accountability for sustainability impacts.
Supporting evidence: Literature review	Regulatory Influence and Future Expectations: i. Some firms voluntarily disclose their emissions through the Science Based Targets initiative (SBTi). ii. While there is currently no legal requirement to reduce Scope 3 emissions, emerging policy signals indicate that more stringent regulations are likely in the future. (Baker, Conquest & Moxey, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Support local and regenerative food production	Local food systems face barriers such as limited land and sea access and complex licensing requirements that disadvantage smaller producers.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	"Access to land, access to seas, complex licensing systems that play into the hands of multinational corporations who have the means and expertise to complete these." (Workshop 1).

Key Theme	Area For Policy Development
2: Regulation of Food Marketing, Composition, and Consumer Information	
Strengthen regulation of unhealthy food promotions	Weak marketing rules allow unhealthy food advertising that worsens health inequalities. Stronger regulation and fiscal measures are needed to shift sales toward healthier, sustainable options.
Supporting evidence: Literature review	Impact of food promotions on diet: Unhealthy foods are heavily promoted, influencing consumer choices and increasing the purchase of unhealthy items. Children in lower-income areas are more exposed to unhealthy food marketing and have higher childhood obesity rates. Cost-of-living pressures have made nutritious food less affordable, worsening dietary inequalities. Weak oversight of marketing and promotional strategies for less healthy food options allows widespread exposure, particularly in vulnerable communities. This lack of regulation risks exacerbating health inequalities by reinforcing dietary patterns linked to poor health outcomes. (Public Health Scotland (PHS), 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Establish nutritional and environmental standards for out-of-home food	The absence of comprehensive regulations for food sold in restaurants, cafes, and takeaways weakens policy efforts to promote healthier and more sustainable dietary habits. There is also a lack of sufficient planning levers to regulate food outlets.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Sustainability Measures: There is a lack of policies addressing the environmental impacts of takeaway packaging and food delivery systems. Nutritional Standards for Out-of-Home (OOH) Foods Regulation of high-calorie, high-salt, and high-sugar foods sold out-of-home remains limited. Promotion Regulation Oversight of promotions for less healthy food options—particularly in quick service restaurants (QSRs)—is weak. Equity in Access Current policies do not adequately ensure that healthier OOH food options are affordable and accessible for lower-income communities. (Food Standards Scotland (FSS), 2021b).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Mandate reformulation requirements for unhealthy foods	The reliance on voluntary industry commitments for food reformulation weakens public health efforts, as there are no legal obligations for reducing unhealthy ingredients.
Supporting evidence: Literature review	The UK and Scottish Governments rely on voluntary industry measures for food reformulation, with no legal obligation for companies to reduce unhealthy ingredients. This weakens efforts to improve public health and reduce diet-related diseases, leaving progress dependent on inconsistent voluntary compliance. Lack of mandatory reformulation: The UK and Scottish Governments support mandatory reformulation only if voluntary efforts fail. Currently, there is no legal requirement for companies to reformulate unhealthy foods. (Obesity Action Scotland (OAS), 2019).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Implement carbon footprint labelling for food	There are currently no mandatory requirements for carbon footprint labelling on food products, which limits consumers' ability to make informed, low-emission dietary choices.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Regulation and Accountability a. Despite growing emphasis on emissions reduction, there are no mandatory requirements for carbon footprint labelling on food products, limiting consumers' ability to make informed low-emission choices. b. Regulatory mechanisms to ensure business compliance with carbon labelling, food waste reduction, and sustainable practices remain weak. (Climate Change Committee, 2020).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-
Ensure the right to adequate nutrition	Dietary policies must uphold human rights by ensuring all populations, particularly marginalised communities, have equitable access to nutritious food.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Ensuring the right to adequate nutrition: Issues surrounding the right to adequate nutrition, particularly for marginalized communities, have been highlighted. Dietary policies must align with human rights obligations to ensure equitable access to nutritious food for all populations. (Stakeholder Meeting 4).
Supporting evidence: Workshops	-
Address gaps in food standards, including non-dairy milk fortification	The absence of mandatory fortification for non-dairy milk alternatives raises concerns about potential nutritional inadequacies for populations relying on these products as dairy substitutes.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Gaps in food standards, including non-dairy milk fortification: There are gaps in regulatory frameworks related to food standards, including the lack of mandatory fortification for non-dairy milk alternatives. This may contribute to nutritional inadequacies among populations that rely on these products as dairy substitutes. (Stakeholder Meeting 13).

Key Theme	Area For Policy Development
Supporting evidence: Workshops	-
3: Legal and Governance Barriers to Policy Implementation	
Align devolved and UK dietary policies	Legal complexities in the division of powers create difficulties in developing cohesive dietary and climate policies across the UK, leading to inconsistencies between devolved administrations and the UK Government.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Challenges in aligning devolved and UK dietary policies: Aligning diet and climate policies between devolved administrations (e.g., Scotland) and the UK Government presents legal challenges. The division of powers complicates the development of cohesive dietary policies, resulting in inconsistent approaches across the UK. (Stakeholder Meeting 9).
Supporting evidence: Workshops	-
Manage legal risks from dietary shifts	There are concerns that dietary guidelines encouraging reduced meat and dairy consumption could lead to nutrient deficiencies, creating potential legal risks if public health is adversely affected.
Supporting evidence: Literature review	-
Supporting evidence: Stakeholder meetings	Legal risks from unintended nutritional deficiencies: Stakeholders have raised concerns about potential legal risks if dietary guidelines inadvertently lead to health issues, such as nutrient deficiencies. This is particularly relevant with blanket recommendations to reduce meat and dairy consumption without considering adequate nutritional alternatives. (Stakeholder Meeting 9).
Supporting evidence: Workshops	-
4: Administrative and Market Challenges in Sustainable Agriculture	
Evaluate the effectiveness of carbon audits in agriculture	While carbon audits for farmers are encouraged, they lack enforceable targets or evidence of significant emissions reductions, making them more bureaucratic than effective.

Key Theme	**Area For Policy Development**
Supporting evidence: Literature review	Limited Impact of Carbon Audits: There is no clear evidence that carbon audits have led to significant emission reductions in Scottish agriculture. Administrative Burden and Costs: Farmers must provide carbon data to multiple buyers, leading to high reporting demands. Uncertainty About Market-Based Carbon Incentives: Voluntary carbon credit markets are underdeveloped, leading to hesitation from farmers. (Baker, Conquest & Moxey (2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Workshops	-

Appendix L Extended Environmental analysis: Areas for further policy development and supporting evidence

Key Theme	Area For Policy Development
1. Land Use, Tenure, and Access for Sustainable Agriculture	
Improve land tenure security for community food systems	Temporary land use agreements create instability for community gardens, while bureaucratic hurdles, insecure tenure, and limited land availability continue to restrict community food-growing efforts, despite the Community Empowerment (Scotland) Act 2015.[15]
Supporting evidence: Literature review	While the importance of secure land access for community gardens is acknowledged, the prevalence of temporary land use arrangements creates instability, limiting long-term planning and the sustainability of community-based food initiatives. (Meyerricks, & White, 2021).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	"Need community to take on land and community need funding to do so. There is something about learning from crofting practices in the context of a sustainable food system. Some challenges are related to the free market and the crofting regulation, the right to buy and the lack of regulation." (Workshop 4).
Support new agroecological farmers with land and financial access	New farmers struggle to secure land and financial resources, limiting the transition to sustainable farming systems.

[15] The Community Empowerment (Scotland) Act 2015 is legislation that aims to strengthen the voices of communities in decisions that affect them. It gives communities additional rights and opportunities to influence public service provision, ownership of land and buildings, and participation in local planning and decision-making to improve outcomes. See Community Empowerment (Scotland) Act 2015

Key Theme	Area For Policy Development
Supporting evidence: Literature review	Limited access to secure land tenure and financial support remains a significant barrier for new entrants into farming, even though this group is often more open to adopting agroecological and sustainable practices. Addressing these access issues is essential to enable a new generation of climate-conscious farmers. (Lozada & Karley, 2022).
Supporting evidence: Stakeholder meetings	Land ownership and affordability issues: Competition and rising land costs are pricing out farmers, limiting opportunities for sustainable agricultural transitions. (Stakeholder Meeting 1).
Supporting evidence: Stakeholder workshops	-
Strengthen strategic oversight for land use change	Unregulated forestry expansion risks displacing agricultural land without a public interest test or requirements for net carbon sequestration assessment.
Supporting evidence: Literature review	Market-driven forestry expansion poses a risk of displacing agricultural land without adequate strategic oversight. There is currently no requirement for a "public interest test" to assess the impact of afforestation on farming, nor a mandate for large forestry projects to demonstrate long-term net carbon sequestration, limiting sustainable land use planning and balance between agriculture and forestry. (Scottish Government, 2024).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	"The ARCZero[16] pilot in Northern Ireland showed that well managed grazing land stores more carbon in the soil and promotes more biodiversity than forestry. SG should account for this when planning future goals for land use." (Workshop 3).

[16] The ARCZero project is a farmer-led initiative in Northern Ireland aimed at measuring and managing carbon flows within agricultural systems to achieve net-zero carbon emissions. Comprising seven diverse farms, the project employs advanced techniques such as detailed soil sampling and LiDAR scanning to assess both greenhouse gas emissions and carbon sequestration capacities. By establishing comprehensive carbon balance sheets, ARCZero

Key Theme	Area For Policy Development
Develop alternative land use strategies for rough grazing areas	There is no clear plan for repurposing Scotland's vast rough grazing areas, limiting sustainable land management and biodiversity conservation. Livestock farming remains the only viable option for some land.
Supporting evidence: Literature review	There is no clear plan for repurposing the 60% of Scotland's rough grazing land that may not be suitable for crop production. The absence of strategic land use policies limits opportunities for sustainable land management, climate mitigation, and biodiversity conservation. (Kennedy, Clark, Stewart et al., 2025).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	"Reducing livestock farming=farming concerns and biodiversity concerns-livestock farming only viable thing for certain land." (Workshop 1).
Recognise the role of grazing land in carbon sequestration and biodiversity	Well-managed grazing land can sequester more carbon and support greater biodiversity than forestry, which should be considered in Scotland's land-use planning.
Supporting evidence: Literature review	Afforestation projects are viewed as potentially effective measures for carbon sequestration and therefore climate change mitigation. Much of the land in temperate regions suitable for afforestation is used for agriculture and consequently afforestation of farmland is frequently proposed. Landowners are commonly reluctant to sacrifice fertile land for purposes other than food and feed production. In Scotland's uplands, grazed pastures are a common land use that could be put under pressure by demands for woodland planting. This chapter explores how farm woodland planting for carbon sequestration and biofuel production affects livestock output. The concepts presented show that there is great potential for integrating agriculture and forestry to achieve environmental benefits without compromising productivity. (Beckert, Smith & Chapman, 2016).

empowers farmers to implement informed strategies that reduce emissions and enhance carbon storage, contributing to more sustainable and climate-resilient farming practices.

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	"The ARCZero pilot in Northern Ireland showed that well managed grazing land stores more carbon in the soil and promotes more biodiversity than forestry. SG should account for this when planning future goals for land use." (Workshop 3).
Balance livestock reduction with land use trade-offs	With more than 85% of Scottish farmland classified as 'Less Favoured Area' (LFA) and often unsuitable for plant protein cultivation, reducing livestock could disrupt feed crop markets and impact farm incomes. Addressing mixed messages on CO_2 impacts of extensively grazed grasslands versus forestry is needed while ensuring food production resilience in a changing climate.
Supporting evidence: Literature review	Afforestation is widely regarded as a promising strategy for carbon sequestration and climate change mitigation. However, much of the land suitable for afforestation in temperate regions is already used for agriculture, leading to frequent proposals for planting trees on farmland. Landowners are often hesitant to give up productive land traditionally used for food and feed. In Scotland's uplands, where grazed pasture is common, there is particular concern about the impact of woodland expansion on livestock farming. This article examines how woodland planting for carbon sequestration and biofuel production can influence livestock output. It highlights the significant potential for integrating forestry and agriculture in ways that deliver environmental benefits without reducing overall productivity. (Beckert, Smith & Chapman, 2016).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	"Don't forget >85% of Scottish farmland is 'less favoured' so mostly cannot be used to grow plant proteins. Also poor quality crops are sold for animal feed. A reduction in livestock will impact this market and reduce farm incomes." (Workshop 3).
Acknowledge biophysical limitations on agriculture	Natural constraints determine what crops can be grown in different regions, influencing food production and sustainability.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	In Scotland, natural constraints such as climate, soil quality, altitude, and water availability significantly shape agricultural decisions—especially regarding what crops can be grown and where. These physical limitations, in combination with socio-economic and policy considerations, influence both food production capacity and agricultural sustainability. This article reviews how regional climate and infrastructure influence where legumes can be grown, considering their role in sustainable agriculture. (Wiltshire, Freeman, Willcocks et al., 2021).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	"Biophysical constraints on what can be grown. Lobby groups preserving industries. Reputation of Scottish food producers." (Workshop 1).
2. Areas for Policy Development in Agricultural Climate Mitigation and Adaptation	
Expand agricultural climate policies beyond food emissions	Current policies measure emissions from specific foods but fail to consider how broader agricultural and food system changes could drive more effective climate mitigation.
Supporting evidence: Literature review	Current assessments highlight emissions from specific foods but fail to consider the broader impact of systemic shifts in agricultural practices and food system transformations, limiting opportunities for comprehensive climate mitigation strategies. (Nneli, Revoredo-Giha & Dogbe, 2023).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	-
Avoid rebound effects in precision livestock farming (PLF) efficiency gains	Productivity improvements from PLF could inadvertently lead to higher total emissions if herd expansion offsets efficiency gains.
Supporting evidence: Literature review	There is a risk that productivity gains from Precision Livestock Farming (PLF) could lead to an overall increase in total emissions, as improved efficiency per unit could be offset by herd expansion. (McNicol, Bowen, Ferguson et al., 2024).

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	-
Strengthen policy responses to climate risks in agriculture	Policies fail to address the financial impact of extreme weather on farming, lack strategies for water conservation, and fail to enforce improved soil management.
Supporting evidence: Literature review	Current policies fail to sufficiently address the financial impacts of extreme weather on agriculture, particularly within the beef sector. Water scarcity risks remain unmanaged due to the lack of strategies for rainwater capture and groundwater conservation. Furthermore, despite increasing concerns about soil degradation, there are no clear policy requirements for improved soil management. SAC Consulting, n.d.).
Supporting evidence: Stakeholder meetings	Fragmented governance across Government divisions, leading to disjointed approaches to diet, climate, and health policies: Disjointed approaches to diet, climate, and health policies due to lack of coordinated structures. (Stakeholder Meeting 3).
Supporting evidence: Stakeholder workshops	-
Integrate grazing land's role in biodiversity and carbon capture	Policies fail to recognise the role of sustainable grazing systems in enhancing biodiversity and carbon sequestration.
Supporting evidence: Literature review	Current policies do not fully acknowledge or integrate the potential role of grazing systems in supporting biodiversity and carbon sequestration. The absence of clear guidelines or incentives limits opportunities to enhance sustainable grazing practices that contribute to environmental and climate goals National Farmers Union Scotland (NFUS , n.d.).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	-
Address localised environmental impacts of intensive farming	While overall farming emissions may appear low across systems, specific regions with intensive agricultural activities experience significant localized environmental impacts.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	The use of nitrogen fertilisers in agriculture is a major contributor to nitrous oxide (N_2O) emissions — a potent greenhouse gas. Reducing these emissions poses a significant global challenge, and doing so requires reliable methods for estimating N_2O output across different farming systems. Scientists commonly rely on biogeochemistry (BGC) models to estimate soil-based emissions, but these models can present difficulties: large-scale studies often lack local detail, while small-scale studies may not be widely applicable. In addition, many studies provide limited information on the reliability of their results. This study took a novel approach by focusing on eastern Scotland, a region with well-documented farming practices. Researchers applied a robust BGC model to assess N_2O emissions, nitrate (NO_3) leaching, and nitrogen uptake in crops such as barley, wheat, and oilseed rape. The high-resolution modelling revealed that although eastern Scotland's intensive cropping systems are efficient, they exhibit elevated N_2O emission intensities per hectare, largely due to the use of synthetic fertilisers. (Myrgiotis, Williams, Rees et al., 2019).
Supporting evidence: Stakeholder meetings	Localised environmental impacts of emissions-intensive farming: While the overall environmental impact of farming may be low when averaged across systems, localized environmental impacts can be significant, particularly in areas with emissions-intensive agricultural activities. (Stakeholder Meeting 8).
Supporting evidence: Stakeholder workshops	-
Balance environmental goals with socioeconomic sustainability	Environmental goals can coexist with job security and the sustainability of fragile communities, but current policy does not always reflect this balance.

Key Theme	Area For Policy Development
Supporting evidence: Literature review	This study explores what it means to be a responsible farm business in today's world, especially after COVID-19 and Brexit. Being a responsible business involves tackling poverty, inequality, and environmental harm, but different groups—like customers, the media, and global organisations—have different views on what that means. Farms are part of a complex rural system filled with tensions and contradictions. This research focuses on how farmers can understand and manage these tensions to run more responsible and sustainable businesses. Using data from one farm and interviews with five others in the same community, the study develops a framework to show how farmers balance competing demands. It looks at how farmers' entrepreneurial mindset (or Entrepreneurial Orientation, EO) is shaped by experience and changing times. The study argues that good policies, informed by real-world farming experiences, can support responsible decision-making. (Smith, Duncan, Edward et al., 2021).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	"An acknowledgement that supporting our environment does not need to come at the expense of jobs or supporting fragile communities." (Workshop 1).
Understand the complexities of meat production and consumption	Variations in where meat is produced and consumed across the UK and internationally influence territorial emissions differently, shaping the regional impacts of dietary change.
Supporting evidence: Literature review	Highlights how territorial specialization in meat production and consumption across Europe creates uneven nitrogen and GHG burdens. Countries like the UK import much of their animal feed and meat, meaning dietary change impacts vary regionally based on local vs outsourced emissions. (Billen, Aguilera, Einarsson et al., 2021).
Supporting evidence: Stakeholder meetings	-

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder workshops	"Complexities around where especially meat is produced and where it is consumed across the UK and internationally. Changes in diet in different regions will affect territorial emissions differently." (Stakeholder Workshop 3).
Rethink agri-tech and livestock systems for sustainability	Climate and environmental protection should focus on transforming food systems and reducing reliance on livestock feed crops like soy, rather than shifting all animals indoors.
Supporting evidence: Literature review	UK livestock systems rely heavily on imported soy. Holmes proposes a shift to legume-supported agroecology, noting this is better for soil, climate, and economic sovereignty. (Holmes, 2018).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	"Issues around agri tech and comms being that to protect climate and the environment, we do not need to put all animals indoors, rather than addressing the food systems themselves and the dependence we have on livestock production and the impact of feeding livestock e.g. deforestation to produce soy that only goes to feed livestock." (Workshop 3).
Ensure net zero goals align with animal welfare standards	Efforts to intensify food production for climate targets must not compromise animal welfare standards.
Supporting evidence: Literature review	Climate change affects agriculture in many different ways. The CCC advises that adaptation efforts should address risks such as flooding, heavier rainfall, and rising temperatures. It also recommends improving the sector's ability to handle new challenges like shifting pest and disease patterns. These climate impacts will affect multiple areas of farming. For instance, both crops and livestock will face heat stress and a rise in pests and diseases due to warmer, wetter conditions. Waterlogged soils can reduce crop yields, while livestock may suffer from lower welfare, affecting fertility and production, such as milk yields. (Jenkins, Avis, Willcocks et al., (2023).
Supporting evidence: Stakeholder meetings	-

Key Theme	Area For Policy Development
Supporting evidence: Stakeholder workshops	"Animal welfare: Intensifying food production to meet net zero goals could come at the expense of animal welfare." (Workshop 4).
3: Environmental Impacts and Food Systems	
Address the environmental impact of ultra-processed foods	Ultra-processed foods, including those from large fast-food chains, often have a high environmental footprint and run counter to principles of sustainable food culture.
Supporting evidence: Literature review	Global food systems are increasingly unsustainable for human health, the environment, animal welfare, biodiversity, food culture, social equity, and small-scale farmers. While the high consumption of animal-based foods has long been seen as a key contributor to this problem, growing attention is now being paid to the role of ultra-processed foods (UPFs). This review examines whether concerns about UPFs are valid. It looks at the typical ingredients and additives in UPFs and the farming practices used to produce them. The findings show that UPFs are closely linked to emissions-intensive farming and livestock systems, and they negatively impact nearly every aspect of food system sustainability. This is largely due to the global spread of cheap, highly processed products made from low-cost ingredients. Although UPFs generally have lower greenhouse gas emissions than conventional meat and dairy, especially those low in animal-based calories, reducing UPF consumption—without replacing it with other energy-dense foods—can still lead to significant environmental benefits. To improve sustainability, the review recommends cutting back on UPFs and shifting toward minimally processed, seasonal, organic, and locally produced foods. (Fardet & Rock, 2020).
Supporting evidence: Stakeholder meetings	Environmental impact of ultra-processed foods: Ultra-processed foods, such as those offered by large fast-food chains (e.g., Domino's Pizza), are often inconsistent with the principles of a sustainable food culture due to their high environmental footprint. (Stakeholder Meeting 11).
Supporting evidence: Stakeholder workshops	-

Key Theme	Area For Policy Development
Strengthen food system resilience against climate and supply risks	Enhancing farm resilience to weather extremes, power disruptions, and crop variability by reconsidering older, more resilient crop varieties, reducing dependence on a limited range of crops, and growing local varieties better suited to conditions. Greater policy focus is needed on planning and adaptation strategies to support farmers facing climate-related disruptions.
Supporting evidence: Literature review	Report on analysis highlighting how much of Scotland's traditional food culture connected to native plants has been lost, with significant implications for climate resilience. This loss is rooted in historical events such as land enclosure, the Highland Clearances, the dissolution of monasteries, and strict regulation of industries like whisky production, which excluded traditional local ingredients. These processes contributed to the erasure of knowledge and practices around native plants—plants that could play a vital role in adapting to climate change through low-input, locally adapted food systems. (Lozada & Karley, 2022).
Supporting evidence: Stakeholder meetings	-
Supporting evidence: Stakeholder workshops	"We need to be more resilient. Even weather concerns > power cuts etc. can have a huge impact on the resilience of a farm. A bad year of weather patterns can completely skew a crop trial, and previous variants that we maybe do not use/grow as much now, could potentially be more resilient. Poultry especially is much more sensitive to zoonotic/disease strains around years ago." (Workshop 3).

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