Farming for the future: Skills for climate- and nature-friendly farming

Report for WWF Scotland

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Instruction

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Executive summary

WWF Scotland is committed to supporting the delivery of a just transition to a nature- and climate-friendly farming system that also ensures nutritional security. To meet this ambition, farmers, crofters, and land managers need trusted, independent advice and access to high-quality knowledge exchange, training, and innovation. A robust Agricultural Knowledge and Innovation System (AKIS) is the foundation for this transition.

AKIS refers to the integrated network of people, institutions, services, and flows of knowledge that support agricultural innovation and decision-making. This includes advisory services, education and training providers, research institutions, demonstration and monitor farms, digital tools, and farmer-led networks. An effective AKIS bridges the gap between research and practice, ensures that farmers can learn from one another, and equips land managers to make confident decisions for their context.

WWF Scotland's Vision for Scottish Agriculture has three strategic pillars: funding climate and nature actions, investing in advice and skills development, and guaranteeing nutritional security. Through promoting these key areas, WWF Scotland has a key role to play in influencing policy design and public investment in AKIS. WWF Scotland commissioned this project to identify practical recommendations and priority investments that can strengthen Scotland's AKIS and unlock the uptake of climate- and biodiversity-positive farming practices.

Purpose and methodology

The purpose of this report is to provide WWF Scotland with a range of options and recommendations on opportunities for influencing policy regarding developing an AKIS which is fit-for-purpose to enable a farming transition in line with Scotland's net zero and nature positive targets. This work had the following key objectives:

1. Assess the current knowledge exchange system, including funding history, and create a system map.
2. Conduct a gap analysis for current advisory system capabilities against the skills required for sustainable, regenerative, and climate-resilient farming, as outlined in policies and strategies such as the Scottish Government's vision for agriculture, the Agriculture and Rural Communities (Scotland) Act 2024, the Agricultural Reform Programme, and WWF's Vision for Agriculture.
3. Suggest an approach for bridging skills gaps, including an estimation of costs to the public sector.
4. Integrate findings from interviews and conversations with key stakeholders and experts throughout the report.
5. Identify implications for policy integration and make recommendations on levers and opportunities for WWF to influence related policy areas.

6. Deliver a workshop for key actors with regards to a future AKIS, including farmers, crofters, farmer groups / panels / committees, supply chain representatives, policymakers, advisors, education / training, and research / innovation. The workshop will present the findings from Parts 1-3 to gauge reactions, validate findings, capture any points of disagreement, and identify areas of future research.

Key Findings

1. **Scotland's AKIS is fragmented and underfunded**
   Scotland lacks a coordination group or governance mechanism for AKIS and existing public investment in knowledge exchange is insufficient to enable the transition required. While the FAS programme has seen significant growth in funding, KTIF and other AKIS related activities occupy less than 1% of Scotland's annual farm support budget. Stakeholders also identified a lack of coordination across advisory services, research, education, and policy.
2. **Farmer and crofter confidence requires trusted advice**
   Long-term, independent advice is critical to support decision-making for complex nature and climate actions. However, organisations with specialist expertise (e.g., RSPB, Soil Association) are sometimes unpaid for their advice and inputs. Access to trusted facilitators and advisors is unevenly distributed across Scotland.
3. **Peer learning and demonstration farms work**
   Initiatives such as Monitor Farm Scotland and FAS Connect are seen as highly effective in supporting practice change. Safe, peer-to-peer learning environments are critical for uptake of regenerative practices. However, current reach is limited.
4. **Scotland could learn from Ireland's AKIS Model**
   Ireland invests significantly more in AKIS functions, including through Teagasc's advisory and research service. Ireland commits over €150 million annually to Teagasc and has a formal AKIS Coordination Group. Scotland's investment in strategic policy, advice and facilitation is proportionally lower.
5. **High-impact interventions are known but under-delivered**
   Farmers and crofters are aware of practices that support biodiversity and reduce emissions. There is a mature evidence base for many nature- and climate-positive practices, but uptake remains constrained by practical and cultural implementation barriers. Knowledge exchange is the critical bridge between evidence and adoption, requiring real-world examples, costed case studies, one-to-one and one-to-many support, and benchmarking tools.

Recommendations & conclusions

WWF Scotland should advocate for a transformative investment in AKIS as part of wider just transition planning and agricultural reform. Seven priority recommendations are:

1. **Ring-fenced specialist advisory grants**
   Advocate for small grants or contracts to be expanded for biodiversity, pollution and soil specialists to support on-farm advice and monitoring.
2. **Expand monitor farms and demonstration networks**
   Help to grow the Monitor Farm Scotland network, supported by regional advisors and an increased digital literacy for open knowledge sharing.
3. **Strengthen farmer networks and events**
   Support farmer-led events, regional innovation festivals, thematic gatherings (e.g., peatland or biodiversity), and small innovation grants.
4. **Support the creation of an AKIS coordination body**
   Support the development of a coordination group or governing body to help strategically align AKIS funding, research translation, skills development, and policy alignment across government and delivery partners.
5. **Dedicated facilitation funding**
   Campaign for facilitator roles embedded in regional structures (for a minimum of five years) to support integrated farm planning for biodiversity, climate and business outcomes.
6. **Support inclusive education and CPD**
   Source funding for bursaries, scholarships CPD credits for under-represented groups (e.g., women, new entrants), and pilot nature-based modules in agricultural colleges.
7. **Invest in digital literacy and benchmarking tools**
   Support digital literacy and upskilling for farmers, including in benchmarking tools (e.g., for nitrogen use, greenhouse gas intensity, biodiversity indicators), and virtual learning formats.

Scotland has made important progress in recent years in recognising the role of AKIS in agricultural reform. However, to meet the Scottish Government's goals on climate, biodiversity and food security, more ambitious and coordinated investment in AKIS is required. Farmers and crofters are already experimenting with regenerative and low-emission practices, but need long-term support, clear pathways, and peer networks to drive adoption at scale. These key interventions are estimated to cost £26.2 million over five years, or £5–6 million annually – representing a modest increase in Scotland's AKIS funding relative to its total agricultural spend. The Scottish Government should commit this funding as a priority and increase AKIS funding year-on-year, to meet the Climate

Emergency Response Group's call to scale up to £20 million per year in agricultural knowledge exchange annually.[1]

WWF Scotland can continue to play a key role in catalysing this transformation, advocating for new investment in advice, skills, education and coordination as foundational pillars of a nature-positive food and farming system. This report provides an evidence-based foundation for that advocacy, and identifies a practical, costed roadmap for delivering change.

[1] Climate Emergency Response Group (2022) Unlocking Scotland's response to the climate emergency: 4 immediate actions to fast-track delivery for the Scottish Government.

1 Background & policy context

Scotland is facing a dual climate and nature emergency. The nation ranks in the bottom 12% globally for biodiversity intactness, and its climate emissions trajectory remains off track, as highlighted by the UK Climate Change Committee.[2] Despite statutory targets to reach net zero greenhouse gas emissions by 2045, emissions from the agriculture sector—Scotland's second largest source of greenhouse gases—have remained largely static over the past decade.[3, 4] How land is used will be critical in determining whether Scotland achieves its climate, biodiversity, and food production goals.

Agriculture, which accounts for over 70% of land use in Scotland, plays a pivotal role in this challenge. WWF Scotland's Vision for Agriculture envisions a sustainable food system where nature thrives alongside a just transition to net zero—one that delivers healthy, affordable, and accessible food, while reversing biodiversity loss and reducing emissions. Resilient ecosystems underpin long-term food security, and without a stable climate, food production cannot be sustained. As such, transforming Scottish agriculture is essential for building climate resilience and restoring nature.

The Scottish Government's Vision for Agriculture (2022) recognises that farmers and crofters are vital decision makers regarding land and outlines a future where they are supported to produce food sustainably while contributing to climate and nature outcomes. Similarly, Scotland's Biodiversity Strategy to 2045 sets out a pathway for nature restoration, calling for transformational change in land use. The Scottish Government's Climate Change Plan Update (2020) identified agriculture as a key sector where emissions reductions must accelerate.[5]

Yet, as WWF Scotland has previously identified, existing agricultural policy measures are insufficient to meet the necessary emissions reductions. The most promising technical and efficiency-based measures—without changing what is farmed—could deliver up to 2.9 Mt CO_2e annually, equivalent to 38% of 2017 agricultural emissions.[6] However, WWF Scotland and others have criticised the Scottish Government's lack of progress to make nature-friendly farming accessible to Scottish farmers.[7]

Historically, uptake of agri-environment and climate schemes has been slow, and the current innovation system is not driving the pace of change necessary. As Scotland

[2] UK Climate Change Committee (2024) Scotland's 2030 climate goals are no longer credible.
[3] Scottish Government (2024) Scottish Greenhouse Gas Statistics 2022.
[4] Scottish Government (2024) Scottish Agriculture Greenhouse Gas Emissions and Nitrogen Use Statistics.
[5] For the most recent publication from Scottish Government (June 2025), see Statement to Accompany the Climate Change (Scotland) Act 2009 (Scottish Carbon Budgets) Amendment Regulations 2025.
[6] Lampkin N, Smith L, Katrin P (2019) Delivering on Net Zero: Scottish Agriculture. A report for WWF Scotland from the Organic Policy, Business and Research Consultancy.
[7] Scottish Wildlife Trust (2025) Scottish Government failing farmers and nature.

transitions to a new system of agricultural support payments by 2027, aligning with the National Performance Framework's environmental and wellbeing goals, farmers and crofters will need to adapt and adopt new skills to respond to this (**Figure 1**). To meet the scale of transformation needed, significantly expanding opportunities for knowledge exchange, skills development and advisory support for farmers and crofters is essential.[8] These services will be crucial in helping land managers understand the implications of climate change, identify opportunities for emissions reduction and nature restoration, and engage effectively with new payment schemes and regulatory frameworks. Ensuring that all farmers and crofters are equipped to adapt and lead in this transition will be critical for securing Scotland's climate and biodiversity targets, and for ensuring a resilient and sustainable food system for future generations.

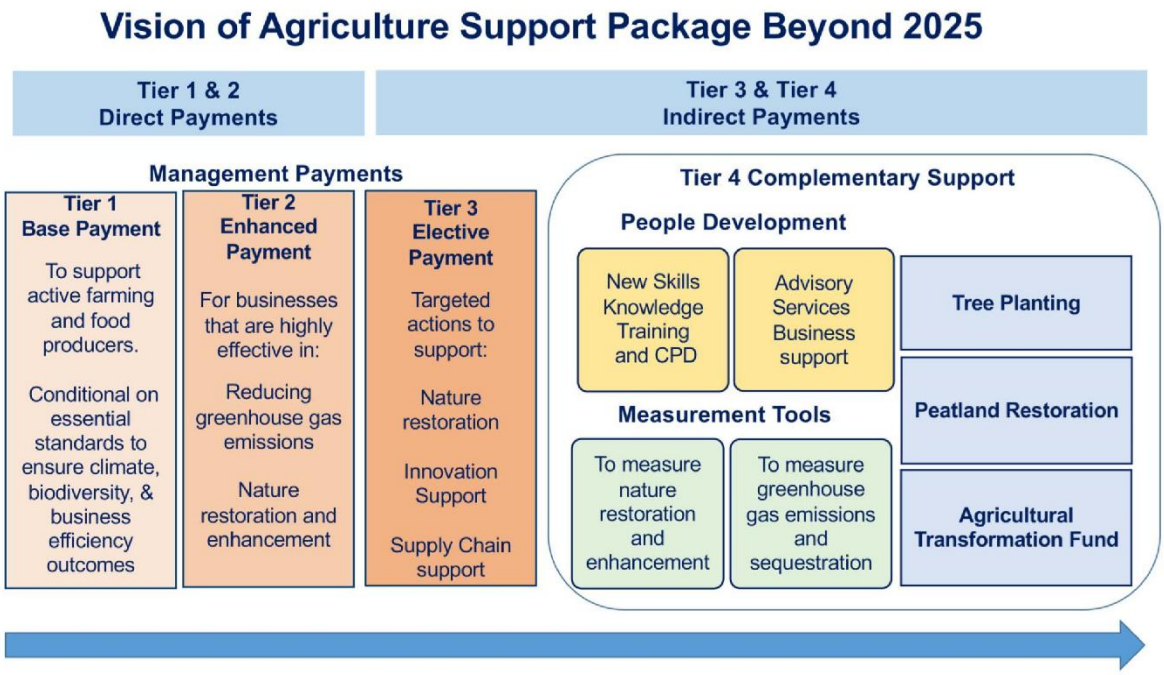


Figure 1: The breakdown of tiered support and associated actions under the Agricultural Reform Programme. Source: The Scottish Parliament (2023) The Agriculture and Rural Communities (Scotland) Bill.

[8] A recent report to the Climate Change Committee cited 'low levels of robust and relevant information and advice' as a barrier to uptake of greenhouse gas mitigation measures. Eory V, Fletcher D, Maclead M, Duthie C-A, Rees R, Topp K (2025) Greenhouse gas abatement in UK agriculture 2024-2050 (SRUC); Report for the Climate Change Committee.

2 Understanding AKIS

An agricultural knowledge and innovation system (AKIS) is defined as "a system of innovation, with emphasis on the organisations involved, the links and interactions between them, the institutional infrastructure with its incentives and budget mechanisms."[9] It encompasses all potential actors "involved in the creation, dissemination, adaptation and use of all types of knowledge relevant to agricultural production and marketing."[10]

2.1 History of AKIS

The concept of an AKIS dates back to the 1960s, originally operating as a linear model of knowledge transfer (from scientists to farmers via extension services) with the goal of accelerating agricultural modernisation. Since then, AKIS has shifted from this one-way, top-down model to embrace a systems approach, in which innovation can be driven by any of the diverse actors within an AKIS and especially via interactive learning between them (**Figure 2**).

The European Commission increased its engagement with AKIS in the 2000s, providing guidance and encouraging member states to map and baseline their AKIS. Under the 2023-27 Common Agricultural Policy (EU CAP), EU nations are required to show their strategic approach to AKIS and how this supports the cross-cutting objective of modernisation, knowledge sharing, innovation, and digitalisation.[11]

[9] European Commission Agriculture and Rural Development (2019) Preparing for future AKIS in Europe. Standing Committee on Agricultural Research (SCAR) 4th Report of the Strategic Working Group on Agricultural Knowledge and Innovation Systems (AKIS).
[10] European Commission Directorate-General for Agriculture and Rural Development (2023) Guidelines: Evaluating the AKIS Strategic approach in CAP Strategic Plans.
[11] European Commission (2021) Tool 8.1 Tool for the CAP Cross-cutting Objective: Modernisation, AKIS, digital strategy.

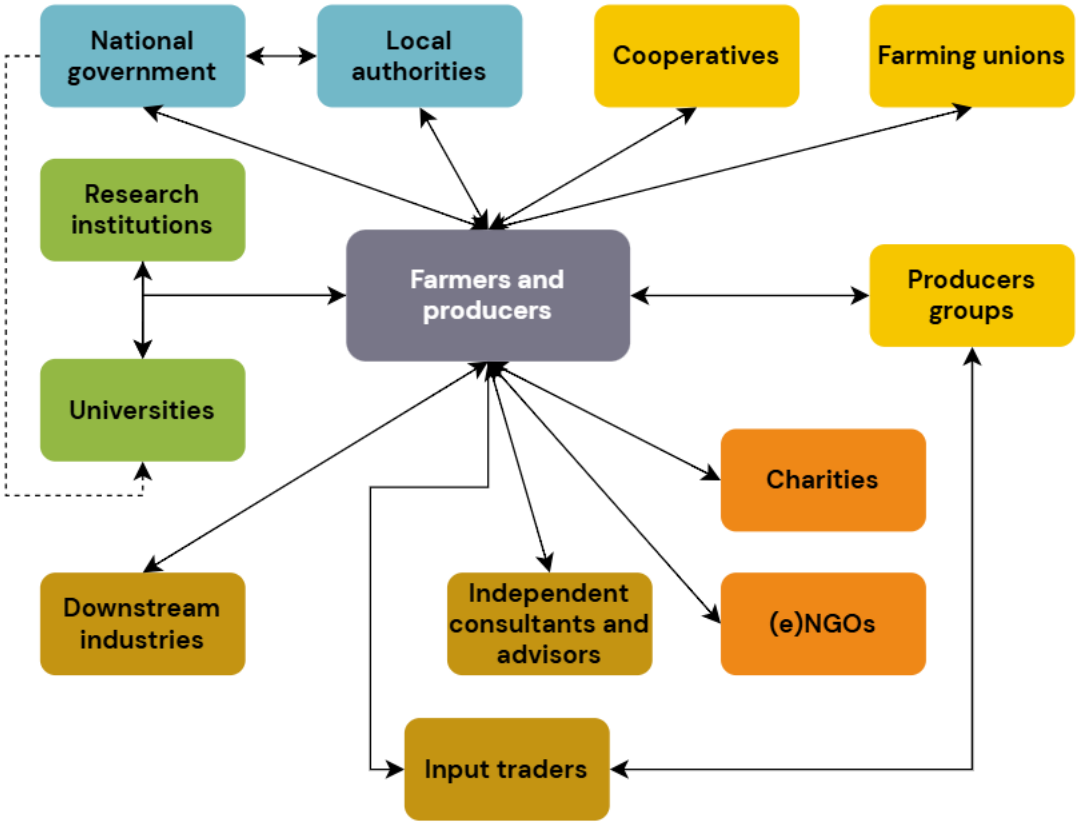


Figure 2: Example of an AKIS diagram. Rather than a linear transfer of knowledge from research to farmers, the double-headed arrows highlight that knowledge and innovation can start and flow from each of the diverse AKIS actors. Adapted from European Commission Directorate-General for Agriculture and Rural Development (2023) Guidelines: Evaluating the AKIS Strategic approach in CAP Strategic Plans. For a diagram of Scotland's AKIS, see **Figure 3**.

2.1 How AKIS is changing in Scotland

The Scottish Government is reshaping its agricultural policy in the post-Brexit era, with a significant emphasis on developing a robust AKIS. The AKIS is envisioned as a cross-cutting component of Scotland's future agricultural support framework, particularly within Tier 4 of the Vision for Agriculture Support Package Beyond 2025.

The Scottish Government is currently in the process of shaping its future approach to supporting knowledge and innovation in agriculture. The key steps of this process are:

2022-23 The Scottish Government commissioned research to explore options for strengthening Scotland's AKIS – The ClimateXChange report, Establishing an agricultural knowledge and innovation system, provided an evidence review of AKIS in Scotland and internationally. The report set out and discussed 35 options under six themes aimed to help improve and strengthen Scotland's AKIS.

2024	The Scottish Government gathered feedback on some of these options and the report's recommendations via an informal discussion paper.
2025-26	The Scottish Government has indicated that they "will undertake a formal consultation on the AKIS and CPD system. This will enable us to shape and refine our views. We will then undertake consultation on the development of secondary legislation on the Ministerial powers to enable us to set up these systems."[12]
2026	The Scottish Government will engage in procurement activities, e.g. to procure a new farm advisory service, to support the new / updated AKIS.
1 April 2027	New / updated Scottish AKIS in place by this date, in line with the timetable set out in the agricultural reform route map.

The following publications provide further background on Scotland's AKIS development, how it interfaces with agricultural and other policy areas, and its direction of travel post-Brexit:[13]

Agricultural Knowledge and Innovation Systems Advisory Note: Provides detailed recommendations on enhancing knowledge exchange and innovation in Scottish agriculture.

Agriculture Reform Implementation Oversight Board Minutes (December 2023): Outlines discussions on the integration of AKIS within the broader agricultural reform framework.

Climate Change Monitoring Report 2024 – Chapter 7: Agriculture: Highlights the role of AKIS in supporting climate adaptation efforts in the agricultural sector.

Scottish Government Response to the Independent Commission for the Land-based Learning Review: Details plans for implementing a CPD system as part of the AKIS.

Scottish National Adaptation Plan 2024–2029 – Outcome Four: Discusses the integration of AKIS into Scotland's broader climate adaptation strategies.

Sutherland, L-A and Prager K (2024) SEFARI Fellowship to Support the Development of a Scottish AKIS: Explores opportunities for aligning Scotland's AKIS with European Union developments and best practices.

[12] Cairngorms National Park Authority (2024) An Agricultural Knowledge and Innovation System (AKIS) in Scotland: a paper for informal discussion. CNPA response.

[13] The Scottish Government informal discussion paper indicated that a future Scottish AKIS would contribute to "broad alignment to EU CAP objectives."

2.2 Implications for the scope and methods of this report

At the time of writing, the Scottish Government is in the process of consulting on and shaping the future of Scotland's AKIS. Therefore, there is a key opportunity to review evidence and gather stakeholder views to enable informed policy decisions. However, with potentially broad changes to Scotland's AKIS being put forward for discussion,[14] the ongoing consultation process introduces an element of uncertainty into the future of AKIS support in Scotland, with implications for the recommendations of this report.

The ClimateXChange (CXC) report, Establishing an agricultural knowledge and innovation system, provided an evidence review of AKIS in Scotland and internationally and discussed 35 options aimed to help improve and strengthen Scotland's AKIS. These options underpin the ongoing consultation process to shape AKIS policy. The options set out in the CXC report are a thorough exploration of the overall design and implementation characteristics of Scotland's AKIS. Drawing comparisons to three similar countries (Republic of Ireland, Belgium, and Sweden), the report considers the structure and mechanisms of Scotland's AKIS, i.e. *how knowledge and innovation are made accessible and move through the system*. This report's findings add value to the existing body of literature by focusing on *what specific types of knowledge and advice are most crucial to achieving the necessary agricultural transition to climate and nature-friendly farming*. It explores where this specific subset of agricultural knowledge resides within Scotland's AKIS, identifies potential gaps and makes recommendations to address these, based on academic and grey literature and conversations with experts.

This report's recommendations are discussed alongside the recommendations of the CXC report, regarding AKIS delivery / structure, in section **6 Bridging the gaps: Conclusions and recommendations**. While the future shape of Scotland's AKIS is being decided, these reports seek to provide context and evidence on both how future AKIS will need to be delivered and the key skills and advice, which are most impactful for climate and nature.

[14] "Creating a responsive, inclusive AKIS for Scotland requires carving new pathways between actors, and rethinking service provision. The Farm Advisory Service has had very positive reviews to date. Pursuing many of the options identified would represent a re-organisation and re-allocation of resources. Detailed planning and consultation would be required to ensure that new approaches add value." Establishing an agricultural knowledge and innovation system p.2

3 Public funding for Scotland's AKIS 2015-2025

Over the past decade, the Scottish Government has supported the development of its AKIS through several key funding streams. Among these were the Scottish Rural Development Programme (SRDP), which included the Knowledge Transfer and Innovation Fund (KTIF) and the Farm Advisory Service (FAS). Additional funding streams also came from the Strategic Research Programme, managed by the Rural and Environment Science and Analytical Services Division (RESAS). The following sections give an overview of the scale and variability of these funding streams over the past decade, as well as what details are available about future public funding for Scotland's AKIS. They are listed in order of magnitude of funding. Figures from the SRDP evaluation 2014-2020 were published in EUR and converted to GBP using the average exchange rate in 2020.

3.1 Direct support to farmers and on-farm projects: Scottish Rural Development Programme (SRDP), including the Knowledge Transfer and Innovation Fund (KTIF), and Farm Advisory Service (FAS)

Before Brexit, the SRDP was co-financed by the EU Common Agriculture Policy Pillar II, which supported rural development initiatives including agri-environment schemes, skills and training. The European Commission approved and monitored these programmes and the SRDP reflected the Europe 2020 Strategy. Post-Brexit, the SRDP continued under domestic law and since 2021, has been funded 100% by national funds.[15] Future funding priorities are still unclear, with ongoing policy development around the Agriculture and Rural Communities (Scotland) Act and the Scottish Government's Vision for Agriculture / Agricultural Reform Programme. The SRDP funds both KTIF and FAS which are two key programmes that deliver knowledge exchange in Scotland.

3.1.1 Breakdown of KTIF

An evaluation was conducted for SRDP 2014-2020[16] which highlighted a total expenditure of £1.4 billion[17]. The total KTIF budget from 2015 until the end of the EU co-

[15] Scottish Government (2024) Scottish Rural Development Programme 2014-2020: Evaluation of Capital Grant Schemes: Annex A - Sector overview.

[16] Scottish Government (2024) Scottish Rural Development Programme 2014-2020: Ex-post evaluation - Annex A Scheme summary report.

[17] The average exchange rate for 2020 was used to convert figures from EUR to GBP. The rate was 1 EUR = 0.8897 GBP. Source: European Central Bank.

financing period in 2021 was £7 million (0.6% of 2014-2020 SRDP budget), which consisted of a knowledge transfer budget of £3 million and an innovation budget of £4 million. A yearly breakdown is displayed in **Table 1** below.

Table 1: Breakdown of Knowledge Transfer and Innovation expenditure from 2014-15 to 2021. Source: Scottish Government (2025).

Year	Knowledge transfer expenditure (£)	Innovation expenditure (£)	All expenditure (£)
2014-15	606,719	225,700	832,418
2016	249,979	234,207	484,186
2017	391,620	479,284	870,904
2018	504,302	520,367	1,024,669
2019	539,035	647,208	1,186,243
2020	308,592	899,306	1,207,898
2021	294,541	593,052	887,593
Total	2,894,788	3,599,124	6,493,913

A total of 39 KTIF (12 knowledge transfer and 27 innovation) projects were funded, of 70 applications submitted. The overall acceptance rate for knowledge transfer projects was 75 %, and 50 % for innovation. The representation of funding recipients is displayed **Table 2** below.

Table 2: Types of organisations that applied and were awarded funding. Source: Scottish Government (2025).

Organisation type	Number applying	Number awarded funding
Company	10	3
Charity	8	4
Membership organisation	5	2
Co-op	4	4
Academic institution	2	1
Public body	2	2
Social enterprise	1	0
Total	**32**	**16**

In terms of innovation, eligible applications included collaborative projects which involved organisations that spanned farmers, researchers, NGOs, businesses, and others. A breakdown by sector over the timeline is given in **Table 3**.

Table 3: Number of organisations included in collaborative projects that received KTIF funding from 2014 & 2015 to 2020. Source: Scottish Government (2025).

Organisation type	2014 & 2015	2016	2017	2018	2019	2020	*Total*
Advisors	0	4	14	3	0	39	*60*
NGOs	0	8	2	3	0	24	*37*
Research institutes	0	2	3	4	0	17	*26*
SMEs	0	0	2	2	4	15	*23*
Farm holders	0	0	22	2	5	173	*202*
Others	0	1	0	2	1	19	*23*

A total budget £7.1 million[18] was spent for KTIF, where 85% of funding went into Focus Area 2A: Improving the economic performance of all farms and facilitating farm restructuring and modernisation. Focus Areas related to nature-friendly farming received the balance £452,139, or 6%, for improving biodiversity (**Table 4**).

Table 4: KTIF expenditure by focus area, 2014-2020. Source: Scottish Government (2024).

SRDP Focus Area	Total expenditure (£)	Percentage
FA 2A: Improving the economic performance of all farms and facilitating farm restructuring and modernisation	6,044,661	85%
FA 4A - Restoring, preserving, and enhancing biodiversity	452,139	6%
FA 4B - Improving water management		
FA 4C - Preventing soil erosion and improving soil management		
FA 5B: Increasing efficiency in energy use in agriculture and food processing	622,039	9%
Total	***7,118,839***	***100%***

The key messages emerging from the data presented in Tables 1-4 are:

[18] The average exchange rate for 2020 was used to convert figures from EUR to GBP. The rate was 1 EUR = 0.8897 GBP. Source: European Central Bank.

- KITF accounted for less than 1% of rural development funding over the period of 2014-2020. Given the importance of knowledge transfer and innovation in achieving the goals of the Scottish Government's Vision for Agriculture, this seems disproportionately low.
- Within the total funds disbursed through KTIF over this period, only 6% went towards focus areas related to nature-friendly farming.

It is crucial to address the mismatch between the objectives in the Scottish Government's Vision for Agriculture and the low allocation of funds made available to achieving the transition to climate- and nature-friendly farming on the ground. SRDP is the largest pot of public funding for agriculture and KTIF is the only open public fund available for innovative, collaborative projects to deliver knowledge exchange outcomes. Future funding allocation for KTIF should expand biodiversity, soil health, and climate resilience to support the knowledge exchange piece in this space.

In addition to the scale of funding available, future funding rounds should consider accessibility and transparency of the funding application process. It is crucial to assess the scale and reach of recipient organisations in **Table 3,** and how representative they are of AKIS actors in Scotland. A recent evaluation on KTIF was published by the Scottish Government which explores these themes in more detail.[19]

3.1.2 FAS: One-to-Many and One-to-One advice

Over the period of 2014-2020, public funding allocated to FAS was £18.3 million, of which 30% was directed to nature-related measures in Focus Area 4 (**Table 5**).

Table 5: FAS realised expenditure by focus area from 2014-2020. Source: Scottish Government (2024).

FAS Focus Area	Total expenditure (£)	Percentage
FA 2A: Improving the economic performance of all farms and facilitating farm restructuring and modernisation	7,328,267	40%
FA 2B: Facilitating the entry of adequately skilled farmers into the agricultural sector and generational renewal	1,831,371	10%
FA 3B: Supporting farm risk prevention and management	917,078	5%
FA 4A: Restoring, preserving, and enhancing biodiversity	5,508,036	30%

[19] Scottish Government (2025) Scottish Rural Development Programme 2014-2020: Knowledge Transfer and Innovation Fund evaluation.

FA 4B: Improving water management **FA 4C: Preventing soil erosion and improving soil management**		
FA 5B: Increasing efficiency in energy use in agriculture and food processing	2,756,803	15%
Total	***18,341,553***	***100%***

This is more in line with the goals of the Vision for Agriculture and reflects alignment with net zero and nature-friendly farming outcomes. Based on the Scottish Government's Climate Change Plan 2025 monitoring report,[20] FAS has maintained consistently high engagement and uptake on services, with increasing focus on biodiversity and carbon sequestration, as well as support for new entrants and women in agriculture. According to the report, conservative estimates indicate more than 70% of FAS one-to-many activities (e.g. FAS publications, webinars, group events, podcasts, events etc.) in 2024-2025 included elements of climate change adaptation and mitigation support. Comparing 2024-2025 against 2023-2024, the top three activities that saw marked increase in provision were FAS Live Events & Webinars (22%), Roadshow events (14%) and FAS Connect Group events (8%). **Table 6** below includes some engagement figures from FAS activities from 2022-2025. Additionally, FAS has a notable presence on Facebook, with 10,000 followers during 2024-2025, an annual increase of 18.5%.

Table 6: Breakdown on engagement statistics for FAS One-to-Many activities for years 2022/2023, 2023/2024, and 2024/2025.

FAS Activity	2022/2023	2023/2024	2024/2025	Change between 24/25 and 23/24
Event Participants	3,910	6,640	6,715	1%
Video Views	308,988	241,759	209,621	-13%
Podcast Listens	24,128	32,839	34,795	6%
Publication Downloads	254,028	221,091	89,498	-60%
Website views	1,357,413	1,211,094	620,156	-49%

As for FAS One-to-One service, there is also positive evidence that the delivery of FAS is aligned with climate- and nature-friendly farming. Among specialist advice outputs, 34% fall under biodiversity, habitat, and landscape management, 15% on soil and nutrient management, and 6% on resilience planning. As of February 2025, there was an 185% increase in specialist advice plans focusing on biodiversity, and habitat landscape

[20] Scottish Government (2025) Climate Change Plan: monitoring report 2025.

management for 2024-25, totalling to 408 plans compared to the previous year. Participant feedback has been overall positive as well, with 98% approval rating and over 80% of users stating they will implement all the actions recommended in their one-to-one consultancy advice. **Table 7** below shows carbon audits have tripled during 2024-2025 whereas specialist advice grew by 27%.

Table 7: Breakdown on outputs for FAS One-to-One activities for years 2022/2023, 2023/2024, and 2024/2025.

FAS Activity	2022/2023	2023/2024	2024/2025	Change between 24/25 and 23/24
Integrated Land Management Plan	54	58	42	-28%
Specialist Advice	200	273	346	27%
Carbon Audits	446	122	366	200%
Mentoring	22	30	30	0%
General Enquires	1,185	1,868	1,287	-31%

Overall, FAS has demonstrated evidence that public expenditure and knowledge delivery through the programme is aligned with Scotland's Vision for Agriculture, Net Zero, and climate- and nature-friendly farming goals through specialist advice, peer learning, in-person networks and events as well as digital platforms.

3.2 Funding for primary research: The Strategic Research Programme

The Rural Affairs, Food and Environment Research Strategy for 2016-21/22[21] guided investment by the Scottish Government in environmental and agricultural research over a five-year period. The programme allocated £279 million across the SRP, Underpinning Capacity, Centres of Expertise, knowledge sharing through SEFARI Gateway, and innovation. The main research providers to the Scottish Government are the James Hutton Institute, Biomathematics and Statistics Scotland (BioSS), Scotland's Rural College (SRUC), Moredun Research Institute, and the Rowett Institute. The Dedicated Centres of Expertise include ClimateXChange, Centre of Expertise for Waters, Centre of Expertise on Animal Disease Outbreaks, and the Plant Health Centre.

Of the total £279 million funding, the Scottish Government allocated around 69% (£190 million) to SRP, 16% (£43 million) to Underpinning Capacity, 13% (£35 million) to Centres of Expertise, 3% (£8 million) to knowledge exchange and management and less than 1%

[21] Scottish Government (2023) Rural affairs, food and environment research programme 2016-2022: evaluation report.

(£1 million) to innovation. A breakdown of this amount across the years is shown in **Table 8.**

Table 8: Spending amount on innovation under SRP from 2016 to 2019. Source: Scottish Government (2023).

Year	Amount spent on innovation (£)
2016/2017	£500,000
2017/18	£400,000
2018/19	£100,000

The evaluation report covering this programme[19] timeline indicated there is lack of transparency on how this funding was utilised by research providers and Centres of Expertise. Nevertheless, out of the 1,480 scientific outputs produced during the timeline, 50% contributed to productive and sustainable land management. The other themes were natural assets (36%) and food, health and wellbeing (14%). This highlights policy focus on nature-friendly farming research, namely low carbon farming, conservation in multi-use landscapes, woodland expansion, soil carbon sequestration, peatland restoration, and integrated pest management. However, the lower proportion of knowledge exchange and innovation indicates a policy gap with SRP's role in delivering a holistic AKIS.

3.3 Looking ahead

Over the period 2014-2020, KTIF and FAS occupied 0.54% and 1.39% of the total budget for Rural Affairs, Land Reform & Islands. This translates to £0.93 million for KTIF and £2.27 million for FAS, per year.[22] The Scottish Government has committed to £4 million annually for FAS One-to-Many programme for up to four years, whereas FAS One-to-One will receive £6.85 million (an annual average around £2.28 million) from 2024 to 2027[23]. This is almost three times the historic amount, a clear indication that FAS is a crucial delivery component of AKIS and a priority for the Scottish Government. The Scottish Budget 2025-2026 outlines £660 million to support the sector, which would be spread across the four tiers. Following the four-tier framework outlined in the **Figure 1**, the funding for Tiers 1 and 2 will constitute at least 70% of the overall funding to support farming, crofting and land management from 2027. The remaining 30% will be split between Tier 3 and 4. FAS and KTIF would sit under Tier 4 of this proposed framework.

[22] Scottish Government (2024) Scottish Rural Development Programme 2014-2020: Ex-post evaluation - Main report.

[23] Based on contract value with Scottish Government for FAS delivery by SAC Consulting (One-to-Many) and Ricardo Energy and Environment (One-to-One)

The budget indicates £3.8 million for Strategic Policy, Research and Sponsorship and £2 million for agricultural and horticultural advice. Assuming KTIF fall under this, that would constitute 0.58% of the support.[24, 25]

A publication by Scottish Environment LINK stated the budgeted funding for KTIF is relatively unchanged for the past decade. The organisation suggested an additional £5 million to KTIF to improve access to advice and training providers as demand for advice will grow due to introduction of Whole Farm Plans and audit requirements tied to conditional payments in Tier 2.[26]

For the 2022-2027 Environment, Natural Resources and Agriculture (ENRA) SRP, a total of budget of £47 million per year is allocated, totalling to £235 million.[27] This will be 19% higher than the previous funding cycle. However, it must be noted that for 2023-2024, this amount was £27.3 million, spread across five themes:

- Plant and animal health (23 ongoing projects, funding circa £5 million for 2023-2024)
- Sustainable Food System and Supply (51 ongoing projects, funding circa £10 million for 2023-2024)
- Human Impacts on the Environment (11 ongoing projects, funding circa £3 million for 2023-2024)
- Natural Resources (22 ongoing projects, funding circa £7 million for 2023-2024)
- Rural Futures (six ongoing projects, funding circa £1.5 million for 2023-2024)
- Cross-cutting modelling activities (three ongoing projects, funding circa £0.8 million for 2023-2024)

While knowledge creation for nature-friendly farming takes majority of funding (36%), a report published by the Scottish Government indicate that the link between research and practice is unclear, and more effort should be put in to widen research impact and reach.[28] The variability of funding year on year may also hinder long term planning and capacity building of delivery partners. Policy support should look at multi-year funding commitments that can provide stability and confidence for sustained innovation and skills development.

[25] Scottish Government (2024) Scottish Budget 2025 to 2026.
[26] Scottish Environment LINK (2024) Farm Funding and the Scottish Budget, 2025-2026.
[27] Scottish Government (2024) Environment, Natural Resources and Agriculture (ENRA) research programme 2022-2027: Mid-programme review report.
[28] Scottish Government (2024) Environment, Natural Resources and Agriculture (ENRA) research programme 2022-2027: Mid-programme review report.

To summarise the annual funding landscape for Scotland's AKIS:

Past expenditure from 2014–2020: Annual funding was consistent at **£3.2 million** (£0.93M KTIF + £2.27M FAS).

Committed funding for 2025: Funding increased to **£5.8 million** (Strategic Policy + Agricultural Advice) and **£6.28 million** for FAS, totalling to **£12.08 million.**

Proposed future funding: If the additional £5 million to KTIF proposed by ScotLINK is adopted, total funding would rise to **£17.08 million per year**.

Additional evidence, analysis, and recommendations for the scale and shape of future funding for AKIS in Scotland, including the results from interviews and a participatory workshop with experts, is presented in **6.1 Future funding of a Scottish AKIS**.

4 Evidence review: Skills and practices needed to achieve the Scottish Government & WWF Scotland targets for climate and nature in agriculture

This section sets out key evidence with regard to the key agricultural practices and skills, which are most impactful for addressing greenhouse gas (GHG) emissions and reversing biodiversity loss. The climate and nature crises are inextricably linked, and many nature-based solutions have cross-cutting benefits, which address both issues. However, there are also key actions targeted at each issue. To lay this out clearly, actions addressing GHGs are discussed first, followed by actions primarily addressing nature and biodiversity, then a section discussing interactions. Some key examples are given in **Figure 2**.

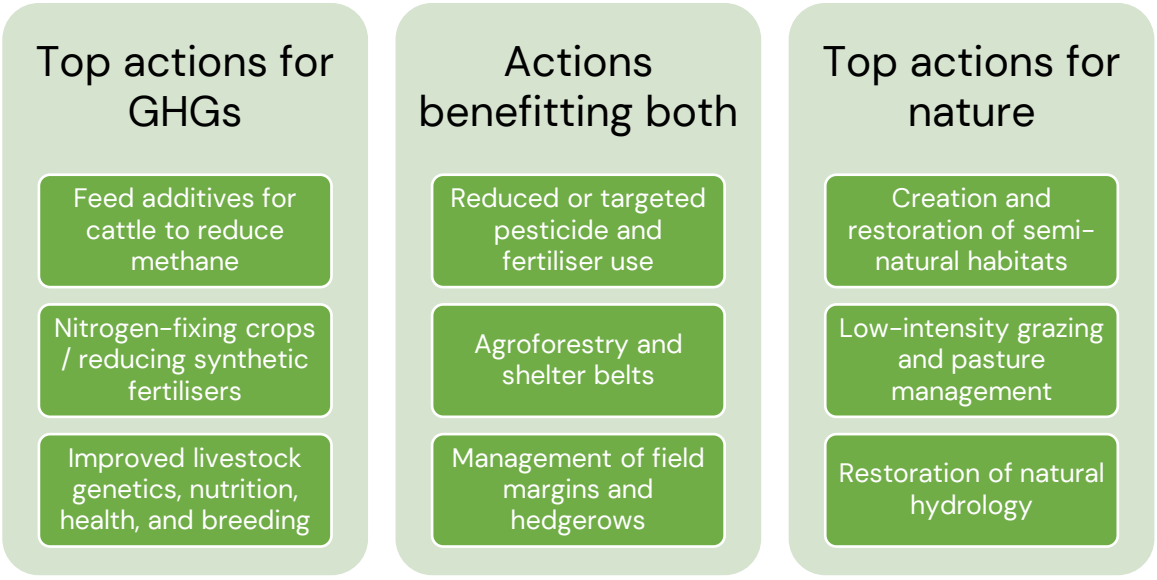


Figure 2: Some examples of key farming measures which are impactful for GHGs, biodiversity, and both. More details on these measures are given in the sections below.

While the climate and nature crises require urgent action, it is important to acknowledge that other aspects of sustainable food production. Actions and practice changes to benefit climate and nature must be integrated with farmers' essential role in producing food and other goods. Food production is underpinned by efforts to maintain and improve on yields, business efficiency and profitability, soil heath, animal welfare, the water environment, and many other areas. This balanced approach is central to both the Scottish Government's and WWF Scotland's Visions for Agriculture and the Agricultural Reform Programme. While the scope of this report is limited to focus on the most impactful actions for the urgent issues of climate and nature, these actions need to be

integrated with holistic farm management and wider sustainability goals or risk adverse outcomes.

This report builds on a rich body of work on the intersection of Scottish agriculture, climate and nature. The following sections summarise and signpost to recent and relevant reports in this area, which have sought to identify and prioritise the interventions necessary to achieve goals for climate and nature in the agriculture sector.

4.1 Measures to reduce GHG emissions in Scottish agriculture

Table 9 gives detail on agricultural practices, which are consistently referenced in the literature as having the greatest potential to reduce emissions from Scottish agriculture. The key reports from which these measures were drawn are discussed below.

Table 9: Farming practice interventions from the Agriculture Reform Programme list of measures identified as having the highest GHG mitigation potential. Adapted from Buckingham S. et al (2024) Farming for Net Zero: Transitioning Scottish Agriculture and Lampkin N et al (2019) Delivering on Net Zero: Scottish Agriculture.

Measure	Abatement potential ($tCO_2e/ha/yr$)	Financial cost
Supporting appropriate uptake of feed products which reduce enteric methane emissions in dairy and beef cattle	1.881 (dairy) 0.508 (beef) (High)	Medium
Silvo-arable systems	1.5 (High)	Medium
Enhancing existing hedgerows	1.0 (Medium)	High
Use of N fixing crops and/or other measures to reduce synthetic nitrogen fertiliser use	0.553 (High)	High
Supporting and incentivising genetic improvement of beef cattle	0.405 (High)	Cost saving
Supporting and incentivising improved beef cattle nutrition	0.229 (Medium)	Cost saving
Improved animal health and breeding (cattle and sheep) i.e. fertility, growth rates, yields, reduced morbidity/mortality	0.125 (Low-Medium)	Cost saving - medium

In 2019, WWF Scotland published a report, titled "Delivering on Net Zero: Scottish Agriculture," which evaluated a shortlist of 37 measures to comment on the feasibility of reducing emissions from Scottish agriculture by 35 % between 2017 and 2045.[29] This

[29] This figure of 35% was derived from an earlier report for WWF Scotland: Vivid Economics (2018) A Climate of Possibility: Harnessing Scotland's natural resources to end our contribution to climate change.

report discusses these measures in detail, including applicability, adoption requirements and barriers, agricultural implications and policy options to enable these. The report concluded that its shortlist of most promising measures could deliver a reduction of 2.9 Mt CO2e annually, or 38 % of 2019 GHG emissions from agriculture, and deliver the 35 % reduction by 2045.[30]

In 2024, SRUC delivered a report for WWF Scotland, titled "Farming for Net Zero: Transitioning Scottish Agriculture." This work looked specifically at measures included in the Scottish Government's Agriculture Reform Programme List of Measures.[31] The researchers made recommendations regarding how each measure should be allocated into the four proposed tiers of agricultural support under the new agriculture support package (Basic, Enhanced, Elective, and Complementary Support). The report also discusses the different measures' GHG mitigation potential, economic costs, scale of uptake required to meet net zero targets, and knowledge gaps and other barriers to implementation.[32]

These two reports draw heavily on the Marginal Abatement Cost Curve (MACC) for Scottish agriculture. This analysis has been repeatedly performed to assess measures, which reduce GHGs, comparing them in terms of mitigation potential as well as the capital and annual costs to implement and maintain each measure. This provides a relative prioritisation of these measures for researchers, policymakers and farmers.[33] It has also been produced at UK level to inform the Climate Change Committee's carbon budget process, including for the most recent Carbon Budget 7.[34]

4.2 Measures to benefit biodiversity within Scottish agriculture

There is a robust and growing body of academic and grey literature focused on identifying high-impact interventions for nature and biodiversity on Scottish farmland. These interventions are often assessed in terms of their potential to reverse biodiversity loss, support ecosystem services and be integrated into viable farming systems. **Table 10** gives a summary of key interventions, followed by notable sources that prioritise them for Scotland or similar agricultural contexts.

[30] Lampkin N, Smith L, Padel K (2019) Delivering on Net Zero: Scottish Agriculture. Report for WWF Scotland from the Organic Policy, Business and Research Consultancy.
[31] Scottish Government Rural Payments and Services (2023) Agricultural Reform List of Measures.
[32] Buckingham S, Naidu T, Sellars A, Salter F, Herbst M, Murphy S, Cole L (2024) Farming for Net Zero: Transitioning Scottish Agriculture; Report for WWF and Soil Association.
[33] Eory V, Topp K, Rees B, Leinonen I, Maire J (2020) Marginal abatement cost curve for Scottish Agriculture. Report for ClimateXChange.
[34] Eory V, Fletcher D, Maclead M, Duthie C-A, Rees R, Topp K (2025) Greenhouse gas abatement in UK agriculture 2024-2050 (SRUC); Report for the Climate Change Committee.

Table 10: Potential measures for Scottish farmland widely regarded as delivering the greatest benefits for biodiversity with examples, specific actions, and impacts.

Measure	Examples and actions	Impacts
Creation and restoration of semi-natural habitats	Species-rich grasslands, wetlands, heathlands, native woodlands	High — supports a wide range of taxa (pollinators, birds, invertebrates, etc.)
Management of field margins and hedgerows	Creating flower-rich buffer strips, managing hedgerows on a rotational cycle.	High — benefits pollinators, farmland birds, and insects
Targeted support for farmland bird species	Retaining overwinter stubbles, providing supplementary feed in winter for species such as Corn bunting, yellowhammer, lapwing	High – when tailored to local species' needs
Reduced or targeted pesticide and fertiliser use	Precision agriculture, organic systems, Integrated Pest Management (IPM)	Medium to high — reduces harm to soil biota, insects, and plants
Low-intensity grazing and pasture management	Conservation grazing, extensification, use of native breeds	High — especially in upland and high nature value farming systems
Agroforestry, shelter belts, and woodland corridors	Silvo-pasture and silvo-arable systems; native tree species planted to shelter livestock and crops; Can provide other outputs such as fuel, nuts, fruit, etc.	Medium to high — increases habitat heterogeneity and can contribute to key corridors
Restoration of natural hydrology	Blocking drains in peatlands, restoring riparian zones, de-channelising and re-meandering	High – supports amphibians, waders, aquatic insects, and has other benefits such as flood mitigation

Key sources

- Scottish Biodiversity Strategy and Delivery Plan 2024-2030 - Prioritise landscape-scale action, habitat connectivity and rewarding farmers through nature-focused payments.
- Scottish Government Rural Payments and Services (2023) Agricultural Reform List of Measures.
- Scottish Government (2025) The Code of Practice on Sustainable and Regenerative Agriculture.
- Scottish Land Use Strategy and Scotland's Agri-Environment Climate Scheme (AECS) priorities.
- NatureScot pages on Farming with Nature - Helpful overview and links to resources. NatureScot is developing four different tools (including Farm Biodiversity Scotland audit app), which are designed to provide the infrastructure for farmers to take actions for nature and be rewarded accordingly.

- Pe'er et al. (2020). Action needed for the EU Common Agricultural Policy to support biodiversity. Science. - Key takeaway: 10% of land set aside for high-diversity landscape features (e.g. flower strips, hedges) is a minimum threshold for biodiversity recovery. Although EU-focused, highly relevant to Scottish contexts.

4.3 Interactions between GHG mitigation measures and other outcomes

As Scottish agriculture faces increasing pressure to deliver for climate, nature, and food, the intersection between biodiversity enhancement and GHG mitigation becomes a critical opportunity. Many nature-based solutions deliver co-benefits for both goals and importantly contribute to broader environmental resilience, improved soil and water function and long-term viability of farm businesses. There is considerable overlap in **Table 9** and **Table 10**, as creating or improving habitats which store carbon in aboveground biomass also provides crucial habitats for wildlife.

Rather than seeing climate and biodiversity as separate targets, the Scottish farming sector stands to gain by embracing nature-based, multi-functional interventions. Many of the most effective GHG reduction measures also deliver gains for wildlife, soil, water and farm viability. The key challenge is designing farm-scale and policy-level schemes that recognise and reward these layered benefits, providing financial and technical support for farmers who lead in landscape restoration. In this context, measures like silvo-systems, hedgerow enhancement, legume integration, low-input pasture, and wetland restoration should be prioritised. This should not only be for their climate or biodiversity value individually, but for their role in building a resilient, multifunctional farming landscape that can meet the needs of the future. Scotland's AKIS must anticipate and meet this need by making sure advisors and other knowledge exchange organisations hold the expertise required to both identify the most suitable nature-based solutions and to creatively combine them to unlock cross-cutting solutions.

Key sources exploring these interactions include the 2017 report to the Scottish Government, Evidence review of the potential wider impacts of climate change mitigation options: Agriculture, forestry, land use and waste sectors. This paper reviews 12 mitigation options against 20 different "wider impacts," including biodiversity, soil quality, human health, and others.[35] Some examples of nature-based solutions relevant to different agricultural landscapes in Scotland are also discussed in Brodie E (2023) The potential for nature-based solutions in Scottish agriculture.

[35] See Table 4 on p.25 – Eory V, Bapasola A, Bealey B, Boyd I, Campbell J, Cole L, Glenk K, Allan G, Kay A, MacLeod M, Moran D, Moxley J, Rees B, Sherrington C, Topp K, Watson C (2017) Evidence review of the potential wider impacts of climate change mitigation options: Agriculture, forestry, land use and waste sectors. Report for Scottish Government.

5 Analysis: Where does this knowledge sit within Scotland's AKIS?

This section provides more detail on the current state of Scotland's AKIS, giving examples of key Scottish actors, which constitute the core components of AKIS systems, as well as a visual map of actors by type. It then returns to the skills and practices discussed in **4 Evidence review: Skills and practices needed to achieve the Scottish Government & WWF Scotland targets for climate and nature** in agriculture and maps out which Scottish AKIS actors are the main holders of knowledge / drivers of innovation regarding each of these skills or measures. An analysis of the proposed changes to Scotland's AKIS is provided and how these may help or hinder increased uptake of the key skills identified.

5.1 Core components of an AKIS

The following headings list the core components of AKIS across the EU nations. Relevant Scottish examples are provided for each. An overarching summary is given in **Table 11** below. A visual map of Scotland's AKIS, organised by organisation type, is given in **Figure 3.**

Research

- **On farm demonstrations, peer-to-peer learning, crop trials** - Farmers learn from real-world examples through monitor farms and peer networks. In Scotland, the Farm Advisory Service (FAS) and Knowledge Transfer and Innovation Fund (KTIF) run farm demonstrations and crop trials across regions.
- **Research, Development & Innovation (RDI) -** Applied research needs to translate quickly into usable tools and practices. Institutions like the James Hutton Institute (JHI) , Scotland's Rural College (SRUC) and other Scottish Environment, Food and Agriculture Research Institutions (SEFARI) work closely with farmers to trial techniques like agroforestry or soil health improvements.
- **Innovation programmes (clusters, investment groups) -** These initiatives seed and scale up innovations. Examples include emerging innovation clusters and land-matching services (e.g. the Scottish Land Matching Service, UK Land Trust, USA, and Europe) supporting regenerative farm transitions.

Education

- **Educational programmes (HNC–PhD) -** Scotland's agricultural colleges (e.g., SRUC) and universities (e.g., Aberdeen, Edinburgh) offer full academic pathways—from HNC to PhD—focused on sustainable farming.

- **Apprenticeships –** Hands-on training for new farm entrants through apprenticeship schemes, often managed via Scottish Agricultural Organisation Society Ltd (SAOS) or college–industry partnerships.
- **Mentoring –** Experienced farmers or scheme mentors guide new entrants; often organized through FAS or specific common-interest groups such as organic or regenerative farmers

Extension

- **Advisory and knowledge services –** Professional support via FAS advisors, private consultants, vets and labs. For instance, FAS advisory underpins on-site KTIF support.
- **Continuing Professional Development (CPD), technical training –** Delivered through platforms like Lantra, BASIS, and FAS events, offering lifelong learning, practical training, and certifications in areas like nutrient management or pest control.
- **Networking and events (digital/in-person) –** Workshops, online webinars, and regional conferences bring the Scottish farming community together—many supported by FAS, SRUC extension, or thematic networks.
- **Common-interest groups –** Groups like Women in Agriculture, organics, crofting associations, and new entrants share knowledge and support (outside formal FAS structures).
- **Ambassadors –** Farmer champions showcase best practices at events, webinars, or in media to raise awareness.
- **Publications –** Practical guides from NatureScot, FAS, and research institutes keep farmers informed (e.g., biodiversity farming handbooks, soil management guides).

Supporting system

- **Governance structure –** Central oversight helps AKIS function holistically. This is not yet in place in Scotland, but an AKIS coordination body (composed of a mix of stakeholders) guides the system within some EU nations and has been proposed for Scotland.[36]
- **Strategic plan –** Scotland's Vision of Agriculture Support Package (beyond 2025) outlines tiers of support, with Tier 4 provision for people development and knowledge exchange.
- **Monitoring & Evaluation –** Regular assessment—such as SWOT evaluations and mapping of actors—should drive system performance, as suggested in Scottish AKIS development.

[36] Sutherland LA, Banks E, Boyce A, Martinat S (2023) Establishing an agricultural knowledge and innovation system. Report for ClimateXChange.

- **Coordinators, facilitators, trainers –** Roles embedded in FAS, SRUC and regional innovation hubs are vital to connect farmers and researchers. SEFARI Fellowships and cluster coordinators are emerging examples.
- **Data systems –** Evidence-based practice relies on data: farm-level monitoring (e.g., via monitor farms), research insights, digital tools, and shared platforms (cf. EU's EIP-AGRI Smart-AKIS).

Table 11: Summary of key AKIS components.

Component	Description	Examples
Research	Practical trials & innovation	FAS on-farm demos, Hutton Institute RDI
Education	Training across career stages	SRUC, Lantra CPD, apprenticeships
Extension	Advisory & peer support	FAS advisors, thematic networks
Supporting System	Governance, planning, data	AKIS coordination, Tier 4 strategy

Scotland's AKIS is regarded as being relatively strong, holding a wealth of context-specific agricultural knowledge (see **Figure 3** and **Figure 4**). In response to the magnitude and urgency of the climate and nature crisis, policymakers have begun the process of actively building a robust AKIS by aligning existing assets (FAS, SEFARI, colleges) with EU-inspired frameworks (CAP's AKIS plans). The desired outcome is a more coordinated, responsive system—one that ensures innovations in practical research, education, and advisory reach into the hands of farmers and crofters, bolstered by strong governance and shared data systems. However, the reorganisation and strategic realignment of Scotland's AKIS must be underwritten by adequate policy commitment and resource (explored in **6 Bridging the gaps: Conclusions and recommendations**).

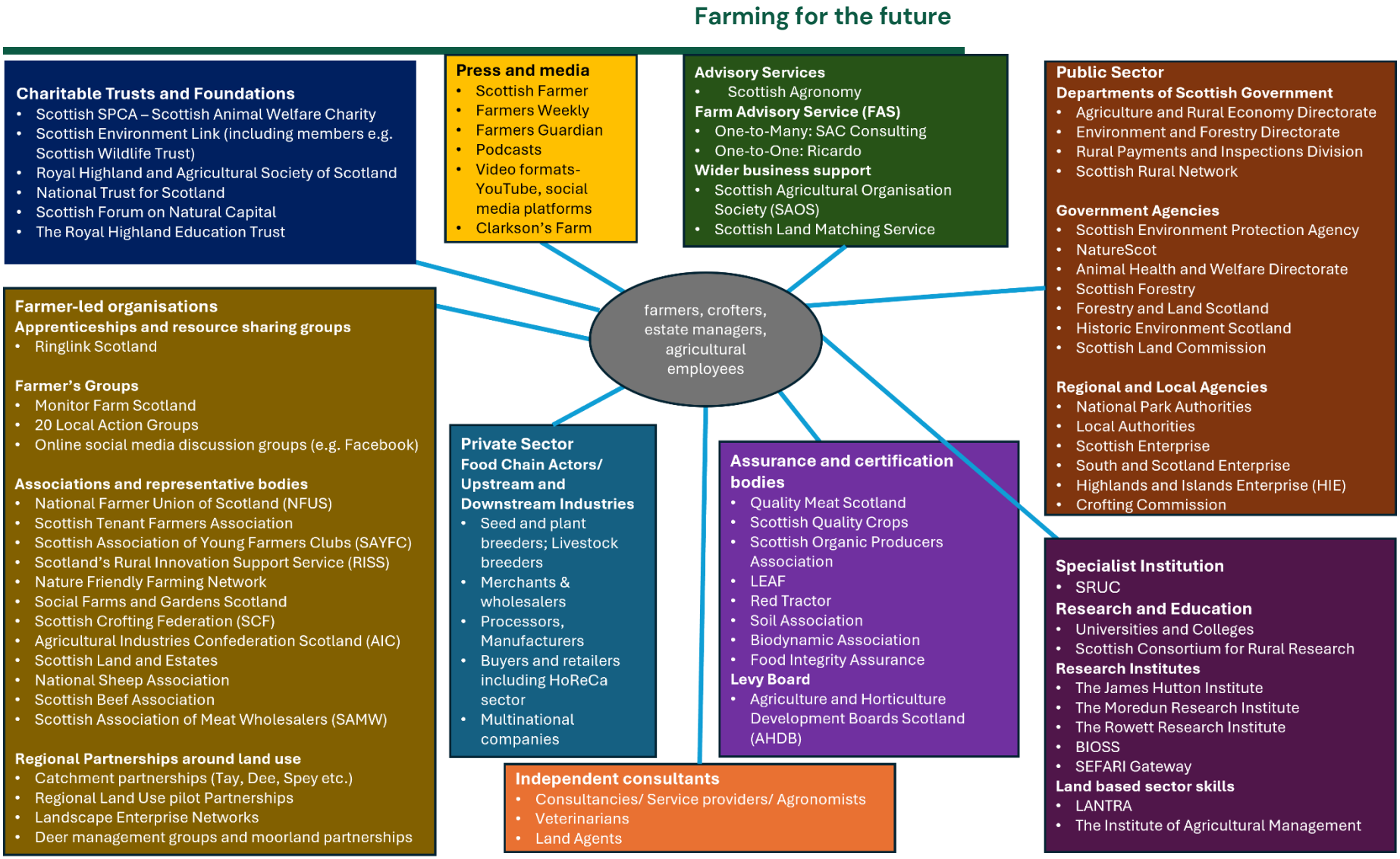


Figure 3: A system map of Scotland's AKIS, organised by organisation / interest type. Note that some organisations play more than one role within AKIS and their categorisation is for the purpose of mapping out a comprehensive systems diagram.

5.2 Mapping key skills for climate and nature-friendly farming to AKIS actors

This section presents a table matching specific agricultural and biodiversity interventions to relevant AKIS actors—organisations which frequently support knowledge exchange, innovation uptake, and implementation in Scotland. By mapping out the key sources of knowledge and experience specific to each of these practices, this section provides a key resource for organisations like WWF Scotland which are seeking to scale the adoption of these most impactful interventions.

Table 12: Intervention-to-AKIS actor mapping. For each key farm practice intervention (left), the relevant AKIS actors which hold knowledge are listed (right).

Measures	Key AKIS actors (organisations likely to hold knowledge & support uptake)
Agroforestry, shelter belts, woodland corridors[37]	**Scottish Forestry**, **Woodland Trust**, **Integrating Trees Network**– planting & management advice, policy, grants **NatureScot** – AECS funding, ecological connectivity guidance **FAS** – on-farm events **Soil Association Scotland** – organic and agroforestry pilots **South of Scotland Enterprise / H&I Enterprise** – innovation cluster funding **UNESCO Biospheres**, **Alliance for Scotland's Rainforest** – regional corridor initiatives **SEFARI (Hutton Institute)** – researching agroforestry
Management of field margins; Enhancing hedgerows	**NatureScot** – Biodiversity Audit, habitat mapping **FAS** – AECS hedgerow and field-margin funding, farm case studies, pollinator-friendly cropping **Scottish Land & Estates** – advisory material and farmer networks **Scottish Wildlife Trust, RSPB Scotland** – biodiversity guidance **Lantra** – training and CPD for hedge management **Butterfly Conservation Scotland**, **Nectar Network** – insect habitat guidance

[37] For a comprehensive overview of the information available for farmers and crofters to plant trees, see Holland JP, Glendinning J, Pollock M, MacDonald S, Sutherland J, and Law B (2024) Trees on Farms Project - Mapping the Process for Farmers and Crofters to Plant Trees; Report for Scottish Forestry.

Creation/restoration of semi-natural habitats	**NatureScot** – AECS, Biodiversity Audit, POBAS pilots **Scottish Wildlife Trust**, **RSPB Scotland Woodland Trust** – habitat expertise **FAS** – AECS guidance **SEPA**, **Scottish Water**, **River Dee Forum** – hydrology and water habitat planning
Targeted support for farmland bird species	**RSPB Scotland**, **Scottish Wildlife Trust** – species-specific guidance **NatureScot** – wader funding in AECS **FAS** – targeted biodiversity guidance available, specialist advice through biodiversity audits **Game & Wildlife Conservation Trust**, **Working for Waders** – bird-friendly farming outreach
Low-intensity grazing & pasture management	**RSPB**, **GWCT**, **Nectar Network** – step-down grazing regimes **NatureScot** – wader and pollinator AECS options **FAS** – pasture-focused farm visits **Pasture For Life**, **Scottish Crofting Federation** – extensive grazing champions
Restoration of natural hydrology	**SEPA**, **Scottish Water** – watercourse & drainage policy **River Dee, Tweed, Ayrshire Rivers Trusts**, **Carse of Stirling Partnership** – hands-on restoration **NatureScot** – wetland-related AECS options, Nature Restoration Fund **FAS** – hydrology-related farm plans and condition monitoring
Use of N-fixing crops; Reduced or targeted use of synthetic N fertiliser and pesticides	**ADAS, NIAB, James Hutton Institute** – crop trial R&D. IPM research **QMS** – RDI in beef nutrition **Lantra / BASIS** – nutrient management training **Nature Friendly Farming Network, Soil Association** – peer-to-peer knowledge exchange **Lantra / BASIS** – spray/application training **Scottish Government / SEPA** – pesticide regulations
Supporting uptake of feed products to reduce enteric methane (dairy & beef)	**Quality Meat Scotland (QMS)** – leads RDI in livestock markets **SRUC / James Hutton Institute / The Royal (Dick) Vet School** – trialling feed supplements

	Farm Advisory Service (FAS) – feeding advice via on-farm events **ABP / ScotBeef** – supply chain adoption pilots
Genetic improvement of beef cattle	**QMS** – genetics & efficiency R&D **SRUC / Royal (Dick) Vet / Moredun Research Institute** – breeding genetics **SAOS** – advisory services **Farm Advisory Service** –knowledge exchange, specialist advisory, farm visits
Improved beef cattle nutrition	**QMS**, **SRUC**, **Hutton Institute** – practical nutrition research **FAS**, **SAOS** – nutritional planning support **Agricultural Industries Confederation** – feed industry insights **Banff & Moray Grain Group**, **Highland Grain** – local sourcing of legumes
Improved animal health & breeding	**Moredun Institute**, **Royal (Dick) Vet**, **AFBI (NI)** – health genetics **APHA**, **TB Advisory Service** – disease advisory **QMS**, **Scottish Pig Producers**, **NFU Scotland** – animal health extension **FAS**, **SAOS** – demonstrations and data on animal performance

This mapping illustrates how multi-actor collaboration within Scotland's AKIS supports bridging knowledge-to-practice across climate and biodiversity interventions.

Table 13: A strengths, weaknesses, opportunities, and threats (SWOT) analysis of how the changes to Scotland's AKIS (proposed in the report Establishing an agricultural knowledge and innovation system, and being consulted on by Scottish Government) may interface.

Measures	Strengths & Opportunities	Weaknesses & Threats
Agroforestry, shelter belts, woodland corridors[38]	• Regional environmental clusters and innovation hubs (Option 9) can tailor tree-based solutions locally. • Peer-to-peer monitor farms (Option 12) enable visible, practical proof of agroforestry benefits.	• Complex regional coordination may delay implementation without trained facilitators. • Digital tools and benchmarking may be underused or poorly adopted in remote areas.

[38] For a comprehensive overview of the information available for farmers and crofters to plant trees, see Holland JP, Glendinning J, Pollock M, MacDonald S, Sutherland J, and Law B (2024) Trees on Farms Project - Mapping the Process for Farmers and Crofters to Plant Trees; Report for Scottish Forestry.

	• Unified governance and CPD introduction (Tier 4) offers clear mechanisms to mainstream agroforestry knowledge.	
Management of field margins; Enhancing hedgerows	• Monitor farms and farmer schools (Options 12 & 16) can showcase rotational pruning and margin benefits. • Environment-focused regional hubs can channel private and public funding. • Ambassador farmers (Option 14) and competitions (Option 15) can promote biodiversity best-practice.	• Limited facilitation capacity could reduce uptake. • Digital-only resources may fail to reach smaller or remote farms. • Peer-to-peer initiatives may struggle without timely funding and strong governance.
Creation/restoration of semi-natural habitats	• Strategic governance and KPIs (Option 1) can ensure habitat goals are tracked. • Regional environmental clusters offer coordinated restoration efforts. • International connections help bring best-practice from EU rewilding projects.	• Extensive planning and high resource demands may delay action. • Digital platforms must be user-friendly to support land managers equitably.
Targeted support for farmland bird species	• Peer-to-peer and monitor farms help demonstrate bird-friendly interventions effectively. • Regional clusters can align local land-use partners (e.g. Regional Land Use Partnerships, RSPB, NatureScot, Tweed Forum). • Ambassador farmers highlight biodiversity benefits in supply chain marketing.	• Peer initiatives risk contention if innovation criteria are unclear. • Limited facilitation or farm-level data may hamper tailored approaches. • Competition-based programming could devalue quieter successes.
Low-intensity grazing & pasture management	• Monitor farms and field schools enable shared learning in pasture systems. • Regional hubs easily integrate crofting and extensive grazing systems like Pasture for Life. • Digital benchmarking can	• Geographic disparities in access to advice or knowledge hubs may fragment uptake. • Reducing complex grazing systems into simple KPIs may miss nuanced outcomes.

	showcase emissions and biodiversity gains.	
Restoration of natural hydrology	• Councils and environmental clusters can coordinate with SEPA, Scottish Water, River Trusts. • Monitor farms can show co-benefits in flood mitigation and carbon. • Unified governance ensures wetland and hydrology data is tracked within AKIS.	• Hydrology interventions are land- and infrastructure-heavy, requiring multi-year support. • Oversight complexity in matrix governance could slow approvals.
Use of N-fixing crops; Reduced or targeted use of synthetic N fertiliser and pesticides	• Peer-to-peer and on-farm trials support rapid testing of legume mixes and reduced inputs. • Digital benchmarking can highlight input savings and nitrogen efficiency. • Regional clusters can align with supply chains to develop local legume markets.	• Complexity of region-specific rotations may overwhelm farmers without tailored advisors. • Resistance to grant-funded trials could reduce broad evidence base. • If benchmarking tools are poorly designed, farmers may ignore recommendations.
Supporting uptake of feed products to reduce enteric methane (dairy & beef)	• National-level support plus monitor farms can trial novel feeds under Scottish conditions. • Supply chain actors like QMS and ABP can champion productivity plus emission metrics. • International networks (Option 2) bring in cutting-edge research on feed supplements.	• New supplements require robust advisory systems to build farmer trust. • Digital upskilling must accompany physical feeding plan changes. • Innovation selection contests (Option 15) risk divisiveness if criteria lack transparency.
Genetic improvement of beef cattle	• Monitor farms facilitate measurement of genetic gains in performance and emissions. • National genetic improvement schemes can integrate with supply chain incentives. • Ambassador farmers can profile best-performing genetics on farm walks.	• Digital record-sharing may raise data privacy concerns. • Peer-based innovation risks exclusion without inclusive facilitation.
Improved beef cattle nutrition	• On-farm demonstration of ration changes and performance metrics.	• Poor digital tools may limit take-up. • Ambassador focus may

	• Regional feed sourcing initiatives build local supply resilience. • Digital benchmarking highlights feed efficiency and cost-benefit.	centralise attention on larger farms, leaving others behind.
Improved animal health & breeding	• Monitor farms and peer-learning amplify disease control and breeding success stories. • Unified governance integrates veterinary input via APHA, TB Advisory Service. • Digital data platforms support benchmarking of health performance.	• Data-sharing may create breeder anxiety without clear privacy safeguards. • Without adequate facilitation, innovation may remain isolated.

Overall, the development of a unified, matrix-style AKIS with regional hubs, peer-to-peer learning and digital benchmarking creates strong potential to accelerate adoption of both climate and biodiversity interventions. The strongest opportunities lie where visible, practical approaches (like monitor farms and ambassador schemes) are matched with regional coordination, supply-chain links, and international insights. However, threats remain if facilitation capacity, digital inclusion, and CPD engagement fall short—especially in remote areas. Governance complexity also risks sidelining specific outcomes unless KPIs are carefully crafted to include emissions, biodiversity, soil, water and economic resilience.

6 Bridging the gaps: Conclusions and recommendations

Scotland's evolving AKIS presents a crucial opportunity to embed climate- and biodiversity-positive farming into mainstream practice. Influencing the design and implementation of this system is one of the most effective ways to support a just transition for land managers—ensuring farmers and crofters are equipped, resourced, and connected to deliver nature and climate actions while continuing to produce food.

Given the current position of Scotland's AKIS (relatively strong, but somewhat fragmented - **Figure 4**) and the proposed changes to its structure and function (proposed by JHI and being reviewed by the Scottish Government), what other opportunities are there to enhance its role in the just transition? The analysis in this report adds value by looking specifically at skills necessary for climate- and nature-friendly farming (**4 Evidence review: Skills and practices needed to achieve the Scottish Government & WWF Scotland targets for climate and nature in agriculture**) and providing an analysis of the structure and future direction of Scotland's AKIS from this perspective.

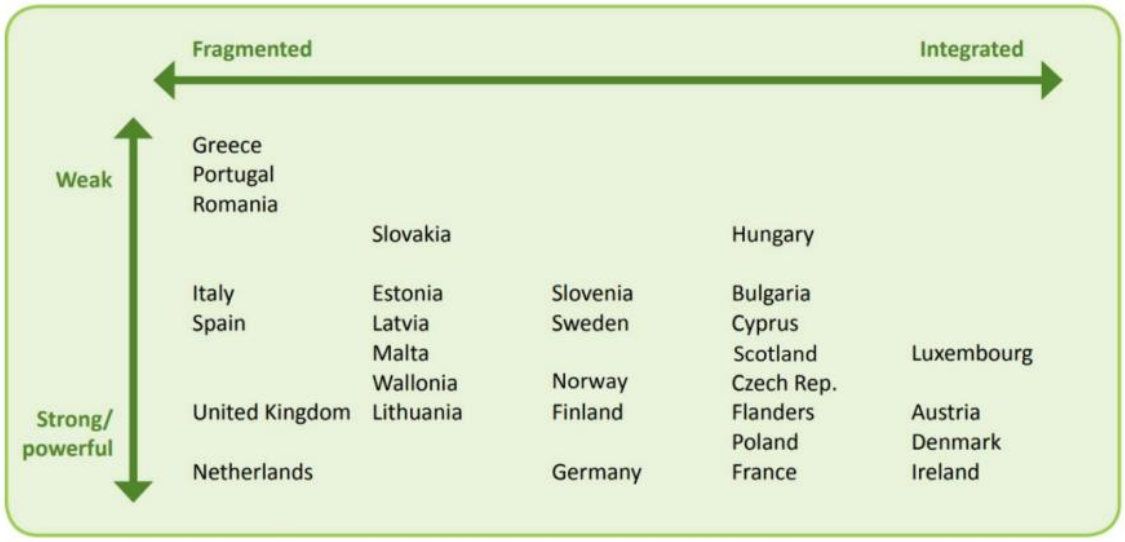


Figure 4: A characterisation of AKIS across Europe in terms of each system's strength and integration. Note that Scotland is listed separately from the UK overall. Source: ClimateXChange (2023) Establishing an agricultural knowledge and innovation system.

6.1 Future funding of a Scottish AKIS

The scale of the challenge of enabling the transition to climate- and nature-friendly farming system in Scotland will require investment over and above what has been made available in the past (detailed in **3 Public funding for Scotland's AKIS 2015-2025**). However, it is challenging to determine a precise figure for the additional investment required. This is in part because JHI's report to CXC indicated that many of the options identified to establish a responsive, inclusive AKIS would require a major reorganisation and reallocation of resources, i.e. that the existing funds could be spent differently, while adding value and retaining the strengths of the well-reviewed and effective FAS.[39]

Nonetheless, this report concludes that additional investment will be required. To estimate the scale of this requirement, this section draws on several key sources of evidence to surround / triangulate a range of values (**Figure 5**). Evidence includes:

1. Historical calls and advocacy for further investment from eNGOs, environmental charities and other interested parties. This section integrates the results of the interviews and workshop which were part of the evidence gathering for this report.
2. A comparison with Ireland's AKIS, integrated under Teagasc. Ireland's farming system and mix of enterprises offers a useful comparison to Scotland's and it is included as a key comparison in the JHI report.
3. Additional requirements of a future Scottish AKIS - These are elements currently absent from the AKIS in Scotland which have been identified as having the potential to add significant value, with estimations of their associated costs.

[39] Establishing an agricultural knowledge and innovation system p.2

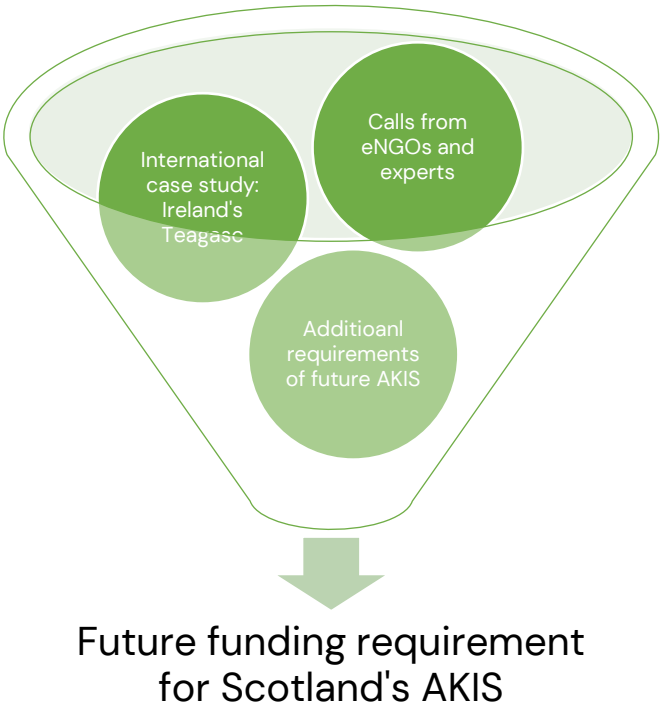


Figure 5: Evidence sources used to support our estimation of funding required for Scotland's future AKIS.

6.2.1 Calls from eNGOs and experts

The budget provision for knowledge and advice (KTIF and FAS) accounted for 1.9% of available agricultural funding between 2014-2020.[40]The following groups have publicly called for increased funding for AKIS, particularly for knowledge exchange, innovation support, and facilitator roles:

- WWF Scotland's Vision for Agriculture called for funding for advice and skills for farmers and crofters to be scaled up to £20 million per year by 2027.[41] This figure came from The Climate Emergency Response Group's (CERG) 2022 report, which highlighted this crucial need.[42]
- In October 2023, the Scottish Wildlife Trust joined conservation organisations to call for £160 million in the Scottish Government convergence funding to be directed into the Agri-Environment Climate Scheme (AECS) and the Agriculture Modernisation Fund.[43] They emphasised this funding should support climate and

[40] Scottish Government (2019) Scottish Rural Development Programme: Summary of Progress - 2014 to 2019.
[41] WWF Scotland Vision for Agriculture p.10
[42] Climate Emergency Response Group (2022) Unlocking Scotland's response to the climate emergency: 4 immediate actions to fast-track delivery for the Scottish Government.
[43] This was the wording used at the time, within the Climate Change Plan: "The plan must also set out the Scottish Ministers' proposals and policies regarding the establishment of a fund, to be known as an Agricultural Modernisation Fund, to support investment in mitigation measures to reduce greenhouse gas emissions on Scottish farms" Legislation.gov.uk (2024) Climate Change (Scotland) Act 2009.

biodiversity friendly farming, implicitly requiring expanded advisory and knowledge exchange capacity to help farmers deliver these outcomes.[44] Instead, this funding went towards the Less Favoured Areas Support Scheme (LFASS) and the Basic Payment Scheme.[45]

- In February 2024, The Academic Advisory Panel to the Agriculture Reform Implementation Oversight Board (ARIOB) made recommendations about AKIS, which did not include a specific funding ask but highlighted a need for "clear pathways for external funding to support development of knowledge exchange and innovation systems. Farmers and crofters may fear that they will be indirectly charged for the reorganisation or upgrade of the existing system. Implementing a transparent funding model will alleviate those concerns and foster active participation and engagement."[46]
- Scottish Environment LINK called for an increase of £5 million for advice and training for farmers and crofters within the 2025-26 Scottish Budget, as well as targeting 75% of farm budget towards supporting nature and climate friendly farming by 2028.[47] In the budget, while AECS was maintained at similar levels, no ring-fenced funding for advice and training was included.[48]

6.2.2 International case study: Ireland's Teagasc

Ireland allocates around €979 million in direct farm supports via Programme B, plus an estimated €1.2 billion in EU CAP payments,[49] bringing total public farm-related funding to over €2 billion annually.[50] Of this, approximately €260 million is committed to ACRES (Agri-Climate Rural Environment Scheme) for 2025.[51] The Department of Agriculture allocated €46 million through thematic research calls in 2023, covering areas such as low-emission dairy, soil carbon, and biodiversity, representing record research funding for Irish agriculture.[52] Teagasc also receives around €170 million in general funding (2023), supporting both advisory services and R&D.[53]

Ireland has established a formal AKIS Coordination Group as part of its 2023–27 CAP Strategic Plan—structuring regular engagement between DAFM, Teagasc, CAP-Network,

[44] Scottish Wildlife Trust (2019) Conservation charities call for support for zero-carbon farming.
[45] Scottish Government (2020) News: Agricultural support underway.
[46] Scottish Government (2024) Academic Advisory Panel - 5 February 2024 - Agricultural Knowledge and Innovation Systems Advisory Note.
[47] Scottish Environment LINK (2024) Farm Funding and the Scottish Budget, 2025-2026.
[48] Scottish Government (2024) Scottish Budget 2025 to 2026.
[49] Fi-compass (2020) Financial needs in the agriculture and agri-food sectors in Ireland.
[50] Kildare Street (2024) Written answers, Department of Agriculture, Food and the Marine.
[51] Teagasc (2024) Agriculture Related Budget Measures - Budget 2025.
[52] Teagasc (2024) Minister Heydon announces €22.3 million in new research grants.
[53] Teagasc (2023) Annual Report 2023.

and other stakeholders.[54] This group also oversees actor mapping and a farmer survey to inform better network functioning.

Table 14: Comparative summary, Ireland vs. Scotland AKIS.

Feature	Ireland	Scotland
Total Farm Support Spend	~€2 bn/year (incl. EU CAP payments)	Comparable aggregate is smaller, £716 m (2025-26)[55]
Agri-Environment Funding	€200 m for ACRES scheme	AECS funding smaller and fragmented
Research Funding	€46 m thematic calls + Teagasc € 153 m general funding	KTIF £7.5 m (2015–24) and modest research allocations
AKIS Coordination	Formal AKIS Coordination Group exists	In development; no formal body yet
Knowledge Exchange Tools	Teagasc advisory + funded Signpost Farms programme	Monitor Farms, FAS services; limited Tier 4 funding

Caveats & contextual differences

- Scale & sector composition: Ireland's agricultural sector is larger in absolute farm-gate income terms, more livestock-intensive, and makes up a comparatively larger portion of the Irish economy. Its funding must account for larger national volume, while Scotland's system includes smaller scale crofting and hill farms. Direct funding comparisons should adjust for population, farm size and structure.
- AKIS maturity: Ireland's AKIS Coordination Group is already active, with mapped actors and surveys to inform strategy. Scotland is still in early design and consultation phases; emerging governance powers exist but operational structures are yet to be formed.
- Funding distribution patterns: Ireland's ACRES scheme explicitly combines climate/nature payments with capacity support. Scotland still primarily funds production tiers, with Knowledge Exchange (Tier 4) receiving less funding.

Ireland invests substantially more in its agricultural sector as a proportion of public spending—especially on research (Teagasc & thematic projects), advisory services, and agri-environment measures like ACRES. Scotland's AKIS funding remains modest, with

[54] CAP Network Ireland: AKIS in Ireland.
[55] Scottish Government (2024) Scottish Budget 2025 to 2026.

most innovation and skills budgets tethered to KTIF and small grants, while broader strategic governance and CPD regimes are nascent. Ireland's more integrated system (Teagasc + AKIS group) contrasts with Scotland's fragmented provider ecosystem, currently lacking coordinated actor mapping or a comparable scale of funding for transmission of knowledge.

Looking wider still, based on analysis by the OECD, current AKIS spending in Scotland is substantially lower than many countries' averages and declining as a share of total agricultural support: OECD estimates that in 2020–2022, general services to agriculture (including advisory services, innovation, infrastructure, and inspection) represented around 12.5% of all support to agriculture in OECD countries. Within that, spending on AKIS, inspection and infrastructure totalled approximately USD 82 billion, which is about 3.1% of the value of production.[56]

By contrast, Scotland's current AKIS-related advisory and innovation funding is only ~£5.8 million per year (approximately 0.2%–0.3% of Scotland's agricultural output), which is far below the OECD average in both absolute and relative terms. While there is no specific per-farm benchmark set by OECD, the broader data strongly supports the conclusion that Scotland's AKIS funding is well below international norms, reinforcing the rationale for significant scaling-up. Increasing to 3.1% of the value of agricultural output (approximately £4.6 billion annually[57]) would mean committing around £143 million per year.

6.2.3 Additional requirements of future AKIS

Throughout the data gathering process (including the literature review, interviews, and workshop) this review compiled specific mentions of AKIS capacities which are not present in the current system and therefore would require new public investment. The following cost estimates **(Table 15)** provide an assessment of the funding required to expand Scotland's AKIS to include these key opportunities. The experts with whom we engaged believe these key changes will meaningfully expand and modernise Scotland's AKIS in support of a just transition. These key opportunities are:

1. Ring-fenced specialist advisory grants
2. Monitor and demonstration farms
3. Networks and events
4. AKIS governance integration
5. Dedicated facilitation funding
6. Education and inclusive CPD

[56] Potentially interesting to explore further in subsequent work - This OECD report found that spending on "general services to agriculture" is in decline across the nations surveyed, as a proportion of value of agricultural output, as is funding specifically for AKIS. OECD (2023) Agricultural Policy Monitoring and Evaluation 2023.

[57] Scottish Government (2025) Total income from farming estimates: 2018-2024.

7. Digital literacy and benchmarking

Based on reasonable assumptions around staffing, participation rates, capital requirements and regional distribution, this indicative framework is designed to offer a practical foothold for policy dialogue. The goal is not to prescribe a definitive budget, but to inform ongoing discussions with the Scottish Government and stakeholders about the scale and structure of investment needed to ensure that farmers and crofters have the advice, training, and other support required to deliver environmental outcomes while sustaining viable businesses. This analysis aligns with WWF Scotland's three core pillars: funding climate and nature actions, investing in advice and skills development and guaranteeing nutritional security through resilient rural systems.

Table 15: Key opportunities to expand Scotland's AKIS, with details on justification, specific requirements, key assumptions, and costs over a 5-year timeline.

Opportunity	Why?	What to fund	Scale & key assumptions	Estimated cost (Year 1)	Annual run-rate (Years 2-5)	5-Year total
Ring-fenced specialist advisory grants	Organisations like RSPB, GWCT and Soil Association routinely deliver unpaid advice.	Small grants or contract hours for specialists (e.g. in biodiversity, diffuse pollution, and advanced soil-health) to input into farm plans and monitor farm networks.	• 25 specialists delivering 0.2 FTE each (total five FTE) at £70 k • Grant pool for freelance input (£200 k/year)	£550 k	£550 k	£2.75 m
Monitor farms & demonstration networks	Peer-to-peer "safe learning" environments accelerate adoption of complex measures (e.g. agroforestry, rotational grazing).	Expansion of Monitor Farm Scotland from nine to at least twenty farms, with a focus on nature- and climate-friendly farming, regional advisors, and increased digital literacy for sharing protocols and results.	• Expand by +11 farms to 20 total • Per-farm cost: coordinator (0.2 FTE at £40 k), events & travel £20 k	£660 k	£660 k	£3.3 m
Networks & events	Large gatherings like the Black Isle Show deliver enormous peer-network value.	Annual grants to support farmer-led networks, thematic symposiums (e.g. peatland restoration), and small-scale "innovation competitions" to catalyse local project ideas.	• 20 farmer-network grants at £20 k each • Four symposiums at £50 k • Innovation	£700 k	£700 k	£3.5 m

			competitions £100 k			
Integration of AKIS governance	A small, well-resourced secretariat is needed to coordinate research, education, extension and funding streams without adding bureaucracy.	Initial setup and two years of operating costs for an AKIS coordination body under SEFARI Gateway	• Secretariat of five FTE at £70 k +20% overhead • One-off setup & consultancy £160 k	£1.0 m	£420 k	£2.68 m (including setup)
Dedicated facilitation funding	Long-term, trusted facilitators drive multi-year behaviour change	Minimum five-year facilitator posts (potentially embedded in Regional Land Use Partnerships) supporting local actors coming together and planning for climate, biodiversity and business outcomes.	• 10 facilitator posts (spread across Scottish regions) at £60 k (salary + benefits) each • 20% overhead for travel, training, admin	£720 k	£720 k	£3.6 m
Education & inclusive CPD	Embedding regenerative practice in HNC curricula through PhD themes, apprenticeships and mid-career CPD ensures the next generation sees biodiversity and climate stewardship as core farming skills.	Scholarships, bursaries and CPD credits for under-represented groups (women, new entrants, crofters), and pilot programmes in agricultural colleges that integrate nature-based modules into all courses.	100 scholarships at £5 k each • 1,000 CPD credits at £500 • four pilot courses at £100 k each	£1.4 m	£1.4 m	£7.0 m

Digital literacy & benchmarking tools	Data-driven feedback (e.g. benchmarking N-use, GHG intensity, biodiversity indicators) motivates change—but only if tools are accessible.	Subsidised digital training for advisors and farmers, plus seed funding for "virtual demonstration" events.	• Training subsidies: 1,000 users at £500/course • £500k seed funding for virtual demonstrations	£1.0 m (capex + training)	£600 k maintenance + top-ups	£3.4 m (including capex)
Total				**Cost in Year 1:** **£6.03 m**	**Annual cost Years 2–5:** **£5.05 m**	**Total increased investment over 5y:** **£26.23 m**

Additional considerations:

- **Continuous vs. one-off**: Most calls demand continuous funding, while items 4 & 7 (AKIS governance integration and digital literacy / benchmarking) have significant, front-loaded, capex/setup components.
- **Uptake & reach**: Assumed coverage of major farm clusters and digital literacy targets ~10–15% of Scotland's ~30 000 holdings, focusing on early adopters and network leaders.
- **Co-funding**: Private sector or EU-sourced match funding (e.g. LIFE, Horizon) could reduce net public cost by 20–30%.
- **Evaluation and adaptation**: Any adoption of above programmes should integrate a monitor-and-evaluate budget (~5% of total spend) to adapt roll-out based on uptake and impact.

These preliminary figures illustrate that a well-targeted and coordinated investment across seven core areas could unlock widespread uptake of regenerative practices, enhance knowledge transfer, and embed long-term capacity within Scottish agriculture. While the estimates are intentionally broad and indicative, they help visualise the kind of integrated AKIS funding package that could bridge the gap between policy ambition and on-the-ground implementation. As the Scottish Government considers the future shape of agricultural support, these figures are offered to stimulate constructive discussion about what levels and types of investment will be required to deliver a just transition for the sector—one that is both environmentally sustainable and socially inclusive. Further refinement will be needed, but this outline provides a credible starting point for that process.

6.2.4 Synthesis: Evidenced funding requirement

The Scottish Government data indicates that in 2025, approximately £5.8 million is allocated across Strategic Policy and Agricultural Advice—comprising knowledge exchange, KTIF-style innovation funding, and advisory services within Tier 4 of the future four-tier framework. This figure includes recent KTIF allocations (£200k in 2024) and Small Producers Pilot Fund (£1 m) but makes up a small portion of overall farm support, 70% of which goes to Tiers 1–2, direct payments.

Bodies such as RSPB Scotland, Soil Association, Nature Friendly Farming Network, and the Scottish Wildlife Trust have repeatedly called for substantial ring-fenced increases in knowledge exchange and AKIS funding. Specific asks have included rebasing AECS funding to £54 m, dedicated grants for specialist advice, and expansion of peer-learning mechanisms funded at the scale of contests and clusters. However, no proportionate increases to Tier 4 have materialised in recent budgets.

In Ireland, Teagasc receives around €150 m annually for advisory and research functions, plus thematic research calls of ~€46 m in 2023 alone—well above Scotland's total advisory allocation. Adjusting for farm population and sector size (Ireland's agricultural sector being 135,000 holdings vs Scotland's 50,000 holdings[58]), advisory spend per farm is an order of 5–10× higher in Ireland compared to Scotland. A formal Irish AKIS Coordination Group ensures aligned funding across departments, an institutional feature still under development in Scotland.

The seven proposed opportunities—facilitator posts, specialist grants, monitor farms, digital upskilling, AKIS governance, education & CPD, and networks/events—have a total estimated 5-year cost of £26.2 million, or £5.0–£6.0 million per annum (undiscounted). This figure is only a starting point towards the total additional funding requirement, as these seven opportunities only partly address the recommendations of the JHI report to CXC.

Scotland currently invests only £5.8 million annually in its AKIS knowledge architecture—far less than Ireland and other OECD nations, and insufficient to support the systemic transformation required for climate- and nature-friendly farming. To bridge this gap and deliver on both environmental ambition and farmer support needs, the Scottish Government should commit at least an additional £4–5 million per year over five years. This combined package (£10–12 million/year total) would enable progress on the seven critical upgrades outlined.

While there is a need for urgent action to address these key gaps in current AKIS capabilities, it will also take time for Scotland's AKIS providers to be able to build their own capacities to meet this proposed increase in funding. Advisory providers, educators, and facilitators will need to be hired and trained up to the cutting edge on nature- and climate-friendly farming. The Scottish Government can give these providers

[58] ClimateXChange (2023) Establishing an agricultural knowledge and innovation system.

adequate time to meet the expanded scope of AKIS by giving a clear direction of travel and future funding commitments. Over time, funding for AKIS should be increased to meet the ask of WWF Scotland and the Climate Emergency Response Group of at least £20 million per year, which would move the current position towards an AKIS of sufficient scale and coordination to drive the transition to sustainable rural Scotland.

6.2 Policy and funding recommendations to WWF Scotland

To ensure Scotland's AKIS is capable of supporting a just transition to climate- and nature-friendly farming, WWF Scotland should focus its efforts on securing more ambitious and better targeted investment in knowledge exchange, advisory capacity and skills systems. The evidence collected in this study highlights key interventions that would unlock widespread adoption of nature-based farming practices and support the resilience and sustainability of Scotland's food system.

1. Secure dedicated and increased funding for climate and nature advice

Stakeholders repeatedly emphasised the importance of long-term, trusted advisors and facilitators in supporting farmers and crofters to deliver on biodiversity, climate and business outcomes. WWF should advocate for:

- A ring-fenced funding stream for specialist advice, particularly for biodiversity, soil health and diffuse pollution, allowing NGOs and technical experts (e.g., RSPB, Soil Association) to input into farm planning and monitoring.
- Support for at least five-year facilitator posts, embedded in regional initiatives such as Regional Land Use Partnerships, to coordinate place-based action and build trusted relationships with land managers.

This supports WWF's pillar of funding climate and nature actions and addresses gaps in delivery capacity currently experienced across Scotland.

2. Champion expansion of peer-led demonstration and learning networks

Cultural norms, peer influence, and trust in the messenger all heavily influence how information is received and acted upon. Interviewees and workshop participants consistently praised the success of initiatives such as Monitor Farm Scotland in providing safe spaces for peer-to-peer learning and showcasing complex interventions (e.g., agroforestry, rotational grazing). Economic clarity—especially around profitability, return on investment, and system-level outcomes—remains a missing link for some key practices. WWF should:

- Campaign for a scaling-up of the Monitor Farm model, with a target of 20+ farms, to extend current provision to all Scottish geographies and farming systems. This should include regional facilitators, and support for digital upskilling to promote open access to learning.

- Support funding for farmer field schools, innovation clusters, and on-farm demonstration hubs.

This would advance both WWF's commitment to investing in advice and skills development, and support community-led climate and biodiversity action.

3. Advocate for integration and governance reform in the AKIS

The current fragmentation of Scotland's AKIS reduces its effectiveness and can lead to duplication. WWF should advocate for:

- The creation of a small, well-resourced AKIS governance body or secretariat, housed within SEFARI Gateway or a suitable neutral body, with the mandate to coordinate research, education, extension, and funding streams.
    - This body should be independent and united behind the shift to climate- and nature-friendly farming in Scotland. An AKIS governance body should integrate input from key organisations involved in Scotland's AKIS while ensuring farmer and crofter voices are embedded in strategic planning.
- Call for better coordination of existing funding streams (e.g., SRDP, Scottish Funding Council, SDS) to reduce duplication and increase accessibility.
- Promote multi-year funding models that enable long-term, adaptive programming rather than short-term, project-based delivery.
- Embed monitoring and evaluation within the design and delivery of an updated AKIS.

This recommendation addresses systemic barriers identified in the report and supports all three of WWF's pillars by improving governance, accountability and effectiveness of public investment.

4. Support targeted investment in digital skills and tools

Benchmarking and data feedback loops are powerful motivators for behaviour change. However, digital literacy remains uneven. WWF should advocate for:

- Subsidised digital training for advisors and land managers and piloting virtual demonstration farms and events. This could potentially be embedded within CPD under Tier 4.

This supports both the skills development and climate action pillars, ensuring that farmers have the tools they need to track progress and inform change.

5. Secure inclusive investment in formal and informal education

Education at all levels — from apprenticeships to CPD — must reflect the demands of climate- and nature-friendly farming. WWF should call for:

- Greater integration of regenerative, agroecological and nature-based modules into all agricultural qualifications.

- Scholarships and bursaries for under-represented groups (e.g., women, new entrants, crofters) and pilot projects that combine training with mentoring and network building.

This supports WWF's mission to invest in advice and skills and addresses the sector's urgent need for new entrants and lifelong learning opportunities.

6.3 Conclusion and future research

WWF Scotland is uniquely placed to ensure the reform of Scotland's AKIS system delivers for both climate and nature, while securing the livelihoods of the farmers and crofters at the heart of land management. By targeting its influence toward these recommendations and reinforcing its three strategic pillars, WWF can help shape an AKIS system that is just, well-governed, and transformative, moving Scotland towards a resilient, nature-rich and food-secure future. Future research should consider engaging directly with a diverse sample of land managers, including:

- Crofters and smallholders, to understand how KE and support systems could better reflect the realities of extensive, low-input systems.
- New entrants and early adopters, to explore their routes to knowledge and perceived barriers to innovation.
- Farmers in more conventional, commercial systems, especially those with high-input operations, to understand the inertia and pressures maintaining or transitioning from the status quo.
- Practitioners with experience in under-supported practices (e.g. agroforestry, legumes, or habitat restoration), to explore what has enabled or blocked success.

Potential areas of inquiry:

- Exploring existing examples of successful, widespread practice changes, to understand what the enablers of these rapid transitions were. Exploring existing examples of successful, widespread practice changes, to understand what the enablers of these rapid transitions were. "positive case studies" at bottom of **Annex 1: Interview findings.**
- What sources of information do farmers consult to make decisions which affect their business, and why?
- What makes a knowledge exchange opportunity useful and memorable?
- What forms of support (e.g. financial, social, technical) would reduce perceived risk when trying something new?
- How do different farming contexts shape the relevance and applicability of evidence?
- Where are the biggest mismatches between research evidence and day-to-day farming decisions?

This next phase would ensure that AKIS development is grounded in practitioner perspectives and tailored to the diversity of Scotland's agricultural systems.

Annex 1: Interview findings

SAC Consulting engaged with five individuals representing various organisations within AKIS: Pasture for Life, Soil Association Scotland, RSPB, SRUC and the James Hutton Institute. This section summarises interview findings from the perspective of these AKIS actors. Interview questions were aimed at assessing strengths, opportunities and barriers with current provision of knowledge transfer.

Themes emerging from interviews

1. AKIS fragmentation and the need for coordinated collaboration

Across all six interviews, respondents praised the wealth and diversity of expertise in Scotland's AKIS. However, there are mixed views on the fragmented nature of AKIS. Pasture for Life emphasised the diversity of actors within AKIS can be seen as a good thing, as there's a broad range of different farmers seeking niche knowledge areas. This helps facilitate change, as larger, more centralised structures are slower to respond. However, more interviewees reflected on its siloed nature. Farmers struggle to navigate the web of services to access knowledge and advice for their specific needs, whether searching for RSPB specialists who offer unpaid biodiversity advice, Soil Association members who are piloting cover-crops or JHI researchers generating new models. Multiple funding streams (KTIF, SFC, Skills Development Scotland) operate in parallel, creating bureaucratic burdens on smaller NGOs.

Rather than a single monolith, interviewees envisage a light-touch coordination body that brings regional clusters, monitor farms, and thematic networks together—minimising duplication but preserving the agility of specialist actors and taking a more farmer-led and outcome-based approach. This would map where agronomy, tree-planting, hydrology or financial-literacy support lives (building on the work started in this report), then actively broker connections to meet farmer needs while achieving nature or climate outcomes.

2. The central role of long-term facilitation and peer-to-peer learning

Most interviewees (Pasture for Life, RSPB, JHI, and Soil Association Scotland) highlighted that trusted facilitators, embedded over multiple years, are the linchpin of innovation adoption. Interviewees pointed to England's farm-cluster model and Monitor Farm Scotland, which both show that when advisors and/or group facilitators commit over multiple years, groups coalesce around shared objectives, for example tree-belt design, rotational grazing or soil-health trials, and then stick with change long enough to see results.

Meta-skills (e.g. digital literacy, critical thinking, growth mindsets and systems-level decision-making) are best instilled through ongoing peer engagement, not one-off workshops. These methods are particularly important for building trust with marginalised

or hard-to-reach groups within the farming community, for example farm staff, older farmers, and transitioning farmers (Pasture for Life). Face-to-face farm walks, community learning events and farmer field schools remain the most credible platforms. To cement these gains, interviewees called for ring-fenced funding to pay facilitators and cover travel, event costs, and facilitation training for advisors with both group-management and technical expertise.

3. Under-investment in knowledge exchange and emerging skills gaps

Interviewees across the board described Tier 4 (knowledge exchange and innovation support) as significantly underfunded, especially compared to base-level payments, (Tiers 1-3). And yet, Tier 4 underpins everything from tree-planting training to digital-survey skills. Future farms will have new vocational needs (e.g. peatland restoration, drone surveying, digital-twin modelling), as well as a need for adaptive short courses that can be delivered on demand.

Regenerative approaches account for complex interactions and embrace uncertain outcomes. To shift to regenerative farming, farmers need enabler or meta-skills: financial-planning fluency, confidence in risk-based decision making, and systems thinking. Without deliberate investment in CPD bursaries, inclusive mentoring schemes and dedicated funding lines for specialist NGOs, these capacity gaps will widen, especially for smaller and non-conventional operations. Interviewees urged policy makers to reallocate a larger share of the agricultural support budget to knowledge exchange, facilitation and emerging technical training.

4. Disconnect between research evidence and on-farm practice

A recurring refrain, echoed by RSPB, Soil Association was the challenge of undertaking bridging the gap between academic research and practical application on-farm. Data of sufficient quality to inform academic studies is difficult to reliably produce on working commercial farms. Pasture for Life also highlighted the institutional limitations of academic publishing that hinder creativity and adaptability of research, which in turn impedes availability of latest place-based evidence in highly dynamic agroecological practices. Advisors feel they lack a fit-for-purpose “one-stop shop” to access distilled, locally relevant findings (e.g. on soil carbon, diffuse pollution control, or feed-additive efficacy).

Meanwhile, sectoral levy-boards can reinforce narrow technical silos (e.g. beef vs. sheep), detracting from integrated, cross-system approaches that regenerative agriculture demands. Interviewees called for improved dissemination of existing science-communication hubs (e.g. SEFARI Gateway and other online resources available through FAS and others) staffed by skilled translators who bridge academia and extension and share clear “tested trade-off” case studies. This function would ensure that new evidence (e.g., on the economics of multi-species swards or the hydrology impacts of drain-blocking) reaches advisors, monitor farms and regional clusters in a timely, usable form.

5. Farmers as creative innovators and the case for risk-tolerant funding

Finally, many organisations emphasised that farmers are far from risk-averse: they experiment in "fun plots," crowdsource advice on WhatsApp and have enthusiastically adopted cover crops, agroforestry and breed selections when they see credible results. RSPB's long-term biodiversity successes illustrate that "sea changes" often follow once farmers trust the process. Yet current funding models are ill-suited to small-scale experimentation, lengthy applications, rigid eligibility and short grant cycles mismatch with agricultural timeframes and discourage first-of-a-kind trials. Interviewees recommended seed-funding schemes that tolerate initial failures, tiered grants for incremental learning and innovation competitions judged on learning as much as on immediate success. By embracing a risk-tolerant approach, policy can unlock the full creative potential of Scotland's farming community.[59]

These themes underscore that a truly just, effective AKIS will combine light coordination, long-term facilitation, robust investment in knowledge and meta-skills, seamless research-to-practice pathways and risk-friendly funding—all tailored to the diverse needs of Scotland's farmers and crofters.

Positive case studies of "sea changes," widespread paradigm shifts in Scottish agriculture

These developments, mentioned by interviewees, provide real-world examples of practice changes, which have swept through the Scottish agricultural sector in recent years. These examples showcase the innovation that farmers are moving ahead with already and could be useful to explore further as case studies, to understand what enablers of these rapid changes were.

- Cover crop adoption integrated into agri-environment schemes; Now there are payments in place, where in recent memory cover crops were a brand-new idea (Soil Association)
- On-farm agroforestry: thinking differently about tree integration (Soil Association)
- Breed and variety selection (both livestock and crops) tailored to farm and region (Soil Association)
- Regulatory response capacity—farmers adapting quickly to changing rules (JHI)
- Agri-environment scheme integration into business plans and land valuations, i.e. accounting for the value of habitats when considering the value of farmland (JHI)
- WhatsApp-based peer advice networks among younger farmers (JHI, Pasture for Life)
- Bale Grazing and Bracken Field Lab (Pasture for Life)

[59] England's new ADOPT fund shows promise but results will take time to emerge.

- Low input livestock programmes including minimising anthelmintics (dewormers), various grazing management (e.g. mob grazing, conservation grazing) (Pasture for Life)
- Biodiversity options within AECS – Integration of Corncrake and Corn Bunting options are two good examples of how farmers and crofters can deliver positive change for priority species at landscape scale

Annex 2: Workshop summary and analysis

Workshop date: 20 June 2025, 0900-1000

Purpose: To analyse and synthesise outputs from the AKIS workshop to inform the final report on Scotland's Agricultural Knowledge and Innovation System.

Overview of workshop

As part of the evidence gathering for this project, as well as to refine our results, a workshop was hosted at the 2025 Royal Highland Show. Key AKIS stakeholders were invited to attend, hear about this project, and share their views on the future of Scotland's AKIS. The workshop was attended by participants representing the following groups and organisations:

- Farmers / practitioners
- NatureScot
- Nourish Scotland
- Peatland ACTION
- Royal Bank of Scotland
- Royal Society for the Protection of Birds (RSPB)
- SAC Consulting
- Scottish Agricultural Organisation Society (SAOS)
- Scottish Crofting Federation
- Scottish Government
- Scottish Parliament
- Scottish Rural Network
- Scottish Wildlife Trust
- Soil Association Scotland
- SRUC Research
- WWF Scotland (facilitating)

The workshop was facilitated by two SAC Consultants and four WWF Scotland staff members. After an introduction from WWF Scotland, the SAC Consulting team gave an overview of the project, including an orientation in the concept of an AKIS. They then introduced the activity for breakout groups: Each of four breakout groups (4-5 participants per group) was given a set of five sticky notes printed with the following nature- or climate-friendly farming practices:

- Reduction in synthetic nitrogen fertiliser use
- Integration of legumes on diverse-species grassland
- Enhancing existing hedgerows
- Creation & restoration of semi-natural habitats
- Agroforestry / silvo-arable / silvo-pasture systems

Each group was also provided with a piece of flipchart paper, on which was drawn a triangle. The corners / vertices of each triangle had the labels "Evidence," "Knowledge Exchange," and "Implementation" (see below figures). Participants were asked to, as a group, place each sticky note onto the triangle, depending on whether they perceived the barriers to uptake of each practice to be primarily related to evidence, knowledge

exchange, or implementation. They could also indicate that it was a mix of these factors, by placing the sticky note elsewhere on the triangle, between the three corners / vertices.

The workshop had great engagement from participants, with thoughtful discussions in each breakout group. Each group placed all sticky notes on each triangle map. The results of the workshop are discussed below.

General themes emerging from breakout group discussions

Across the four breakout groups, a strong consensus emerged around the importance of knowledge exchange (KE) and implementation as the dominant barriers to agricultural practice change, with evidence seen as largely available, albeit with some critical gaps.

Knowledge exchange was repeatedly identified as the most effective lever for change. All groups emphasised the value of peer-to-peer learning and on-farm demonstration, noting that advice delivered by trusted peers, suppliers, or agronomists is more impactful than formal or top-down approaches. Storytelling and real-world examples (e.g. via Living Labs) were also seen as powerful tools. Participants highlighted that KE must be well-facilitated, funded, and accessible—especially for time-poor farmers. The format and messenger matter greatly for uptake.

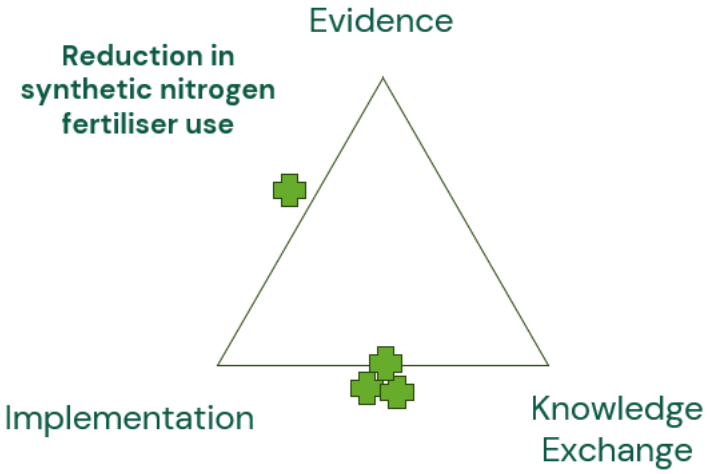
Implementation challenges featured strongly. Farmers' risk aversion, anxiety about failure, and a lack of capacity to try new methods were recognised across groups. The need to pay farmers for their time and innovation was emphasised. Groups also stressed the importance of scaling interventions to landscape level, supported by skilled facilitation.

While evidence was not seen as the primary barrier, gaps remain—particularly around the economic benefits of change, especially for crofting and extensive systems. Where solid evidence does exist, the challenge lies in translating it into usable, farmer-facing formats. Long, technical reports were considered inaccessible to many in the sector.

There was strong agreement that agricultural transition in Scotland hinges on behaviour change and KE, not just generating new evidence. Several participants called for a rebalancing of emphasis, away from a research-heavy model towards greater investment in facilitation and KE—framing this as essential business investment in farming's future.

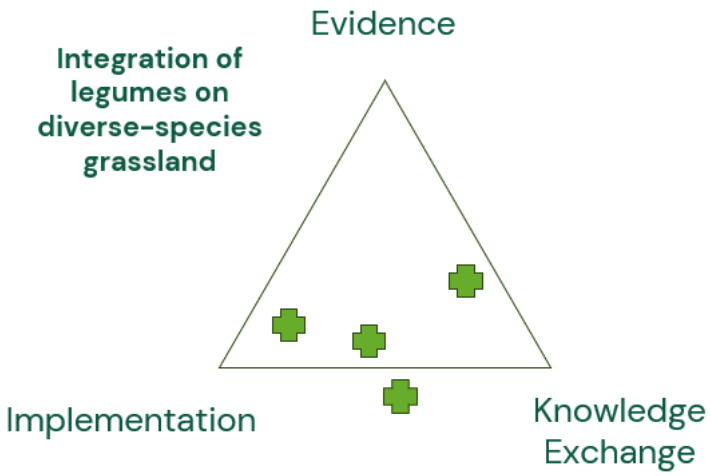
Results of mapping exercise

Reduction in synthetic nitrogen fertiliser use



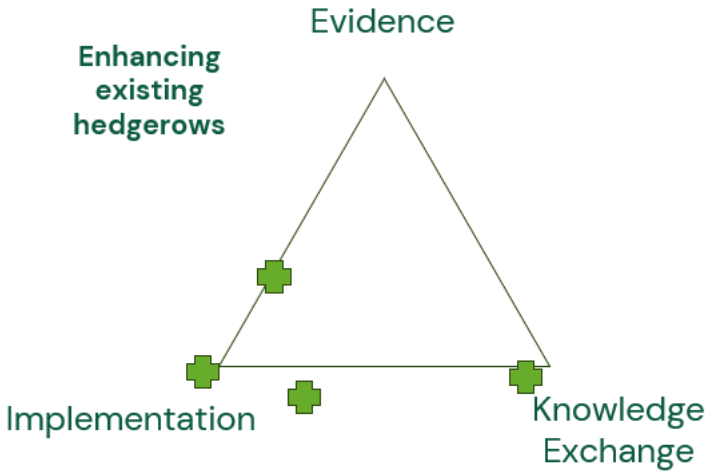
Sticky notes for this practice were placed primarily between knowledge exchange (KE) and implementation, with one note also indicating a barrier relating to evidence. This distribution was reflected in the discussion: while evidence on the need to reduce fertiliser use is widely available, uptake is hindered by entrenched behaviours, cultural norms, and the quality of KE. Farmers often rely on sources they trust (e.g., fertiliser salespeople) for advice, and existing advisory services are sometimes seen as quite conventional or subsidy-focused to support regenerative alternatives. For new entrants, access to relevant KE is especially limited. Although financial incentives may support change, participants stressed that behaviour change and business-as-usual inertia remain significant challenges.

Integration of legumes on diverse-species grassland



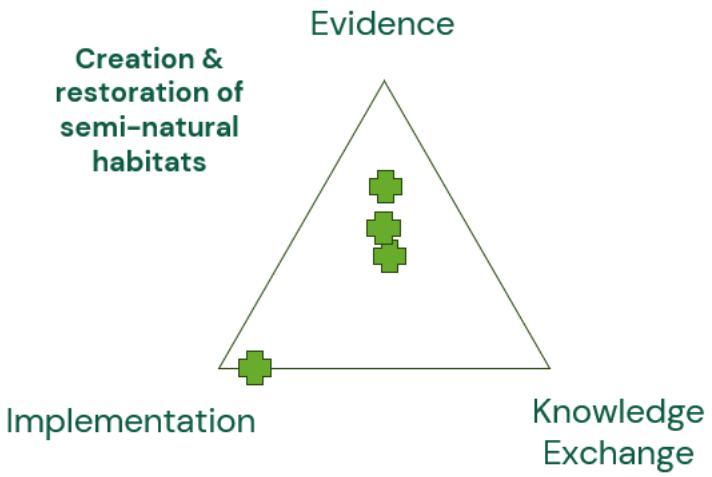
Sticky notes were scattered between implementation and KE, indicating barriers in both areas, with evidence seen as less of a concern overall, but not absent. While some knowledge exists, specific gaps remain (e.g., around regional performance differences and potential effects on existing clover species). Implementation is complicated by challenges such as reseeding timing, the lack of appropriate government funding, and limited supply chain demand. The success of legume integration appears highly context-dependent, varying with system design and market linkages. Participants also noted that without clear economic incentives, adoption is unlikely to scale.

Enhancing existing hedgerows



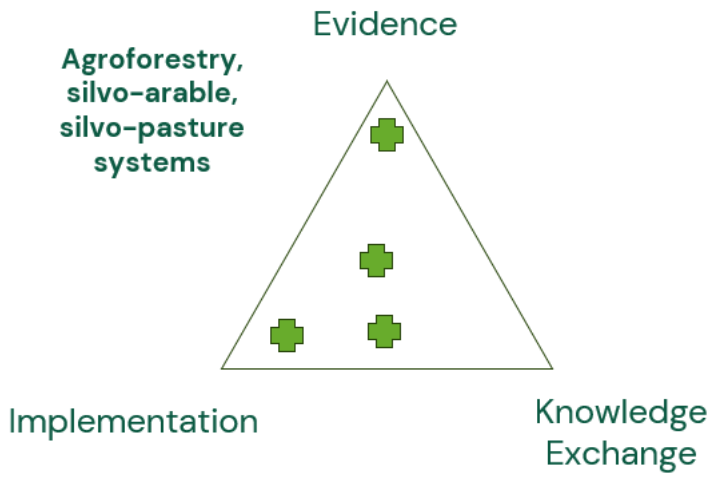
Sticky notes were dispersed across implementation, KE, and some reference to evidence, though weighted towards the first two. This is consistent with discussion points, which referenced a long-standing awareness of hedgerows' environmental value but persistent cultural and practical barriers to adoption. Farmers may resist changes due to aesthetics (e.g. a wish or pressure for farms to appear "tidy"), productivity concerns (e.g. shading crops), or generational attitudes rooted in past practice. Despite decades of advocacy, hedgerows are still not recognised by many as farm assets, and current funding schemes may lack the flexibility to incentivise meaningful change. Participants emphasised that both technical and cultural KE are required to shift perceptions and normalise hedgerow restoration.

Creation & restoration of semi-natural habitats



Sticky notes for this measure clustered near the centre of the triangle, suggesting a balance of barriers across evidence, KE, and implementation, with a slight tilt toward evidence. While some participants acknowledged knowledge gaps—especially around specific practices like regenerative grassland management—most discussion focused on how limited or misaligned funding prevents action. For example, the Basic Payment Scheme does not directly support restoration outcomes, making it difficult for farmers to prioritise habitat creation. Additionally, restoration isn't always a win-win and may involve trade-offs that complicate uptake. Participants also called for better KE strategies that highlight the practical steps and benefits of habitat creation.

Agroforestry / silvo-arable / silvo-pasture systems



Sticky notes were scattered throughout the interior of the triangle, including positions split between evidence, KE, and implementation, indicating a complex mix of interlinked

barriers. Key challenges include lack of funding, unclear definitions of agroforestry, and limited integration between forestry and agriculture sectors. Language and framing matter—"trees on farms" was seen as more acceptable than "agroforestry" due to emotive connotations. Farmers are unsure about what grants are available to fund different types of tree planting on farms, how it will affect productivity, and whether the investment pays off. There is a perceived gap in credible, Scotland-specific economic evidence, contributing to hesitation around adoption.

Conclusions and next steps

The AKIS workshop held at the 2025 Royal Highland Show brought together a diverse cross-section of stakeholders from policy, research, advisory, finance, and advocacy organisations. Participants engaged deeply with the barriers to uptake of five climate- and nature-friendly farming practices. Across all breakout groups and all five measures, a clear and consistent message emerged: the primary constraints to change are skewed towards knowledge exchange (KE) and implementation, rather than a lack of evidence.

The group discussions strongly reinforced these findings. Participants emphasised that while scientific evidence is often available, it is not reaching farmers in a usable or trusted form. Peer-to-peer learning, on-farm demonstration, and storytelling were widely recognised as the most effective KE methods—far more persuasive than formal education or written reports. Cultural and behavioural factors, such as risk aversion, generational norms, and business-as-usual mindsets, were identified as significant obstacles to implementation, particularly in hedgerow management and fertiliser use. There was also a widely shared view among participants that funding for facilitation and KE is insufficient.

One notable observation was that where participants did reference evidence gaps, they tended to be practice-specific and economic in nature—for example, the cost-benefit of agroforestry or legumes under Scottish conditions. Similarly, implementation concerns often related to inadequate policy design, such as inflexible or poorly targeted support schemes, or supply chain challenges in less common systems.

Key conclusions

- There is a mature evidence base for many nature- and climate-positive practices, but uptake remains constrained by practical and cultural implementation barriers.
- Knowledge exchange is the critical bridge between evidence and adoption, but there is room to improve upon current systems, especially around these impactful practices.

- Cultural norms, peer influence, and trust in the messenger all heavily influence how information is received and acted upon.
- Economic clarity—especially around profitability, return on investment, and system-level outcomes—remains a missing link for some practices, especially agroforestry and legumes.

Annex 3: Report methodology

Key research questions

1. What policy and funding levers are required to develop a knowledge and advice service that supports Scottish farmers and crofters in reducing emissions, restoring nature, and maintaining food production under a new agricultural payments system?
    a. What are the projected public budget costs for an improved knowledge transfer system?
2. What are the strengths, weaknesses, opportunities, and threats of the current knowledge transfer and advisory system?
    a. What are the critical skills and infrastructure gaps that must be addressed to meet the goals of the Agriculture and Rural Communities (Scotland) Act 2024?
3. What improvements can be made to one-to-one, one-to-many, and peer-to-peer learning models?
    a. How do key stakeholders perceive the current knowledge system, and what improvements do they suggest?

Part 1: Skills gap analysis

Objective: To analyse the current knowledge transfer and advice provision landscape for Scottish farmers and crofters, identifying its strengths, weaknesses, opportunities, and threats (SWOT).

Methods:

- **System mapping:** Develop an overview map of the current agricultural knowledge exchange system, detailing key players, funding streams (since 2015), advisory services, and training programmes. Desk-based research will be combined with existing knowledge from SAC and SRUC internal experts, liaising with externals through SAC Consulting's networks, and key stakeholder contact information provided by WWF Scotland.
- **Skills gap assessment**: Compare current advisory system capabilities against the skills required for sustainable, regenerative, and climate-resilient farming. The system map and SWOT analysis will be compared and validated against key reports and existing research in this space, including the ClimateXChange research on future AKIS for Scotland, consultations with internal experts, and SRUC's response to an informal Scottish Government consultation on future AKIS.
- **Policy integration:** The current provision will be compared against those skills identified as being important to support the relevant Scottish Government and other strategies for agriculture, including the Scottish Government's vision for

agriculture, the Agriculture and Rural Communities (Scotland) Act 2024, the Agricultural Reform Programme, and WWF's Vision for Agriculture.

- **Funding analysis**: Identify trends in public and private sector investment in knowledge exchange and assess funding stability.

Part 2: Analysis of solutions to skills gap

Objective: To assess the knowledge and skills required for Scotland's agricultural transition and propose solutions for addressing gaps.

Methods:

Through further desk-based review and input from key experts, the evaluation team will analyse:

- **Skill types needed**: Is the knowledge available? From the analysis in Part 1, evaluate whether there are any key skills or topics on which knowledge exchange opportunities are lacking / absent.
- **Accessing information and training**: Is the knowledge accessible? Then, evaluate the channels through which the current knowledge exchange is provided and the opportunities for improvement.
- **Cost estimation**: From the analyses above, estimate costs of bridging the current gaps. This work will draw upon the available evidence and data (e.g. from previous / existing similar schemes and allocated budgets) to provide an estimation and will include details on areas uncertainty or potential sources of error, where more information is needed to improve accuracy.
- **Integration with AKIS**: Assess how proposed solutions align with Scotland's Agricultural Knowledge & Innovation System (AKIS) strategy.

Part 3: Stakeholder views

Objective: To enrich the research with qualitative insights from stakeholders.

Methods:

- **Stakeholder input:** The project team proposes to collect information through a limited number of targeted interviews with stakeholders who hold key experience and knowledge which will inform this work. The project team will conduct approximately five interviews with these key actors; We will discuss and refine the list of target stakeholder types with the WWF client team, however this could potentially include:
    - Farm advisory bodies, including senior administrators of these programmes as well as local consultants who deliver one-to-one and one-

to-many advice on the ground. These interviewees may be able to share additional evidence collected from farmers via feedback or past surveys.
    - Industry experts and/or researchers.
    - Cooperatives or other farmer networks such as SAOS, LEAF
    - Continuing Professional Development (CPD) providers including Lantra, BASIS
    - Formal education providers awarding Higher National Diplomas, short courses, and other degrees
    - Peer to per learning channels such as the Knowledge Transfer and Innovation Fund and FAS Connect.
- The project team will develop an interview schedule (with input from the WWF client team if required), focusing on the key research questions, including assessing the current system's effectiveness, uptake of best practices, validating findings and helping to prioritise key levers and opportunities. Interviews will be semi-structured to allow for emergent themes to be discussed and captured.
- **Thematic analysis**: Identify common themes, challenges, and opportunities from interviews.

Part 4: Stakeholder workshop

Objective: To facilitate discussions on the future of agricultural knowledge exchange at the Royal Highland Show (June 2025) or similar event.

Methods:

- **Workshop design**: Develop a structured agenda for discussions. Potential AKIS stakeholders include farmers, crofters, farmer groups / panels / committees, supply chain representatives, policymakers, advisors, education / training, and research / innovation. The workshop will present the findings from Parts 1-3 to gauge reactions, validate findings, capture any points of disagreement, and identify areas of future research.
- **Facilitation**: Guide discussions to gather insights on opportunities for improvement and the design of a future AKIS for Scotland. Members of the project team are experienced facilitators and can lead the group through plenary discussion, breakout groups, and participatory exercises such as ideation, deliberative prioritisation, "serious play" style games, or other methods as deemed most suitable.
- **Data collection**: Capture qualitative input on future needs and design recommendations for the development of AKIS for the Scottish farming sector. Data will be captured through group exercises and potentially materials such as flipcharts and post-it notes. Project team members will be present to take notes and (if necessary) record the workshop discussions for later analysis.

Annex 4: Conflict of interest statement

Description of risk

SAC Consulting are one of the main deliverers of education and skills services to the farming community, including delivery of the one-to-many component of the Farm Advisory Service since 2016, as well as other projects. Therefore, there may be a view that a potential conflict of interest exists. This plan provides a transparent assessment of this risk and an action plan to confirm how SAC Consulting has ensured that any conflict of interest has been suitably mitigated and continually managed.

SAC Consultants have applied for and led delivery of the Farm Advisory Service, in addition to providing advice and knowledge exchange to our farming clients and subscriber base. The Scottish Government has dispensed significant funding into the land-based sector with the goal of upskilling the agricultural sector, work which SAC Consulting and SRUC are well-placed to deliver. As such, there is a risk that SAC Consulting may be perceived to be motivated to:

1. View the existing knowledge transfer system favourably, as SAC Consulting has benefitted commercially from its implementation.
2. View the programmes and interventions in which we have played a part favourably, so as not to negatively affect the reputation of SAC Consulting / SRUC.
3. Gain an advantage in applying for future funding by shaping the key success criteria for future AKIS.

Actions taken to mitigate these risks

Firstly, SAC Consulting and SRUC more broadly are independent, research-based organisations and integrity is a key value that pervades our professional culture. Research and consulting projects often include sensitivities and risks of this nature, and we have systems in place for addressing conflicts of interest which figure into our mitigation plan below.

Regarding risks #1 and 2 above – SAC Consulting, SRUC, and their employees are united behind our mission to deliver the best possible quality of advice and support to farmers in Scotland. Our interests in delivering FAS and other knowledge exchange are aligned with the overall outcomes of the programme itself and it is therefore in our interest to thoroughly evaluate the current provision, including FAS and other outlets. It is also important to note that FAS is not the sole source of farm advisory activities in Scotland, but forms part of a diverse mix of knowledge sources, which this project will map and evaluate.

Regarding risk #3 above – While the resulting report from this work will identify strengths and weaknesses in the current system, the methods and results of the report will be publicly available, with nothing withheld or omitted.

The steps taken to mitigate residual risk from the above list are as follows:

1. Declare the conflict.
    a. The project team included versions of this statement, summarising the nature of the risk and mitigating measures, in our original tender application, as well as in all reports and presentations.
    b. Additionally, SAC Consulting has an established register (Conflict of Interest Declaration for SAC Consulting) where conflicts of interest are declared such that they can be appropriately evaluated, monitored, and mitigated. The details of the potential conflict within this project were listed there and kept up to date.
2. Appoint someone not connected with delivery of the Farm Advisory Service as a quality assurance lead for the final report.
    a. Our teams at SAC Consulting/SRUC include individuals who have had no previous engagement with FAS whatsoever. These staff led on quality assurance for all outputs and continually reviewed the potential conflict with reference to this document throughout delivery, in conjunction with the WWF project team.