Commission for the Land-Based Learning Review

Report to Scottish Ministers

Scottish Government
Riaghaltas na h-Alba

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Executive Summary

The Commission has sought to review learning in Scotland's land-based and aquaculture sectors - from early years to adulthood in order to provide independent, evidence-based advice to Scottish Ministers. The aim of the work is to help deliver a just transition to net-zero, by ensuring the learning system equips people with the skills and knowledge both they and the Sector requires and that the workforce is sufficient.

The term 'land-based' has long been used to collectively describe the range of different industries which use land and the marine environment to produce food and renewable resources. It has also encompassed what have in the past been seen as key supporting roles such as engineering, equine and environmental conservation. Collectively these industries utilise and manage the majority of Scotland's land and coastal areas and have the largest impact on our environment. More recently, the land-based industries have also been included within 'Green Careers' recognising the key role the Sector plays in nature restoration, climate change mitigation and adaptation.

Regardless of their collective definition, the wide variety of career opportunities available across all of the Sector's industries reflect the specialist skills and knowledge required to produce food and raw materials from our natural environment in a safe and sustainable manner. This includes the need to manage land in a way that continues to provide a range of ecosystem services such as flood protection, pollination and opportunities for recreation. The recent increase in the number of skilled workers needed to meet long term Scottish climate and biodiversity targets also presents an opportunity to improve wellbeing and increase our national connection with nature**.**

Yet across the Sector, businesses are experiencing workforce shortages and struggling to recruit. Given their importance in terms of food and materials production, addressing the nature and climate crises and supporting rural communities and the economy, it is imperative that we find solutions which attract more entrants, widen the pool of applicants, and increase training opportunities. There is also a clear need to contribute to the 'Skills delivery landscape' independent review[1] to ensure the effective development of the workforce.

Many of the employers within the Sector are micro, small, or medium sized enterprises (SMEs), with a small number of employees (if any). The available labour market intelligence (LMI) across the Sector often lacks sufficient detail which makes labour demands difficult to determine. The nature of the businesses involved means they have little time to grapple with the intricacies of funding rules and requirements, whilst the supporting education, training and career options ('pathways'), can be a confusing mixture of acronyms, course details and choices. Individual industry sector

[1] Purpose and scope - Skills delivery independent review Scottish Government 2023

skills groups often provide the main source of available sector specific insights and interventions.

The Commission has identified some of the key areas and opportunities which could attract learners, support more adult returners and increase uptake by underrepresented groups. Their recommendations span a breadth of organisations, levels, and approaches, commensurate with the diversity of challenges faced by the Sector.

But it isn't just about recruitment, 'learning outdoors' has long been recognised as vital for wellbeing as well as an effective strategy to support environmental and related Learning for Sustainability (LfS) education in early years and primary school. There is however a lack of consistency in the access of learners to opportunities to engage with learning outdoors, particularly within secondary schools. There is a need to establish clear progressive experiences for nature-based learning across all levels of Curriculum for Excellence (CfE).

The practical challenges for schools are recognised but funding for greater school/college partnerships could support this. Such interventions could broaden interest among pupils and teachers and increase understanding of the impact the Sector has on the environment (and vice versa) and help to better communicate the positive job roles within. It could also help to retain key further education curriculum expertise during recruitment fluctuations.

The Sector has had a broad range of curricular and vocational programmes from Scottish Credit and Qualifications Framework (SCQF) level 4 to level 12 which have historically addressed the needs of most land-based career pathways. Many of these have become outdated, do not fully reflect modern industry needs and often have a low uptake. Over time there has been a reduction in the delivery of some of the more expensive practical programmes and access for learners has significant regional variation as a result. Any further reductions in the availability of land-based education and training facilities would be a significant concern to the land-based industries affected and would be very difficult if not impossible to replace.

Education providers, Skills Development Scotland (SDS), the Scottish Qualification Authority (SQA), the Scottish Funding Council (SFC) and successor organisations need to work more collaboratively with the Sector to ensure small, but high impact programmes meet industry needs and have sustained support even if uptake numbers are relatively low.

It is recognised that in a time of low unemployment and particularly post-EU exit, every employment sector is seeking to better inform and gain greater access to the key influencers: teachers, parents and the formal career service. For the voice of relatively niche areas to be heard, there is a need to 're-frame' what the land-based industries can offer young people and career changers. The often-negative perceptions need to be addressed by a clearer coordinated and innovative communication strategy.

Employers, who are often small micro businesses, must also reflect on how they can change working practices and conditions to demonstrate career opportunities which embrace competitive ‘fair work’ and greater diversity to compete with the opportunities presented by larger, more recognised, industries.

Collectively, we need to more clearly explain the role of the Sector in helping to tackle the twin nature and climate emergencies. Only through the promotion of land management approaches that deliver increased biodiversity, carbon sequestration and habitat connectivity whilst also sustaining food and materials production will we be able to present the true range of opportunities in which new recruits can play their part.

Hence throughout this report the Sector and its associated industries as deliberately referred to as ‘nature based’, not to replace the names used by the diverse industries within the Sector, nor to shift the focus from their unique character and requirements. It was instead employed as the most effective way to connect the industries together as each works in and with nature. The term has been used effectively by NatureScot[2] and aligns with the ‘green careers’ associated with the transition to net zero. Though it is acknowledged that further research and consultation is required before use is extended.

The changes recommended are not straightforward but are achievable. They won’t occur overnight, and hence a joined up strategic policy approach is required, which avoids duplication of strategies, effort and cost and one which should lead to tangible benefits for the Sector and the Scottish economy.

We are not starting from scratch. A range of effective collaborative initiatives are evident within the Sector and the opportunity to build upon these is essential as further climate policies and rural strategies emerge. The pace of change can be unsettling and it is only by working together that positive changes can be effectively implemented.

[2] NatureScot 2022 Nature-based jobs and skills

Recommendations

1. Work towards the reframing of the land-based sectors as nature-based.

1.1 Develop an effective communications strategy to support the reframing of the Sector.

2. Establish clear progressive experiences for nature-based learning and climate literacy across all levels of Curriculum for Excellence.

2.1 Identify ways to support an increase in Sector school/college partnership learning pathways, offered and undertaken by schools

2.2 Provide on-going Career Long Professional Learning (CLPL) support for school-based staff and volunteers across all education authorities, supported by education providers to improve their knowledge and understanding of the opportunities within the Sector. Include practical training in supporting learning in the natural environment.

3. Ensure that the Learning for Sustainability (LfS) Action Plan refresh encompasses strong progressive learning experiences relating to nature-based learning.

3.1 Establish a robust approach to monitoring quality of the curriculum delivery of LfS, including the quantity and quality of nature-based and outdoor learning.

3.2 Promote the delivery of more outdoor learning by supporting local authorities and colleges to undertake a review of their estate, to identify the potential for carbon reduction, climate change mitigation and the creation of accessible nature spaces.

4. Ensure funding to support core and innovative nature-based education and training programmes, to ensure sustainable provision to allow for fluctuating uptake.

5. Ensure that accreditation bodies (at all curriculum levels) have sufficient capacity to respond timeously to review existing awards and develop new awards, guaranteeing the skills and knowledge requirements of the Sector are met.

6. Contribute to the Skills delivery landscape independent review, ensuring that the complex needs of the sector are understood and addressed.
7. Contribute to the Skills delivery landscape independent review, ensuring that the 16+ Data Hub captures the wide range of job roles undertaken across the Sector to allow for effective monitoring and impact.
8. Support the retention of critical Higher Education (HE) provision in areas such as forestry and aquaculture by developing innovative ways to extend the reach of their delivery.
9. For the new Agriculture Scotland Bill, as part of Tiers 3 and 4, to include provisions to enable support to fund upskilling/Continuing Professional Development (CPD) training for farmers and employees to support priority, quality non-legislative training towards a just transition to a green economy.
10. Strongly recommend that Scottish Government incentivise uptake of structured Education and Training programmes to support the Agricultural sector.
11. Amend the annual compulsory Agriculture Census to include specific Labour Market Intelligence (LMI) questions, which can be used by Skills Development Scotland (SDS) and others to inform the Sector's skills needs more accurately.

11.1 Identify opportunities to add LMI questions to other Sector surveys sent out by the Scottish Government or related agencies.

12. Undertake research which identifies key transferable skills required across different job roles within the Sector.
13. Ensure learning from interventions such as the Women in Agriculture Taskforce and Women in Scottish Aquaculture is used to inform actions to attract more women into sectors where there is a gender imbalance.

13.1 Ensure learning from interventions support other groups which are under-represented in the Sector.

14. Sector ‘Industry Leadership Groups’ (or equivalent) to establish what help or interventions would enable their industries to meet fair work requirements.
15. Annually review recommendation progress, whilst sharing best practice and lessons learned.

Table of contents

		Page
1.	**Introduction**	**10**
	1.1 Commission for the Land-based learning review - context	**12**
	1.2 Scope	**13**
	1.3 Learning levels	**13**
	1.4 Cross-cutting themes	**13**
2.	**What did we do**	**13**
	2.1 Commission initial discussions	**13**
	2.2 Stakeholder engagement	**14**
	2.3 Engagement	**14**
	2.4 Data gathering	**15**
	2.5 Desktop review of policies, research and Sector reports	**15**
	2.6 Interviews	**15**
	2.7 The land-based learners journey explored	**16**
3.	**The backdrop to all land-based sector employment and careers**	**17**
	3.1 Data set limitations	**20**
4.	**The early years and school engagement with the Sector**	**21**
	4.1 The engagement with early years and primary education providers	**22**
	4.2 Secondary school engagement	**24**
	4.3 Factors influencing school subject choices and careers	**28**
	4.4 Career websites	**31**
	4.5 The perception of the Sector	**32**
	4.6 Anticipated school leaver destinations and predicted Sector uptake	**34**
5.	**The land-based curriculum**	**38**
	5.1 Career and learning pathways	**38**
	5.2 Award currency and development	**39**
	5.3 Driving curricular change	**40**
	5.4 Land-based tertiary provision and uptake	**42**
	5.5 Distribution of Sector provision by college area or HEI provider	**49**

5.6 Other providers of land-based education and skills **52**
5.7 Education provision gender balance and ethnicity **53**
5.7.1 FE/HE gender balance **53**
5.7.2 Education provision FE/HE relevant protected characteristics **55**
5.8 Regional variation in education provision **57**

6. Sector initiatives and impacting policies 59
6.1 Emerging employer implications **60**
6.2 Industry solutions and support needed **61**
6.3 Future needs **62**

7. Conclusions and context for the recommendations 63

8. Recommendations 65

9. Acknowledgements 86

10. List of Abbreviations and Acronyms 87

11. Appendices 89

Table of Appendices

Appendix 1 Commission Membership **89**
Appendix 2 Education and Skills reviews and overarching national policies **90**
Appendix 3 Stakeholder event questions **92**
Appendix 4 Stakeholder participant organisations **97**
Appendix 5 School uptake of environmental science by Local Authority area **101**
Appendix 6 Land-based and aquaculture training and careers searches **102**
Appendix 7 Land-based courses available 2022 at SCQF Levels 4-8 **104**
Appendix 8 College and HEI course and subject codes **108**
Appendix 9 Modern apprenticeship starts by occupation grouping **111**
Appendix 10 College FE/HE gender balance and protected characteristics **113**
Appendix 11 HEI enrolments by Local Authority & SRUC FE enrolments by campus **120**

1. Introduction

Scotland's land and waters are a valuable natural and economic asset, and for them to be maintained as such for future generations, we need the right people, with the right skills, to manage their use. In alignment with the Skills Action Plan for Rural Scotland and the work undertaken by the Skills for Farming Group and other Sector initiatives, the need to review the learner's journey, across the Sector was considered timely. This was particularly relevant following EU Exit, Covid-19 and the challenging recruitment conditions facing the different industries covered by this report.

Scotland has a wide variety of nature, landscapes and microclimates, and there are an equally broad range of demands of those natural resources from food and timber production to the provision of ecosystem services such as flood protection, climate change mitigation and adaptation, pollination and opportunities for recreation. The knowledge and skills requirements for those who work in this area or are hence no less diverse, and yet it is a sector that is widely misunderstood. Despite their critical role in meeting climate change targets and the complexity of the task ahead, its often seen as 'simple' work, which could be done by anyone.

This is of course not the case, but it's a misconception that must change if we are to meet Scottish Government's net zero and nature restoration commitments[3], whilst simultaneously supporting our rural economy and improving food security. We need enough people, with the right skills, knowledge and passion to undertake the work required.

[3] Such as the Leaders Pledge for Nature Home - Leaders Pledge for Nature

Careers in the sector are diverse in nature and many roles now combine knowledge and understanding of science, data and engineering with an understanding and passion for the natural world and how it works. Roles often require individuals to work with animals, engage with the public, carry out nature restoration and help to protect our land and environment. At the same time, the sector depends on staff understanding key business principles and an extensive range of ever-changing legislation. This is particularly important for the large number of micro businesses, small and medium-sized enterprises (SMEs) and contractors that operate in the environment and land-based sector.

Despite a wide range of attempted interventions, the perception of roles within the Sector is that they are hard, unrewarding, and poorly recompensed. This despite increasing interest in climate change and nature conservation. Although the workforce remains dominated by white, older men, increasingly it is beginning to attract new entrants, younger people, more women and more people from minority ethnic backgrounds, though there is still much further to go.

The value of natural environments for developing children and young people's social skills, improving wellbeing and supporting better learning outcomes, is both established and accepted. Connecting children and young people with nature has been shown to improve physical and mental health and support learning, yet the proportion of time spent by pupils playing and learning outside of the classroom is unknown and unmeasured. Access to green space is unequal and we must do more to ensure that all children have opportunities to access and build connections with nature. If they are inspired by and connected with the natural world, they are more likely to understand the need to work to protect it.

We then need to build on that engagement by ensuring there are pathways that link to and prepare them for actual jobs as well as those we think might exist in the future. Equally, we need to ensure support for career changers and mature entrants, who might not have had the same level of exposure to the natural environment but are now keen to work in this area.

Scotland's land and waters have an essential role to play both in contributing to Scotland's net zero targets, and food security. The sector is hence well positioned to both become part of the narrative of 'saving the planet' as well as providing a huge range of career opportunities. Although the land use sector in Scotland has a set of challenging greenhouse gas emission reduction targets to meet, it is potentially able to offset its own emissions and could also offset emissions from other sectors of the economy that cannot currently be eliminated.

More than ever before, we need our young people, educators, career influencers and career changers to help us to find the solutions we need for a fair transition to a green economy, by choosing a career within the nature-based sector.

It is our duty, and the role of this Commission, to help ensure the path ahead of them is clear, well signposted and free of any unnecessary barriers. It is with this goal in mind that we submit our report and associated recommendations.

1.1 Commission for the Land-based Learning Review - context

The Commission for the Land-based Learning Review (the Commission) was a short-term advisory group established to provide independent, evidence-based advice to Scottish Ministers. Members were drawn from a wide variety of industry sectors and organisations (see Appendix 1) to reflect their own range of industry experience and expertise and not the views of any one organisation.

The Commission was asked to undertake a review of learning in the Sector from early years to adulthood. This would support the Scottish Government's ambitions of delivering a just transition to net-zero, by ensuring our learning system equips people with the skills and knowledge needed to work in the Sector.

The review considered learner opportunities and qualifications through early years provision, school, college, university and work-based learning, including apprenticeships, which promote engagement with the different industries and support more people of all ages and backgrounds to enter and maintain land-based employment.

The Commission's report identifies interventions which need to be applied across the learning pathways to inform, promote and enable individuals to take up the available career opportunities, with a view to encouraging more people and specifically women into the Sector.

It is recognised that this is a time of great change. As a result, the report will inform and be informed by several education, skills and sector reviews, as outlined in Appendix 2. Scotland's overarching 10-year National Strategy for Economic Transformation (NSET) sets out the priorities for Scotland's economy as well as the actions needed towards achieving Scotland's vision of a net zero, nature positive, wellbeing economy with fair work at its heart. The recommendations of this report align with those of NSET and its objective for a skills and education system, and which supports the Scottish Government mission on child poverty. Additionally, the 'Skills Delivery Landscape; Independent Review' (due to conclude in Spring 2023) charged with ensuring the public body landscape for skills remains fit to meet the challenges and opportunities for the future, is pertinent to the scope of the Commission's work.

1.2 Scope

For the purposes of this review the Sector includes the following activities: agriculture, aquaculture, biodiversity, environmental conservation, equine, forestry, trees and timber, food and drink processing, game and wildlife, horticulture, land-based engineering and peatland restoration.

Many already have associated industry analyses from which learning has been drawn and which will not be repeated within this report. Instead, the Commission has focused on the common themes and challenges across the Sector.

The scope of the review did not include:

- Nature-based tourism, outdoor recreation or renewables (wind, hydro, solar).

1.3 Learning levels

For the purposes of the review the learning levels included early learning and childcare, primary and secondary, further and higher education and continuing lifelong professional development.

1.4 Cross-cutting themes

The work of the review is underpinned by the cross-cutting themes of:

- Equality and inclusion
- Fair work
- Delivering a just transition to a net-zero and a climate resilient Scotland

2. What did we do?

2.1 Commission initial discussions

Members reviewed and discussed the overall Sector learning and skills development landscape and the existing challenges as they perceived them. The initial anecdotal evidence indicated the scale, impact and the challenges but it was recognised that this needed to be ‘sense checked’ with those more directly impacted. The wider Sector background was supported by the following presentations to the Commission:

- SDS presentation on Employment in Land-based and Aquaculture Sectors
- SDS presentation on the 16+ Data Hub
- RESAS presentation on the Rural Economy

To support planned stakeholder engagements, the Commission developed and refined a series of questions and identified perceived evidence gaps prior to undertaking the stakeholder engagements.

2.2 Stakeholder engagement

The Commission led a series of engagement workshops to enable a broad consultation on the content of the review. Stakeholders were encouraged to submit written evidence prior to, during and after the workshops.

Four stakeholder workshops were held over September to October, covering the following four consolidated themes decided upon by the Commission:

- Education and Training
- Employers, Skills and Skill Gaps
- Awareness/Perception of the Sector
- Learning for Sustainability (LfS)

The events were held online via Microsoft Teams, using facilitated break-out groups and online discussion facilities, where participants could record their views and shared links.

Participants were encouraged to:

- Discuss a series of questions set by the Commission and issued to participants prior to the events (see Appendix 3)
- Share their experiences, evidence and knowledge by working collectively through core questions in mixed groups
- Engage across sectors using a Current State/Future State approach, by describing what the current answer to the questions would be, an ideal future scenario and ideas on how to get there
- Ensure that contributions were evidence-based rather than assertion (where possible) and triangulate where this was not possible
- Highlight any relevant case studies and examples of good practice

2.3 Engagement

- 59 people attended the Education and Training workshop
- 46 people attended the Employers, Skills and Skills Gaps workshop
- 34 people attended the (rescheduled) Awareness & Perception workshop
- 42 people attended the Learning for Sustainability workshop

Over 200 pages of online responses were collected from the workshops. These were reviewed by the Commission and a summary of the emerging themes was also presented by the Report Writer to the Commission, for discussion and broad agreement.

The Commission acknowledges at this early stage the valuable contribution made by stakeholder participants to inform and shape the review. Some participants attended all four workshops and others helped to ensure that there was always a sectoral or organisational presence at each event. A list of organisations that took part in the workshops is contained in Appendix 4.

2.4 Data gathering

Data was requested from The Scottish Funding Council (SFC), The Higher Education Statistics Agency (HESA), Skills Development Scotland (SDS), Scottish Qualifications Authority (SQA), Lantra and Scottish Government. Additional supporting data and insight documentation was also provided by the Royal Highland Education Trust (RHET), Scottish Forestry, SRUC (Scotland's Rural College) and The University of the Highlands and Islands (UHI). Some of this data appears directly within this report to identify or support an emerging issue or where it conflicts with perceptions. However, much of the data has been used to inform and support views and recommendations developed within the report and may only appear in a limited form within the appendices. Where some internal organisational data has been provided in confidence, due to commercial sensitivities, it has only been used to support and inform specific aspects of the report.

2.5 Desktop review of policies, research and Sector reports

Given the very broad scope of the land-based sector and learning pathways, included within this review, over 40 Scottish Government, non-government organisations, and other agencies, Industry specific sponsored reports, Sector briefing papers and wide cross cutting Education Scotland reports and research papers were examined. The range of evidence which has been considered is extensive, with over 12 organisations potentially influencing directly or indirectly the learner's journey to employment within the Sector.

It is not the intention of this report to drill down to the very specific issues affecting each of the land-based sectors, although some sector specific examples are provided. Instead, the focus is on the cross cutting common areas which are affecting land-based learning pathways and uptake.

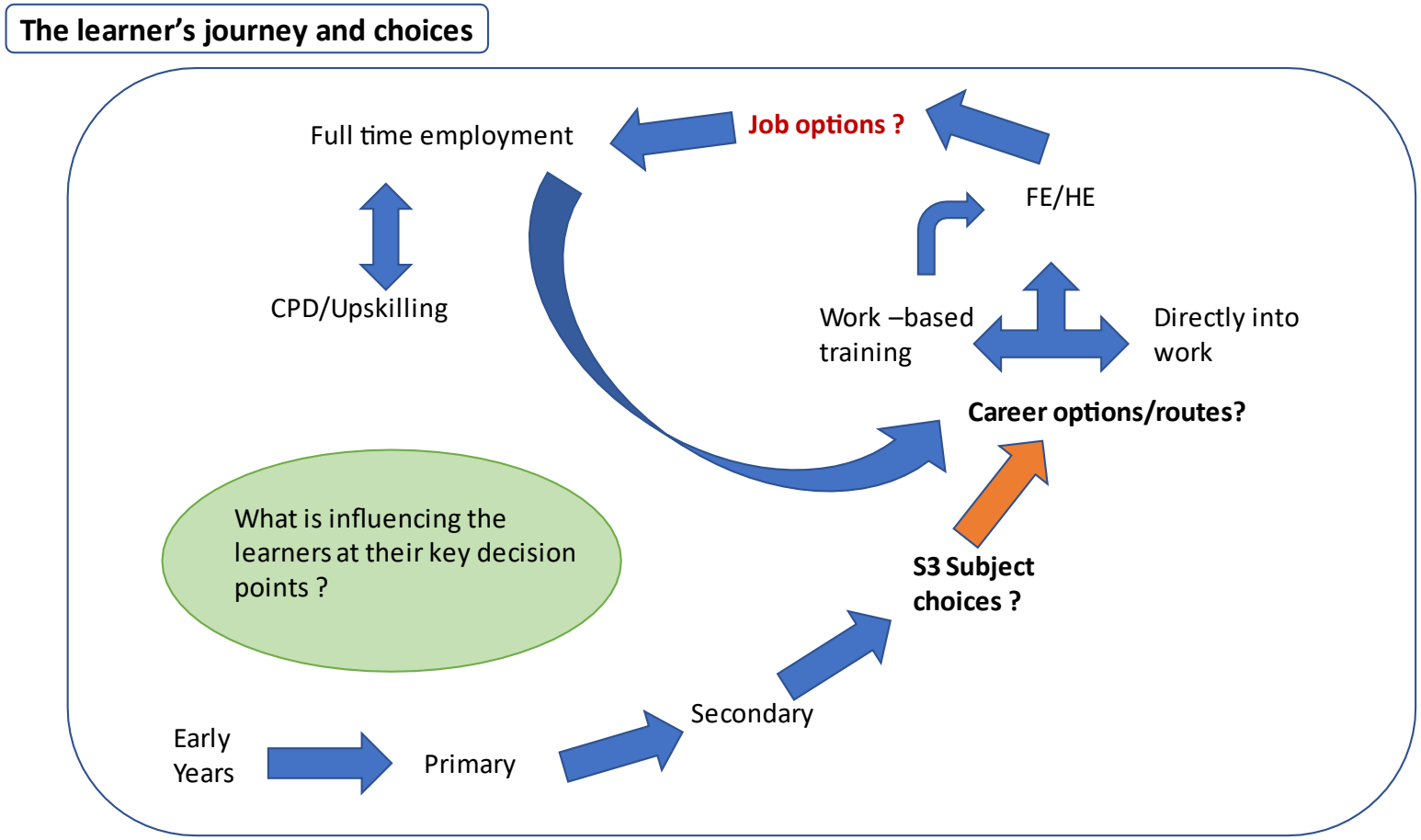
2.6 Interviews

Commission members were interviewed separately by the Report Writer to ensure their diversity of backgrounds (see Appendix 1), specialist knowledge and views were captured and key emerging report messages sense checked.

Additional interviews were also undertaken with SDS, SQA, SRUC, UHI, Education Scotland, RHET, Teagasc and Lantra (Scotland) representatives, to gather additional insights and clarify some emerging messages.

2.7 The land-based learner's journey explored

The graphic below outlines the key areas of the land-based learner's journey explored by the Commission.



3. The backdrop to all land-based sector employment and careers

The Commission has endeavoured to establish an overview of the labour market. The types and numbers of job roles in the Sector are difficult to establish due to coding and aggregation of data. This has implications for accurate intelligence on current and future requirements.

Graphs 1 and 2 confirm the well understood demographic challenge that Scotland has ageing population with fewer employees entering the job market. The increasing number of 45–64 year-olds does provide an opportunity for some greater Sector focus on career changers. SDS forecast data supplied to the Commission indicated: 'Employment in Scotland's Agriculture, Forestry and Fishing sector over the mid-term (2022 to 2025), the overall total requirement is expected to be around 10,200, with 400 people forecast to be required due to expansion in the sector and 9,800 people required due to replacement demand.'

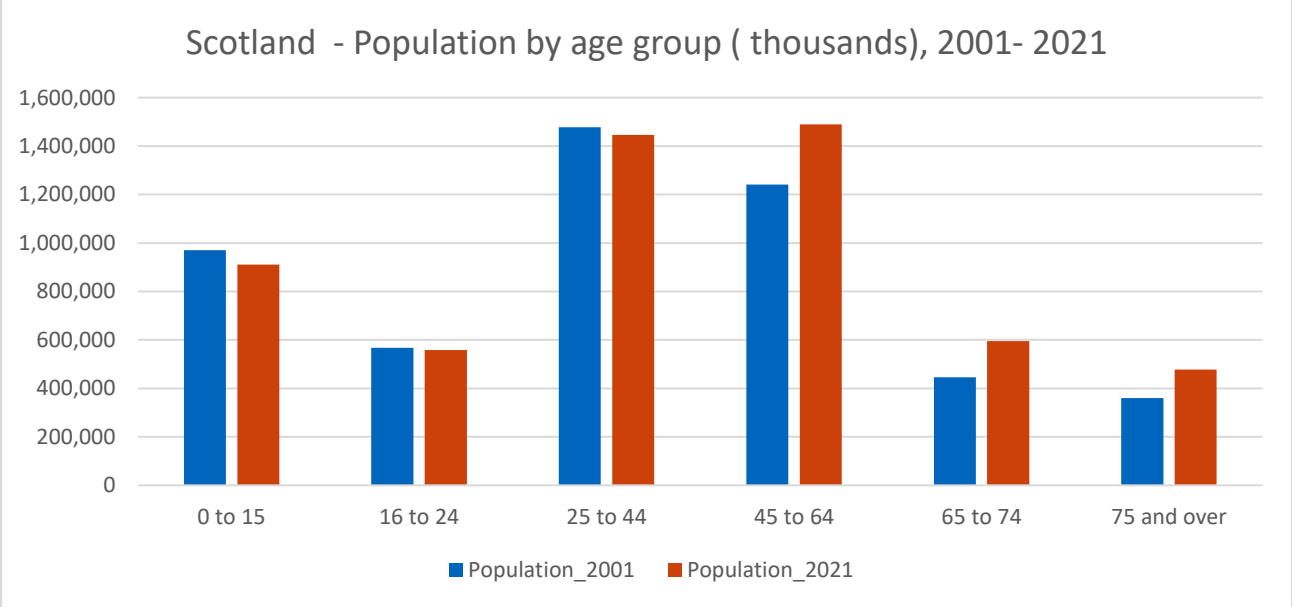
Over 20,000 people are forecast to be required in the sector over the next 10 years with the majority replacing those workers who leave the labour market due to retirement and other reasons.'

It is recognised that some industries within the Sector are expanding and that where there are overlapping skills requirements (e.g. Forestry and Peatland Restoration) there may also be migration of jobs within the Sector as a result.

The majority of Agriculture working occupiers and spouses are older than 55[4]. SDS analysis indicates that in 2021, over half of those working in the sector are aged 50 or over in both Scotland as whole (51%) and Rural Scotland specifically (54%[5]).

Employee age is an issue facing other sectors and one that has to be addressed by a greater industry focus on training a replacement workforce. That will involve attracting a new pipeline of talent into the Sector from a relatively fixed number of school leavers. School/College/University leavers are sought after by other competitive industries, also experiencing skills shortages, who may offer better pay and working conditions, have a larger marketing budget or just have a greater appeal or more familiar to the school leaver (for example, hairdressing).

Graph 1: NRS Mid-year population estimates for Scotland 2021

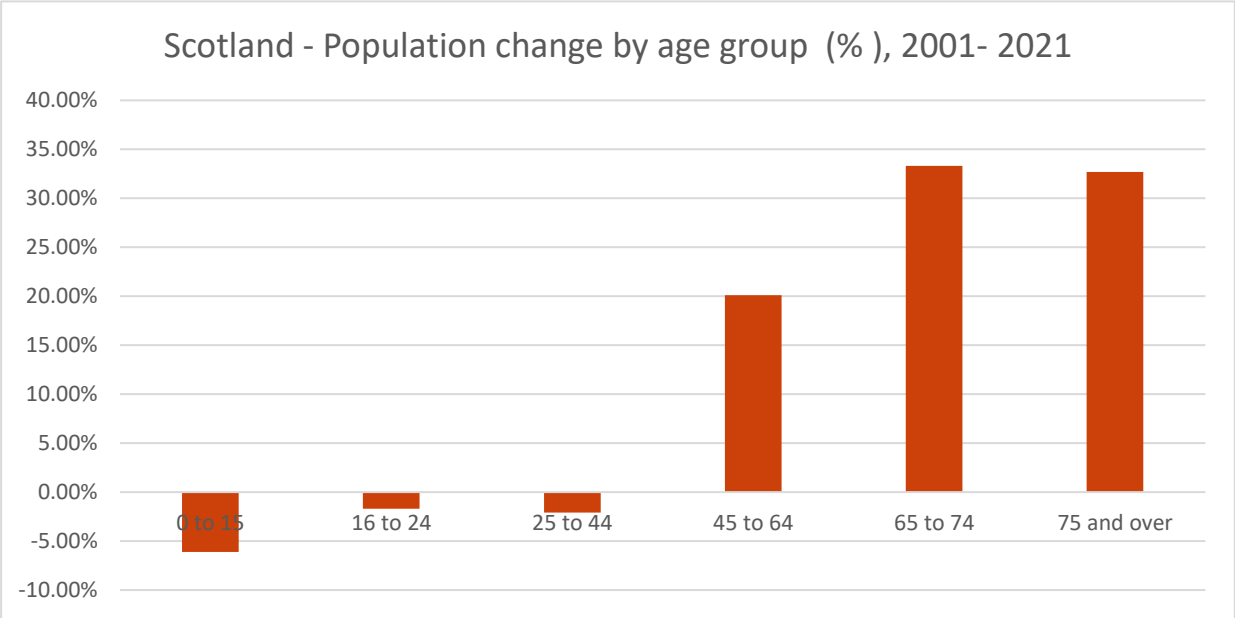


Source: NRS 2021

[4] June Agricultural Census 2020 A National Statistics publication for Scotland Final results 15 December 2020

[5] Oxford Economics Forecasts (September 2022)

Graph 2: Scotland – Population change by age (%), 2001-2021



Source: NRS 2021

Other re-training/upskilling opportunities for the existing workforce and strategies to 'widen the recruitment pool', attract and support more women and other underrepresented groups and adult career changers into the sector and retain or share their existing skills as a trainer, will need to be considered.

While precise understanding of future jobs needs is uncertain, there is a need for a flexible education and training system to respond timeously to the Sector's needs and to support the changes in land-management needed to tackle the nature and climate emergency whilst supporting sustainable production and food security. At the time of writing, consultation was open on both the Agriculture Bill and the UK Forestry Standard, both of which will influence future skills development priorities.

The perception that the Sector is poorly paid and unskilled is not entirely unfounded, with no mandatory requirement for professional registration or formally certified qualifications for many of roles in the industry. Currently, other than legislative requirements for short course training such as chainsaws and forklifts, there is no mandatory qualification requirement for any role within the Sector nor is there a requirement for professional registration (excluding the veterinary professions). Mandatory registration is required within Horticulture as a 'Professional Plants Operator', but no mandatory training is required.

Industry bodies and schemes such as the Farm Business Adviser Accreditation Scheme for Scotland (FBAASS), The British Agrochemical Standards Inspection Scheme (BASIS), the Construction Industry Training Board (CITB), the National Plant Operators Registration Scheme (NPORS), the Institution of Agricultural Engineers (IagrE) and the Institute of Chartered Foresters (ICF), operate voluntary registration schemes, which are often a contract requirement, within some of the land-based industries.

3.1 Data set limitations

The Labour market intelligence (LMI) data sets for the Sector within the scope of this report are unclear and confused by aggregated Standard Industrial Classification (SIC) and Standard Occupational Classification (SOC) codes. Agriculture, Forestry and Fishing come under one SIC code[6], although there are related activities in Professional, scientific and technical activities (Urban planning and landscape, Environmental Consulting, etc.) and in Manufacturing (Food production, Sawmilling etc.). The resulting lack of detail for a specific sector can hamper effective strategic planning, with many forecasts based on third party data analysis and independent research[7]. Where commissioned industry body research has been undertaken within sectors such as Trees and Timber[8] and Aquaculture[9], more robust and specific data and insight is available to inform Sector recruitment issues and planning but requires regular review. For smaller industries this is largely absent.

However, the emerging message across all sector reports, Commission engagement and available forecasts, is one of fewer suitable applicants applying for a wide range of job vacancies, where increasing STEM skills (Science, Technology, Engineering and Maths) are required. It is against this common backdrop that this report explores the issue behind this and how they can be addressed.

Recommendations

- Amend the annual compulsory Agriculture Census to include specific Labour Market Intelligence (LMI) questions, which can be used by Skills Development Scotland (SDS) and others to inform the Sector's skills needs more accurately.
- Identify opportunities to add LMI questions to other Sector surveys sent out by the Scottish Government or related agencies.

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[6] SDS - Sectoral Skills Assessment Agriculture, Forestry & Fishing (February 2022)

[7] Oxford Economics Forecasts, (September 2022)

[8] A review of the future of the forestry workforce in Scotland Prepared on behalf of Lantra and the Scottish Forest and Timber Technologies Skills Group July 2019

[9] Skills Review for the Aquaculture Sector in Scotland - 2018

4. The early years and school engagement with the Sector

The Commission recognises the range of policy initiatives and attainment priorities schools must address as 'Education reform' discussions progress. It also acknowledges the need to ensure its work supports greater strategic alignment of national policies, recognising the wider work underway within the Future Skills: Action Plan[10] and the Wellbeing and Sustainable Development (Scotland) Bill (WSD Bill) – with cognisance to sector specific challenges that need to be overcome. This will also need to involve successor organisations to Education Scotland and SQA.

The Commission engagement workshop feedback and a range of supporting data from: RHET, Scottish Forestry, Education Scotland, Lantra (Scotland) and Further Education (FE) and Higher Education Institutions (HEI) Providers, highlighted a variety of examples of excellent practice but also identified some inconsistency in delivery as well as gaps in both provision and data.

[10] Future Skills Action Plan 2021- Scottish Government

4.1 Engagement with early years and primary education providers

A wide range of outdoor engagement and learning initiatives within early years[11] [12] and primary schools are undertaken by teachers supported by many other nature-based industry and outdoor learning organisations which include; Royal Highland Educational Trust (RHET), the John Muir Trust, the Royal Forestry Society, Countryside Learning Scotland, the Duke of Edinburgh Awards, Learning through Landscapes, Forest and Outdoor Learning Awards (FOLA), Eco-Schools, Learning About Forests (LEAF) to name but a few. These promote a wider understanding of nature, farming, woodlands, aquaculture or use outdoor spaces and activities to improve learner self-confidence and team building. It is noted that several different sectors out with Agriculture, support the work of RHET by preparing delivery material/publications and providing specialist speakers and resources (Aquaculture, Food & Drink[13], Learning & Education providers). Table 1 below provides an indicative example of one organisation's activities.

Table 1: School engagement activities – Sample of some activities

RHET Activities 2019	Number	Children	Adults
Farm Visits	574	12467	1920
Farm Visit Events	363	8540	1107
Classroom Speakers	979	23027	1734
STEM and Food/Farming awareness activities		2859	919 (teachers)

Source: RHET 2022

Support for such engagements is in some cases funded through Scottish Government STEM project initiatives and others by organisational funding mechanisms. Some industry focused initiatives are self-funded to promote awareness and perception of their industry such as Aquaculture.

A range of organisations provide CPD training for early years practitioners, primary and secondary teachers and outdoor practitioners. Scottish Forestry in particular support professional development through Outdoor & Woodland Learning Scotland and continue to support Forest Kindergarten through Training the Trainers and subsidiary courses for practitioners. The development of Scottish Junior Forester Award encourages young people to learn more about trees and forestry and consider it as a positive career option.

[11] Successful approaches to learning outdoors A report by HM Inspectors February 2022

[12] Training Directory 2020: Outdoor Learning and Play Early Years and Childcare Practitioner

[13] A summary of Food Education resources -Education Scotland - 2022

Challenges included:

- Stakeholder feedback indicated considerable variation and lack of consistency in engagement with learning outdoors across different Early Learning Centres (ELC) and schools within the same local authority and across local authorities.
- A pre-requisite of a good Care Inspectorate inspection is demonstrating daily access and engagement in outdoor and natural spaces. But the demonstration of such outdoor learning is not required within schools and anecdotal evidence suggests this tails off from primary to secondary.
- A broad understanding of the value of outdoor learning[14] [15] including Learning for Sustainability (LfS) was evident from stakeholder feedback but a lack of consistency of application was identified from anecdotal evidence.
- Education Scotland and GTC Professional standards[16] have embraced and promoted Learning for Sustainability[17] (LfS) and it is recognised as learner entitlement within Curriculum for Excellence (CfE). Again, there is no evidence of consistency of uptake and application across the school phases.
- It is noted that over 90% of schools are registered as 'eco schools' but there is no requirement for primary or secondary schools to record LfS activities delivered within the curriculum.

The Commission has viewed early engagement with learning outdoors and LfS as 'sowing early seeds' which support and nurture young learner's interest in the world around them and may influence later subject and career choices focused on the Sector.

"Simply expanding access (universal) to outdoor education in schools would be brilliant"[18]

"How could schools pick up and implement the Care Inspectorate requirements?"

[14] Outdoor Learning: Practical Guidance, Ideas and Support -Education Scotland

[15] My World Outdoors – The Care Inspectorate

[16] Learning for Sustainability A professional guide for teachers- General Teaching Council for Scotland

[17] Learning for Sustainability Action Plan

18 Quotes in blue are from comments at the engagement events

4.2 Secondary school engagement

As indicated in earlier comments, there are generally fewer opportunities for land-based employers or Education providers to engage with Secondary Schools.

However, there were some opportunities including:

- Supporting careers events, information and taster days.
- Some contextualised STEM and Industry initiatives such as the 'Growing Rural Talent pilot'[19]. An employer lead partnership with a Local Authority/Schools and Education Providers delivering accredited training and work placement opportunities to 5th year secondary school pupils.
- Provision of some element of work experience with an industry employer or Education and Training provider.
- Supporting candidates with work placements and delivery as part of a formal SQA Award: Skills for Work (SfW), National Progression awards (NPA's), Foundation Apprenticeships.

There are a limited number of nature-based qualifications relevant to the needs of the Sector as evidenced by Table 2, which provides an indication of the uptake of NC, NPA and SfW awards over recent years for school and FE learners (100 + approved centres including 50+ schools).

The SfW and NPA awards are considered as an introduction to the different land-based industries and provide a positive entry option which enables progression to further study pathways. National Certificate programmes have a high practical skills content and have over many years have provide a clear route directly into employment or higher-level study.

[19] Growing Rural Talent – Pathway into Agriculture & Forestry - SDS

It should be noted that the NPAs in horticulture, horse racing and agriculture, have only recently been introduced, with a significant growth anticipated in the latter. NPA and SfW delivery can be a mix of School, Industry and School College partnerships which cannot be identified from the data sets provided.

Except for Horse Care which has seen some displacement to the Racing Yard awards and declining Gamekeeping and Agriculture NC numbers, most other awards have a relatively stable recruitment trend.

Table 2: SQA – NC, NPA and SFW award uptake

Land and Environment		2018	2019	2020	2021
National Certificates					
Agriculture	SCQF6	72	52	54	48
Countryside Management	SCQF5	16	18	18	18
Greenkeeping	SCQF5	34	19	20	12
An Introduction to Horticulture	SCQF4	35	35	37	35
Horticulture	SCQF5	79	68	66	87
Rural Skills	SCQF4	37	35	26	36
Totals		**273**	**227**	**221**	**236**
National Progression Awards					
Angling and the Aquatic Environment	SCQF3	10	0	0	0
Aquaculture	SCQF4	9	8	5	7
Aquaculture	SCQF5	0	0	1	0
Beekeeping	SCQF5	0	5	14	27
Crofting	SCQF5	0	0	0	5
Horticulture	SCQF4	0	0	85	56
Investigation of Modern Agriculture	SCQF5	0	0	0	13
Horse Care	SCQF4	104	65	104	49
Horse Care	SCQF6	38	33	23	32
Racehorse Exercise and Performance	SCQF5	0	0	0	6
Racing Yard Routine	SCQF5	0	0	0	36
Specialist Racehorse Care	SCQF5	0	0	0	12
Thoroughbred Preparation	SCQF5	0	0	0	1
Zoo Animal Behaviour and Welfare	SCQF6	0	15	11	10
Totals		**161**	**126**	**243**	**254**
Skills for Work					
Rural Skills (Nat 4)	SCQF4	310	288	346	291

Source: SQA 2022

Table 3 shows that in relation to Nat 4 SfW Rural Skills (Table 2), Environmental Science has a comparable uptake, but both fall well behind the more traditional subject of Geography, with over 10 times the uptake and below Health and Food Technology. With no general land-based degree, Geography is often cited as a useful degree in some Sector roles for example Conservation and Forestry.

Table 3: School Qualification uptake

Environmental Science	2019	2020	2021	2022
National 3	185	105	145	70
National 4	330	320	370	495
National 5	205	260	335	350
Higher	390	360	515	545
Totals	**1110**	**1045**	**1365**	**1460**

Health and Food Technology	2019	2020	2021	2022
National 4	520	640	640	750
National 5	460	1495	1700	1805
Higher	1190	1110	1435	1245
Totals	**3170**	**3245**	**3775**	**3800**

Geography	2019	2020	2021	2022
National 3	600	705	825	705
National 4	3315	3430	3230	3975
National 5	9795	9700	10070	10265
Higher	6865	6435	7130	7175
Advanced Higher	710	750	795	1025
Totals	**21285**	**21020**	**22050**	**23145**

Source: SQA 2022

There are currently no SDS approved Foundation Apprenticeships (FAs) in land-based subjects other than Food and Drink Technologies[20]. Several challenges regarding the introduction of a specific FA within the land-based sector were identified within the Lantra review[21] and wider issues within the Education Scotland review[22].

However, Commission stakeholder feedback identified FAs as an area which may be worth revisiting with Sector partners, with strong support from industry bodies such as the Aquaculture Skills Group. There is however a need to support greater curriculum design and partnership between schools and tertiary education providers to change the view that schools are just 'feeders'[23].

The key issues emerging from the data is the low uptake of the available land-based SQA awards across the school senior phase. It is unclear why Environmental Science which could be considered a land-based proxy subject also has a low uptake. Local Authority analysis (see Appendix 5) does broadly support a more rural school uptake of Environmental Science and this has generally been the case with Rural skills SfW and NPA awards.

School SfW and NPA uptake challenges included**:**

- The school ethos and location
- Collective/shared timetabling
- Senior management support
- Reliance on supportive and enthusiastic individual teachers
- Willingness to seek out local partners
- Funding for generally small cohorts
- Can be viewed as only suitable for learners who are struggling with other subjects
- Time required to develop effective industry or school college partnerships
- Transport and timetabling issues to enable practical skill activities to be undertaken
- The school estates infrastructure (grounds/garden/greenhouse). The issue of Health & Safety (risk assessments) constraints, with different local authority restrictions imposed on school visits and work experience opportunities

[20] SDS Foundation Apprenticeships Progress Report June 2021

[21] Lantra -Foundation Apprenticeships –opportunities for land-based businesses using current frameworks (2020)

[22] Education Scotland - Review of Foundation Apprenticeship provision across Scotland 2022

[23] Education Scotland – Learner Pathways: A key to successful curriculum design - 2020

Recommendations

- Establish clear progressive experiences for nature-based learning and climate literacy across all levels of Curriculum for Excellence.
- Ensure that the Learning for Sustainability (LfS) Action Plan refresh encompasses strong progressive learning experiences relating to nature-based learning.
- Establish a robust approach to monitoring quality of the curriculum delivery of LfS, including the quantity and quality of nature-based and outdoor learning.
- Promote the delivery of more outdoor learning by supporting local authorities and colleges to undertake a review of their estate, to identify the potential for carbon reduction, climate change mitigation and the creation of accessible nature spaces.
- Identify ways to support an increase in Sector school/college partnership learning pathways, offered and undertaken by schools.

4.3 Factors influencing school subject choices and careers

There are mixed perceptions around the key school factors influencing senior phase learners' subject choice and future career options. Data extracted from '*Young People in Scotland Survey 2019'* and presented in Table 4 indicates the key sources of careers advice within the school environment.

Table 4: Schools Careers Advice – Survey responses

What guidance did you receive in selecting your courses/subjects for the senior phase?	Totals from all pupils
Class teachers	25%
Pastoral care/guidance teachers in school	22%
My own research (for example Googling, social media)	14%
Career Advisers	14%
Option assembly at school	9%
Personal Social Education at school (PSE)	14%
My World of Work website	10%
Careers evenings at my school	7%
A mentor in my school	4%
Attending careers fairs	4%
Other websites and employer presentations	2% each
Main Outside Influence S2-S6 – Parent/Guardian	
Parent/Guardian influence at S2	31%
Parent/Guardian influence at S6	16%

Source: Young People in Scotland Survey 2019

The survey report concludes that:

- There are a multitude of factors that influence young people when they are considering their course choices, and these tend not to be based on what their peers are doing.
- Young people report that class/guidance teachers are the most common source of guidance for choosing courses.

The role of external Careers Advisors (14%) and career web sites (10%) are important but less so than anecdotal stakeholder feedback had suggested. Parents/Guardians remain the main outside influencers but this declines from 31% at S2 to 16% at S6.

There is a recognition that early selection of subjects is less focused on career pathways and more related to FE/HE course entry requirements. The key message is that early intervention in the secondary years significantly affects course and potential career choices.

The rural or more urban location of learners does impact on their interests and subject/career choices. Learner uptake evidence within Appendix 11 identifies some Local Authority areas but further research would be required to quantify geographical variations and related influencing factors.

"Influencing the influencers–- how do we change perception of the sector?"

"Need to influence careers advisers, primary teachers and parents"

"Subjects such as National Progression Award (NPA 5) Horticulture could sit brilliantly alongside, for example, Higher Biology in secondary schools but needs good engagement from school"

Recommendation

- Provide on-going Career Long Professional Learning (CLPL) support for school-based staff and volunteers across all education authorities, supported by education providers to improve their knowledge and understanding of the opportunities within the Sector. Include practical training in supporting learning in the natural environment.

4.4 Career websites

There are a few careers websites available to inform influencers and senior phase learners. These include: 'My World of Work', Lantra and those specific to sectors such as the Royal Forestry Society. These are also supported by education provider sites which provide more specific course-based information and industry body specific promotional sites.

The messages and navigation across all vary from clear career routes to a mix of career and course choice options for each step on a particular pathway. The very wide range of Sector career opportunities and jobs, across the very different industries for example Agriculture, Aquaculture, Forestry, Equine and Horticulture, could be confusing for learners.

Each site has its own target audience. Table 5 is a sample of the most popular pageviews by learner input of a job title, within My World of Work, which is also used to inform the 16+ Data Hub career analysis. (See Appendix 6 for other examples).

Table 5: Extract of the most popular land-based page views–- SDS – 'My World of Work'

Animals, land and environment job profiles: April 2021 – March 2022

Job Profile	Page Views
Veterinary surgeon	12,239
Veterinary nurse	8,376
Zookeeper	7,929
Animal care worker	7,729
Dog handler	5,810
Farm worker	4,346
Dog groomer	4,138
Agricultural engineer	4,086
Tree surgeon	3,856
Oceanographer	3,852

Source: SDS 'My World of Work'

The indicative focus on animals is clear (urban and rural) and this does appear to translate into later FE/HE course choices.

The question raised within some stakeholder sessions was "Is there a need for a 'one stop shop'?". There is some clear duplication of effort across the sites, but the issue of choice and approach had no clear consensus. This may be an area which should be reviewed further and involve influencers and young people to assess the best communication platform which really has an impact.

4.5 The perception of the Sector

Many sectors wish to influence and inform careers advisors and teachers in order to meet their skills and recruitment gaps. As Table 4 indicates, there are a variety of ways in which pupils can access guidance and information on careers, but teachers and guidance staff are most influential. There is hence a need to support and inform all school influencers and parents at a local and national level, but this has led to a ‘crowded landscape’.

There is a poor understanding of the wide variety of job roles across the different industry sectors such as Aquaculture[24]. The land-based sector also faces a challenge around perception that there are poor working conditions/pay/progression opportunities and that careers in the area are more suited to the less academic[25]. There may also be a gender bias with young women and girls not encouraged to consider a career in a particular industry for example Aquaculture or Land-based engineering.

[24] SAIC Lantra 2022 Skills Review

[25] Careers in Agriculture and Horticulture Report prepared by FK&Y for TIAH

There is a strong need to change the perception of the Sector regarding the personal, social and environmental value offered by careers and jobs which support our food industry and help tackle the nature and climate emergencies. Young people's interest in the environment and their wish to influence change is clear[26].

"There is a need to reframe land-based", "value in the job" "What you can get from the job"

This will only be achieved through a more collaborative and focused approach by the Sector. While there will always be a need for industry specific initiatives there is also a need for an effective communication strategy embracing a more collective nature-based focus.

This should provide examples of how new entrants and career changers have accessed a wide range of Sector job roles (supporting climate change mitigation and adaptation, nature restoration, ensuring sustainable and high quality food and materials production) that can provide unrivalled job satisfaction.

This approach should also be reflected in the names of courses and awards that support pathways into these new jobs and the names of the jobs themselves. For example, 'rural skills' though well used by schools and colleges, does not really seem appropriate when delivered in an urban environment, neither does it accurately portray the diversity of skills required in rural areas. Equally, the term Green Skills, which has been adopted across a range of areas[27], has become largely associated with carbon capture, waste and energy use reduction, and risks swamping the importance of protecting and conserving nature. All activities in the Sector are based in Nature or use natural processes, and it is clearly of benefit to both parties if those interested in working in Nature were more aware of the diversity of roles in which they can work, whilst having a positive impact on the environment.

This is not to say that industries such as Forestry, Farming, Aquaculture or Horticulture require any 're-branding', rather it makes sense when capturing data on vacancies and skills requirements, for the collective name to encompass the transferable skills as well as their environment. It may be that collective adoption of Nature-Based as the sector title, rather than Land Based, presents a better 'face' to the prospective new entrant, as well as better capturing the importance of the industries therein, but further research and sector engagement would be beneficial before proceeding.

[26] NatureScot Research Report 1295 - Youth Survey on NatureScot's Corporate Plan 2022-2026

[27] https://www.skillsdevelopmentscotland.co.uk/media/49856/green-jobs-in-scotland-report_final-4.pdf

The Sector has promoted and supported many varied industry specific and broader initiatives with a range of key stakeholders. Each initiative has varying levels of success at a local and national level, such as Women in Agriculture[28] link to taskforce and the ALBAS[29]. Each has benefited from a collaborative, innovative and co-ordinated approach, which now needs to be widened. A structured and supported cross Sector approach and aligned implementation strategies, could help change perceptions, promote uptake and support growth.

Recommendations

- Work towards the reframing of the land-based sectors as nature-based.
- Develop an effective communications strategy to support the reframing of the Sector.

4.6 Anticipated school leaver destinations and predicted Sector uptake

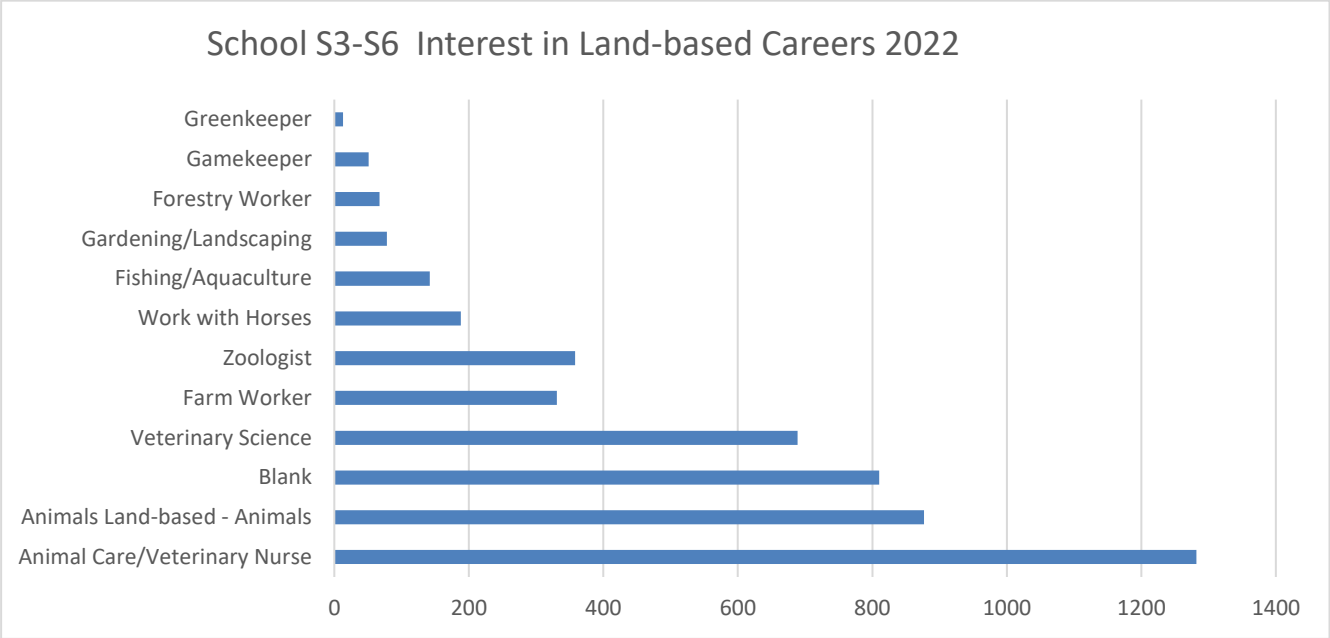
The 16+ Data Hub School leaver destination data (2022) indicates that over 80% of leavers wish to enter Further or Higher Education, with 4% entering a Modern Apprenticeship (MA) and 9% entering work directly.

Graph 3 below provides an indication of the broad initial interest in land-based occupations as defined by the 16+ Data Hub for S3-S6 learners still at school across Scotland. This is based on initial careers interest and uses the standard job role classifications used by SEEMiS and SDS.

[28] https://www.gov.scot/publications/final-report-women-agriculture-taskforce

[29] www.scotland.lantra.co.uk/learner-year

Graph 3: Preferred School destination data 2021

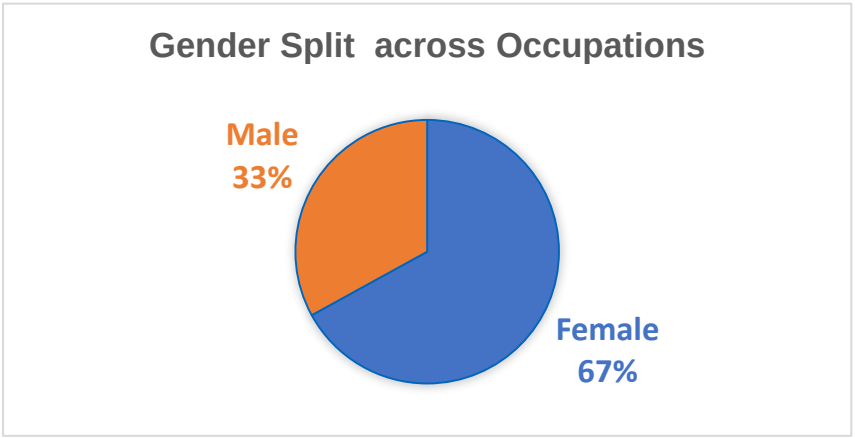


Source: 16+ Data Hub 2022

The use of many outdated job titles perpetuates an unhelpful image of a limited number of available roles. The image of a 'Farm Worker' or Gardening/Landscaping are uninspiring titles and should be revised over time. No Conservation or related job roles are listed as available careers options.

The gender balance in Chart 1 shows the very high level of female interest (67%), in the Sector which is primarily in the animal care and veterinary related roles. Later tertiary provision data analysis confirms the high female uptake within this area of education across the HE provision.

Chart 1: Gender Split across Preferred land-based Occupations



Source: 16+ Data Hub 2022

Table 6 shows the anticipated land-based career interests of the 2022 school leavers in Scotland, who will enter the tertiary education system or job market (based on the learners most recent interview with school careers advisors).

Table 6: Land-based – Predicted School S5/S6 summer 2022 leaver career interests

School leavers 2022: Land-based career interests	
Animal Care/Veterinary Nurse	420
Animals land-based – Animals	341
Blank – no specific sector job indicated	279
Veterinary Science	221
Farm Worker	159
Zoologist	108
Work with horses	67
Fishing/Aquaculture	52
Gardening/Landscaping	33
Forestry Worker	29
Gamekeeper	23
Greenkeeper	8
Total	1740

Source: 16+ HUB 2022

The emerging message is one of an apparent low interest in most of the traditional job roles except for Animal care and Veterinary. This is a point in time measurement of the predicted school leavers career interests using the 16+ Data Hub but it does provide a useful indication of the Sector's 'appeal' to school leavers across Scotland.

Recommendation

- Contribute to the Skills delivery landscape independent review, ensuring that the 16+ Data Hub captures the wide range of job roles undertaken across the Sector to allow for effective monitoring and impact.

5. The land-based curriculum

This section outlines the current availability of training programmes specific to the Sector which are predominantly delivered through colleges and HEIs.

5.1 Career and learning pathways

There can be no doubt from stakeholder feedback and the large range of sector specific awards available, that the land-based learning landscape is complex. SQA recognise that many of the very subject specific niche awards were developed to meet a learning provider demand or industry needs. SQA data (see Appendix 7) identifies 121 awards from SCQF level 4-8 which are available across the Sector. This is unrivalled in other industry sectors and reflects the very diverse range of employment opportunities available. The range of awards has allowed progression opportunities within most sectors pathways from SCQF level 4 SfW at school to HEIs, SCQF level 10-degree awards and above.

The difference between a work-based learning route and the more traditional College/HEI full time route, is not well understood by many. The routes are funded differently, promoted differently, supported differently and too often seen as less academic versus more academic routes. Parity of esteem was a commonly expressed concern identified at stakeholder meetings. The focus should be on the most appropriate career pathway which supports the individual and develops an able, well-trained workforce, who have a range of appropriate ‘skills’ in order to meet current and future employer needs.

5.2 Award currency and development

Some excellent examples of new courses were shared with the Commission, including the HN (Higher National) NextGen development pilots within Horticulture, Agriculture and Agricultural Technology, each providing a refreshing restructure of awards which seek to address identified industry needs. These awards now include practical skills, key knowledge and understanding and the development of meta-skills, in line with industry expectations. The developments are often 'Centre lead' with SRUC or UHI, undertaking most of the development work and bearing the associated cost.

Other examples of partnership working across learning providers and industry include the new Technical Apprenticeship in Rural land Use and Management, delivery of the pilot pre-apprenticeships with the Scottish machinery rings and closer industry collaborations to support training and provision of specialist resources (for example Forestry & Agriculture equipment). Regional SFC 'Pathfinder' proposals, shared with the Commission, hope to identify shared institutional development opportunities identified across the education and skills pathways from school, through to tertiary education, and employment across one Region.

New courses have more recently been developed in partnership to meet specific Sector requirements such as the new HND Rural Animal health, HN NextGen Agricultural Technology, Peatland Restoration, a revised HNC Poultry Production, NPAs in Investigating Modern Agriculture and Horticulture. Future Technical and Graduate apprenticeships within other land-based industries are gaining some traction for example Agriculture, Forestry and Aquaculture but progress is slow and it is often unclear what determines agreement to proceed.

Unfortunately, while some new courses are reacting to a demand, some may be meeting a more restricted need (for example NPA Horticulture-Schools focus) and can be splitting the limited current demand for other awards (for example SfW Rural Skills Horticulture route).

Many of the awards from SCQF level 4- 8 are now viewed as out of date by industry and learning providers, with often low uptake. Many degrees at SCQF level 9-10 have also been viewed as not meeting industry requirements and lacking many basic work ready skills. SQA has currently limited capacity to update and re-fresh the full suite of awards.

The development of new awards places considerable demand on the associated accreditation bodies. The timeline to develop new awards and achieve appropriate awarding body accreditation can vary from 3 months to over 2 years. The need to adhere to the 'long established' measures of rigour are an institutional norm across most awarding bodies. A review of timelines may be required, if education providers are to meet the SFC desire to be '*agile, adaptive* and *responsive'* and meet the changing Sector skills and training needs.

"For our outcome agreements (as education providers) we need a very clear push on aligning our provision with what employers (and whole of Scotland) needs."

Recommendation

- Ensure that accreditation bodies (at all curriculum levels) have sufficient capacity to respond timeously to review existing awards and develop new awards, guaranteeing the skills and knowledge requirements of the Sector are met.

5.3 Driving curricular change

Some new awards are being developed under 'Green Jobs' and in the application of new technologies within Sector. These appear to be largely driven by industry interest/demand, Education provider Sector insight and strategic planning. Innovative new course development does require effective collaboration with all stakeholders and an acceptable element of risk. No matter how well developed a new course is to meet an identified or perceived industry need such as Peatland Restoration, they must be matched with a sustainable learner uptake after any initial pilot phase.

The current Scottish Funding Council (SFC) funding model for public Education providers, does focus on learner demand and perhaps less on the direction to support industry specific skills shortages (at all SCQF levels from skills based up to management).

There is now a need to re-focus some funding resources to support priority skills shortages within nature-based and other sectors. Education providers must balance high learner demand courses with those which have a lower demand, higher resource/delivery costs but meet industry sector needs, such as the National Certificate (NC) in Agriculture or Certificates in Forestry. The different nature-based industries all require qualifications which may take a practical skills-based approach (college or work based) and awards which develop greater application of knowledge and understanding.

The variability of annual funding initiatives to support: Developing the Young Workforce (DYW), Local Employability Partnerships, 'No One Left Behind' employability support and the Learner Guarantee programmes, is a planning and development challenge, raised during stakeholder feedback.

There is a need to ensure funding is flexible enough to support continuing provision where there is fluctuating uptake. The funding landscape for skills is complicated and there is a need for the Sector to engage with the skills delivery landscape independent review to ensure that the complex needs of the Sector are understood and addressed.

Stakeholder feedback indicated some lack of clarity amongst agencies who initiate, develop, accredit and promote some awards. The proposed changes to the modern apprenticeship frameworks, referred to by some interviewed and others as the New Model Apprenticeship (NMA), is quoted as an example of this. Although it is clear that the aim of such changes to approach, are to reduce duplication and develop awards which meet industry and learner needs. There is a need to ensure agencies work together and align strategies, while communicating these developments effectively to all stakeholders, for this aim to be met.

Delivery approaches post Covid-19 are now more flexible and the introduction of more online learning is generally welcomed by more remote candidates undertaking HE courses. Evidence suggests there is less enthusiasm and often more limited engagement from learners undertaking what are more predominantly practically based NC and work-based MA programmes. Anecdotal evidence indicates that blended learning approaches undoubtedly benefit more remote learners who are part time, with a limited need to undertake practical skills development, are motivated and often adult returners.

Access to land-based learning opportunities can be increased by the use of online blended learning approaches but it is not a panacea for all, particularly where industry requires greater development of practical skills. The development of sound practical skills is essential across many of the land-based job roles. UHI has demonstrated how online delivery and practical skill can be integrated within Horticulture, using partner practical sites and only limited practical assessment attendance at a college site but it is not straightforward to establish.

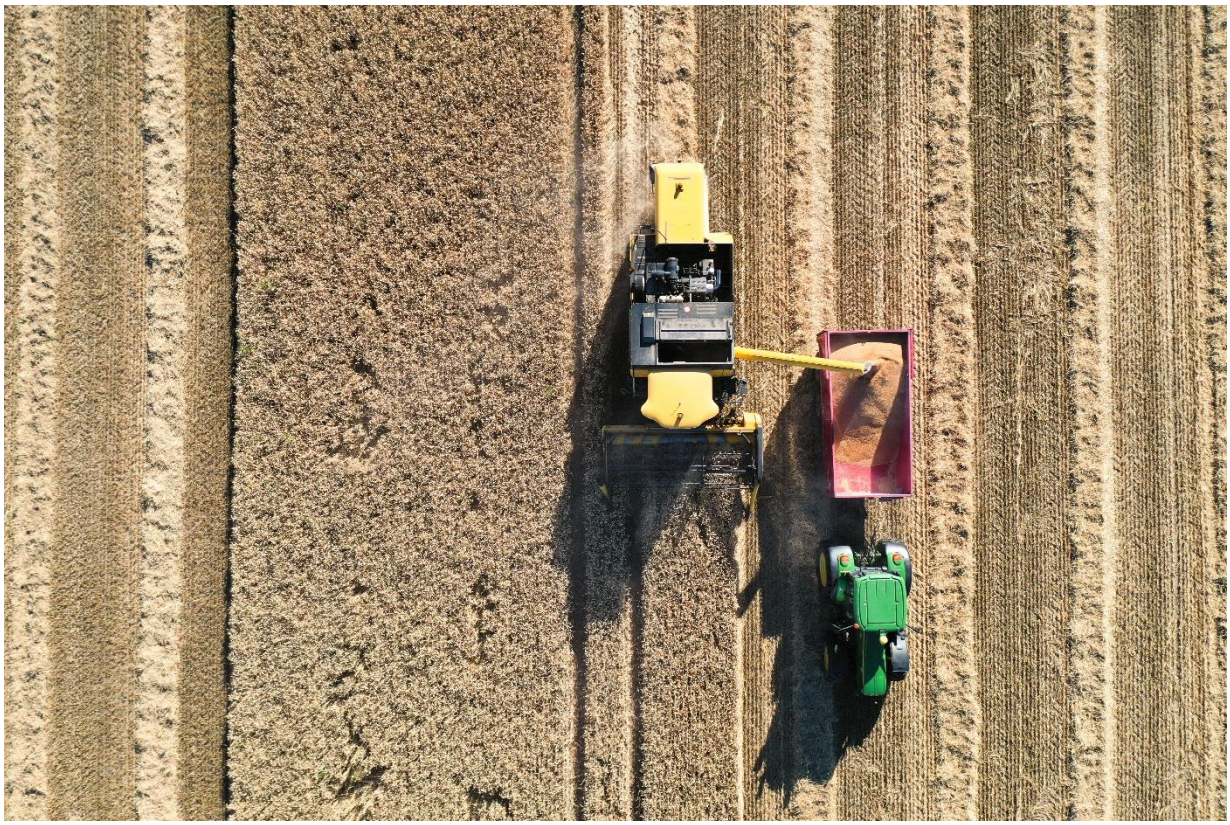
Education providers are adapting their delivery materials and assessment approaches to support a wider geographical access. The need to avoid duplication of effort in the development of high-quality online materials remains. A more centralised and shared development approach would benefit all.

The Sector curricular offering needs to be updated, with the modernisation of content, more flexible delivery models and a reduction in the overall assessment burden on learners.

"It's not a curriculum issue, it's getting people engaged with the career pathway", "We need a career led and not a course led approach"
"Closer collaboration between education providers and employers at local and regional levels"

Recommendations

- Ensure funding to support core and innovative nature-based education and training programmes, to ensure sustainable provision to allow for fluctuating uptake.
- Contribute to the Skills delivery landscape independent review, ensuring that the complex needs of the sector are understood and addressed.



5.4 Land-based tertiary provision and uptake

The following tables provide an indication of Sector enrolments, gender balance and ethnicity across the wide range of land-based courses, available within the Sector. The data is based on HECoS subject course codes used for Higher Education Institutions (HEIs) and SFC, Superclass codes used for Colleges (See Appendix 8). A wide interpretation of land-based subjects has been used to ensure no provision is missed which may support learning pathways into the Sector (for example Veterinary Sciences, Food Sciences and the Earth Sciences). SRUC and UHI as the largest providers of land-based education are both HEIs, with their HE course provision within the HEI data and their FE provision within the SFC College data. Details of individual Education provider courses are not explored within these data sets.

Table 7 shows the uptake of HE programme areas which broadly cover the land-based sectors and related areas for comparison. The degree provision is dominated by Environmental and Geographical Science at 46%, followed by the veterinary sector with 36% and the total of Agriculture (incl. of Aquaculture & Horticulture)/Forestry/Rural Management/Food and Beverage at 18%. Most HNC/D programmes are within Agriculture (incl. of Aquaculture and Horticulture) /Forestry/Rural Management, reflecting a vocational progression pathway which is not available within most of the other areas.

Table 7: Enrolments on Land-based and Aquaculture courses 2020-21

Course/Subject	First degree			HNC/HND		
	F/T	**P/T**	**All**	**F/T**	**P/T**	**All**
05-Others in veterinary sciences	380	20	400	-	-	-
05-Veterinary medicine and dentistry	1465	5	1470	-	-	-
06-Agricultural sciences	-	-	-	-	-	-
06-Agriculture	410	35	445	685	100	785
06-Animal Science	95	10	105	10	35	45
06-Food and Beverage production	65	-	65	-	-	-
06-Food and beverage studies (non-specific)	175	-	175	-	-	-
06-Food sciences	60	-	60	-	-	-
06-Forestry and arboriculture	20	-	20	75	40	115
06-Rural estate management	80	-	80	85	20	105
26-Earth sciences	655	15	670	-	-	-
26-Environmental sciences	340	330	670	55	40	95
26-Geography (non-specific)	185	15	200	-	-	-
26-Others in geographical studies	-	-	-	-	-	-
26-Physical geographical sciences	965	100	1065	-	-	-
All	**4895**	**530**	**5425**	**910**	**235**	**1145**

Table 8: Enrolments on Land-based and Aquaculture courses by level of study 2020-21

Table 8 shows that 86% of HEI activity within the areas covered, are at 1st degree or postgraduate level, with only 14% at HNC/D level.

Level of Study	Enrolments		
	F/T	P/T	Total
First Degree	4890	535	5420
HNC/HND	905	235	1140
Other Undergraduate	5	125	130
Postgraduate	1590	950	2540
Total	**7390**	**1845**	**9235**

Source: HESA Student data, SG Analysis - Based on CAH/HECOS codes - '05', '06' and '26' (Science based)

Table 9: Land-Based/Aquaculture and Food/Beverage related courses 2020-21

Table 9 provides a more detailed breakdown of the main land-based and Food and Drink subjects undertaken across Scottish HEIs. Progression routes from HNC/D to degree provision are offered in 5 out of the 13 areas (with entries). Degree uptake is highest within Agriculture & Sustainable Agriculture/landscape (39%), Food & Beverage (33%) and the other areas of (Animal science, Equine, Horticulture, Aquaculture and Countryside Management) at (28%). The degree uptake within the priority sector of Aquaculture is low and is not balanced with any HNC/D uptake, as this sector has moved to an MA pathway.

Course/Subject	First degree			HNC/HND		
	F/T	**P/T**	**All**	**F/T**	**P/T**	**All**
Animal behaviour	5	-	5	-	-	-
Animal science	80	-	80	-	20	20
Equine studies	15	10	25	10	15	25
Agriculture	190	10	200	215	25	240
Animal management	-	-	-	290	15	305
Aquaculture	10	-	10	-	-	-
Horticulture	65	5	70	175	60	235
International agriculture	25	-	25	-	-	-
Livestock	-	-	-	-	-	-
Sustainable agriculture and landscape development	115	20	135	-	-	-
Countryside management	80	-	80	80	10	90
Gamekeeping management	-	-	-	5	10	15
Food and beverage studies	175	-	175	-	-	-
Food science	60	-	60	-	-	-
Brewing	40	-	40	-	-	-
Food and beverage production	25	-	25	-	-	-
Food safety	-	-	-	-	-	-

Source: HESA Student data, SG Analysis – HECOS Codes – 06-01-(01-08)

Table 10: Enrolments to Land-based/Aquaculture course at Scotland's Colleges 2020-21 by Subject, Mode of Study and Gender

Table 10 details the land-based provision delivered across Scotland's Colleges using the SFC land-based Superclass and subject codes identified in Appendix 8.

Course/Subject	Full Time				Other Part Time			
	Female	**Male**	**Other**	**Total**	**Female**	**Male**	**Other**	**Total**
Further Education	**730**	**745**	**15**	**1490**	**1550**	**1770**	**15**	**3340**
Agricultural/Horticultural Engineering/ Farm Management	5	95	0	100	5	115	0	120
Agricultural/Horticultural Maintenance	20	50	0	65	15	60	0	75
Agricultural/Horticultural (general)	165	295	5	465	195	755	5	960
Amenity Horticulture	5	35	0	40	30	125	0	155
Animal Husbandry	150	100	5	255	490	235	5	735
Crop Protection/Fertilisers/By Products	0	0	0	0	15	125	0	140
Earth Sciences	0	0	0	0	15	5	0	25
Energy Economics/Management/ Conservation	0	0	0	0	0	30	0	30
Environmental Protection/Conservation	0	0	0	0	25	15	0	40
Fish Production/Fisheries	0	0	0	0	15	110	0	125
Forestry/Timber Production	10	65	0	75	15	40	0	55
Gardening/Floristry	40	55	0	95	340	70	0	410
Land and Sea Surveying/Cartography	0	0	0	0	15	10	0	20
Land Based Studies	0	0	0	0	60	30	0	90
Pets/Domestic Animal Care	195	45	0	240	80	30	5	115

Rural/Agricultural Business Organisation	5	5	0	10	0	5	0	5
Veterinary Services	140	5	0	145	230	5	0	235
Higher Education	**235**	**320**	**5**	**560**	**70**	**925**	**5**	**1000**
Agriculture	0	0	0	0	0	0	0	0
Animal Husbandry Group	80	10	0	90	0	0	0	0
Applied Biology	130	95	0	225	5	5	0	10
Biology	10	10	0	20	0	0	0	0
Environmental Engineering	0	0	0	0	20	65	0	85
Food Hygiene	0	0	0	0	5	10	0	15
Food Technology/Manufacture	0	0	0	0	0	0	0	0
Gamekeeping Sporting Management	0	0	0	0	0	0	0	0
Horticulture	10	25	0	35	0	0	0	0
Marine Engineering	5	180	0	185	40	820	5	865
Sea Fishing	0	0	0	0	0	20	0	20
Total	**965**	**1065**	**15**	**2045**	**1620**	**2690**	**25**	**4335**

Source: SFC Student data, SG analysis using Superclass and HE Subject codes 2020-21

Analysis of the FE full-time provision shows the Animal Husbandry/Animal Care and Veterinary services (vet nursing) has the highest uptake at 44%, followed by Horticulture and Agriculture at 40%, Agricultural/Horticultural Engineering at 11% and Forestry Timber production at 5%. Part-time courses are less clear as these may include School link, block release activities and a wide range of other fundable skills-based courses. Animal Care/Husbandry/Veterinary services and Horticulture have a high part-time uptake. The college based HE land-based provision excludes the HEI data previously discussed (in tables 7, 8 & 9) and does not include SRUC or UHI data. Therefore, the levels of HE land-based activity is significantly lower and reflects the activity of only a few FE colleges undertaking some general and specialist programmes for example Biology.

Table 11: The Sector Modern Apprenticeship Total - Currently undertaking an MA

Table 11 below identifies the Modern Apprenticeships currently being undertaken across the different industries. The 2020/21 information is included within earlier tables but is shown here in detail to identify Sector engagement with this learning pathway.

MA Framework	18/19	19/20	20/21	21/22	Total
Agriculture	102	65	97	72	336
Aquaculture	58	66	99	77	300
Aquaculture Management Technical Apprenticeship	15	18	21	23	77
Equine	25	10	26	9	70
Game and Wildlife Management	25	14	11	9	59
Horticulture	210	196	106	209	721
Land-based Engineering	47	58	29	50	184
Rural Skills	7	10	-	5	-
Trees and Timber	23	8	19	25	75
Wood and Timber Industries	-	11	8	12	-
Total	**-**	**456**	**-**	**491**	**-**

Source: SDS

Horticulture continues to show the highest number of employees currently undertaking their MA, with many apprenticeships supported by Local Authority employers. The MA and Technical apprenticeships in Aquaculture are increasing steadily and now provide the main funded training pathway for this industry[30]. Agriculture and Land-Based Engineering numbers have also remained stable, with Agriculture not reflecting its uptake potential, as identified by stakeholder engagement discussions.
Annual new MA start trends, over recent years, within the Sector are shown in appendix 9. This identifies a relatively stable but low annual Sector MA uptake of around 270 compared to an industry such as Food & Drink at around 1200.

[30] Review of Practical, Operational Aquaculture Training across the UK January 2020

5.5 Distribution of Sector provision by college area or HEI provider

Tables 12 and 13 provide an indication of land-based education provider enrolments across all providers. The years reviewed are broadly unchanged reflecting a relatively stable and fixed recruitment pattern. The key specialist providers of land-based education are SRUC, UHI, Borders College and Dundee & Angus College.

Access to specialist courses can be dependent on location for many potential learners and on their ability to travel or live away from home. Internal research by SRUC has shown that this is particularly relevant with the more practically based full time National Certificate (NC) courses, where learners prefer to study within a reasonable travelling distance from home. The use of shared practical resources across provider regions and more flexible delivery models, may allow wider opportunities for rural and urban learners.

Table 12: Enrolments to Land-based/Aquaculture courses by College Region 2011-12 to 2018-19

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Aberdeen and Aberdeenshire	371	315	315	282	297	101	99	396
Ayrshire	71	82	96	168	188	138	113	93
Borders	320	347	373	397	404	391	291	310
Dumfries and Galloway	3	6	17	20	19	12	0	0
Edinburgh	183	64	190	245	189	47	15	15
Fife	142	214	144	131	99	196	68	66
Forth Valley	51	40	71	86	114	329	316	134
Glasgow	1041	1755	1674	1464	1917	1840	1561	1627
Highlands and Islands	1219	1320	1520	1546	1648	1326	1516	1339
Lanarkshire	97	55	72	82	86	91	232	212
Newbattle Abbey College	21	41	33	57	29	19	12	11
SRUC	5177	4386	4167	4595	4419	4388	4984	4796
Tayside	562	513	636	394	467	392	417	516
West	107	62	119	3	36	0	46	19
West Lothian	0	0	0	0	0	0	54	0
Total	**9365**	**9200**	**9427**	**9470**	**9912**	**9270**	**9724**	**9534**

Source: SFC Student data, SG analysis using land-based Superclass and HE subject codes.

Table 13: Enrolments on Land-based and Aquaculture courses, at Scottish HEI providers, 2011-12 to 2018-19

Providers	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
University of Abertay Dundee	5	200	20	15	195	200	195	175
Robert Gordon University	0	0	0	0	0	0	0	0
Edinburgh Napier University	125	135	145	150	175	175	165	210
University of Edinburgh	1090	1150	1155	1160	1150	1165	1220	1275
University of Glasgow	760	830	815	930	875	855	855	880
University of Strathclyde	0	0	0	0	0	0	0	0
University of Aberdeen	40	35	35	20	35	30	30	25
Heriot-Watt University	165	110	115	100	105	110	185	190
University of Dundee	35	40	25	15	15	5	10	15
University of Stirling	155	150	155	140	130	145	150	145
SRUC	255	250	570	595	580	715	775	775
University of Highlands and Islands	365	380	250	250	225	255	310	305
Total	**3000**	**3290**	**3295**	**3390**	**3495**	**3665**	**3900**	**4000**

Source: HESA Student data, SG analysis using JACS codes – ‘4’ and ‘5’

5.6 Other providers of land-based education and skills

Other education and training providers include the Scottish Machinery Ring Network, Private Training Providers and Instructor Skills Networks[31] (using Lantra or NPTC Awards). As these organisations are not SFC funded and some may have private individual SDS contracts to deliver MAs within the Sector, no publicly available data is provided. However, MA uptake data in Table 11 does include private training provider numbers. Many of the private providers work closely with the mainstream land-based colleges and offer valuable partnership access to industry networks and membership initiatives.

Lantra data in Table 14 below was made available to indicate the number and range of specialist upskilling short courses undertaken across the land-based industries in Scotland. The majority of short courses are focused on the attainment of legislative 'tickets' with a few on CPD supported through initiatives such as the *Women in Agriculture Practical Training Fund* and through Scottish Association of Young Farmers Clubs (SAYFC) courses. However, there is little current industry demand for CPD in practical training courses or understanding of natural capital or Net Zero production systems or green finance. The recent Climate Change Mitigation and Adaption training fund went some way to encourage this, but more support is required.[32]

Table 14: Upskilling short courses delivered by Lantra Instructor networks

Short Course	2017	2018	2019	2020	2021
Pesticides	2214	2168	2776	1854	1702
Farm vehicles	1010	877	1221	626	862
Forestry and Arboriculture	2154	2317	2536	1846	1651
Landscape and Horticulture	2176	2257	2699	1215	1598
Plant Operation	1153	1026	1358	1075	1022
Other (Leadership, MEWPS etc)	453	421	663	301	384
Total	**9160**	**9084**	**11253**	**6917**	**7219**

Source: Lantra 2022

[31] Instructor and Assessor Network Mapping Project - Lantra (Scotland) 2017

[32] https://www.scotland.lantra.co.uk/funding-available-training-sustainable-skills

Recommendations

- For the new Agriculture Scotland Bill, as part of Tiers 3 and 4, to include provisions to enable support to fund upskilling/Continuing Professional Development (CPD)training for farmers and employees to support priority, quality non-legislative training towards a just transition to a green economy.
- Strongly recommend that Scottish Government incentivise uptake of structured Education and Training programmes to support the Agricultural sector.
- Undertake research which identifies key transferable skills required across different job roles within the Sector.

5.7. Education provision gender balance and ethnicity

5.7.1 FE/HE gender balance

Details of subject area gender balance is contained within Table 10 for FE Colleges course and Table 15, for the HEI Provision (see Appendix 10 for additional details). Almost twice as many females are studying the HEI selected subjects as males. The FE picture is almost balanced overall, although there are significant variations on a course-by-course level. In both HE and FE, there are particular subjects with significant imbalance for example Veterinary, Animal Care and Equine have a large female uptake, Forestry and Land-based engineering with a large male uptake, reflecting the industry norms[33].

Table 15: Land-based Enrolment Gender Balance at Scottish HEIs 2020-21

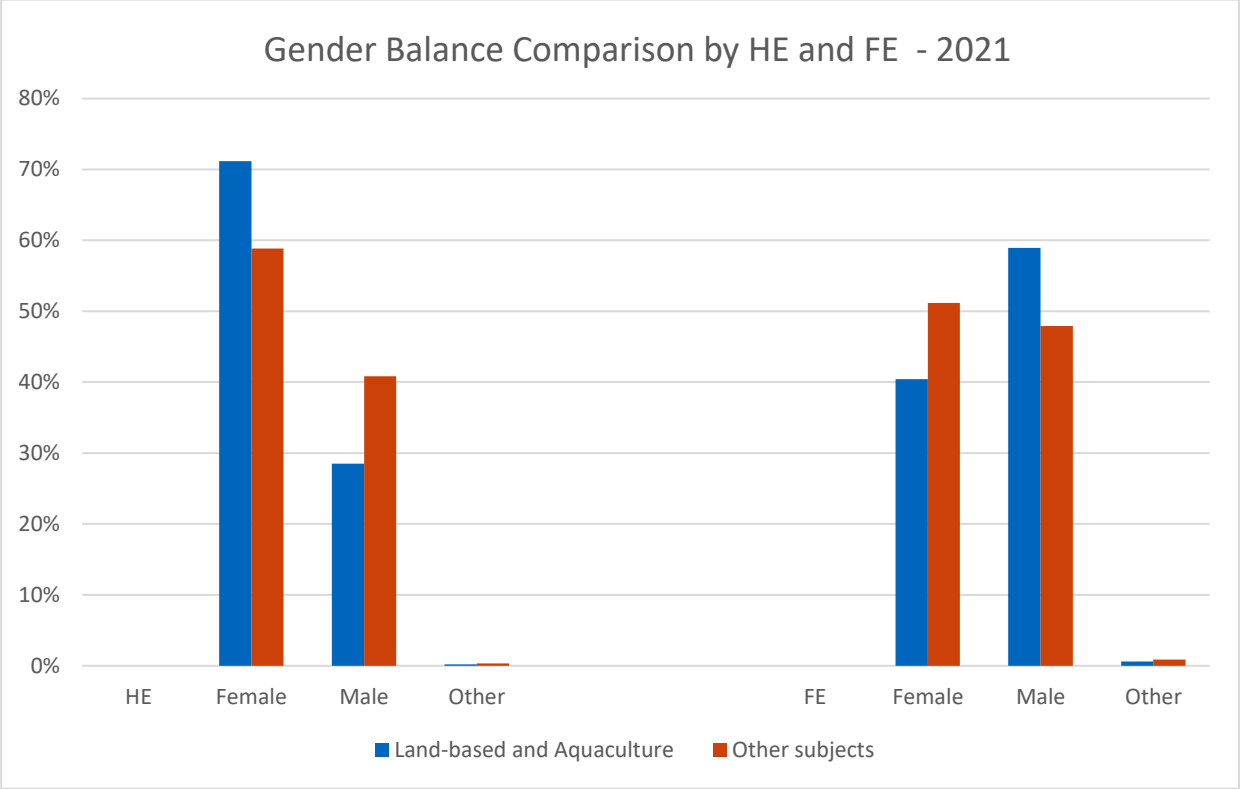
Course/Subject	Female	Male	Total
05-Others in veterinary sciences	400	25	425
05-Veterinary medicine and dentistry	1475	340	1815
06-Agricultural sciences	65	35	100
06-Agriculture	945	560	1515
06-Animal science	275	45	320
06-Food and beverage production	35	125	165
06-Food and beverage studies (non-specific)	140	35	180
06-Food sciences	55	30	80
06-Forestry and arboriculture	40	120	160
06-Rural estate management	125	115	235
26-Earth Sciences	635	595	1235
26-Environmental sciences	755	570	1330
26-Geography (non-specific)	125	85	210
26-Others in geographical studies	55	60	115
26-Physical geographical sciences	830	525	1355
All	**5955**	**3260**	**9235**

Source: HESA Student data, SG analysis based on HECOS codes – ‘5’,’06’ and ‘26’

[33] Gender Commission Report and recommendations -A SAAB paper | October 2022

Graph 4: HE/FE Gender Balance Comparison

Graph 4 compares the land-based Sector FE and HE provision, with other subjects to identify any significant features of the provision. Within HE there are 12% more female enrolments than within other subjects but 11% fewer females' enrolments within FE. It could be concluded that female applicants are drawn to more advanced courses which are less practical in nature or have a more clearly defined career pathway for example Veterinary Science or provide wider career options for example Environmental Sciences. However, the Agriculture female balance would suggest otherwise and further investigation of this would be required to enable any firm conclusions to be drawn.



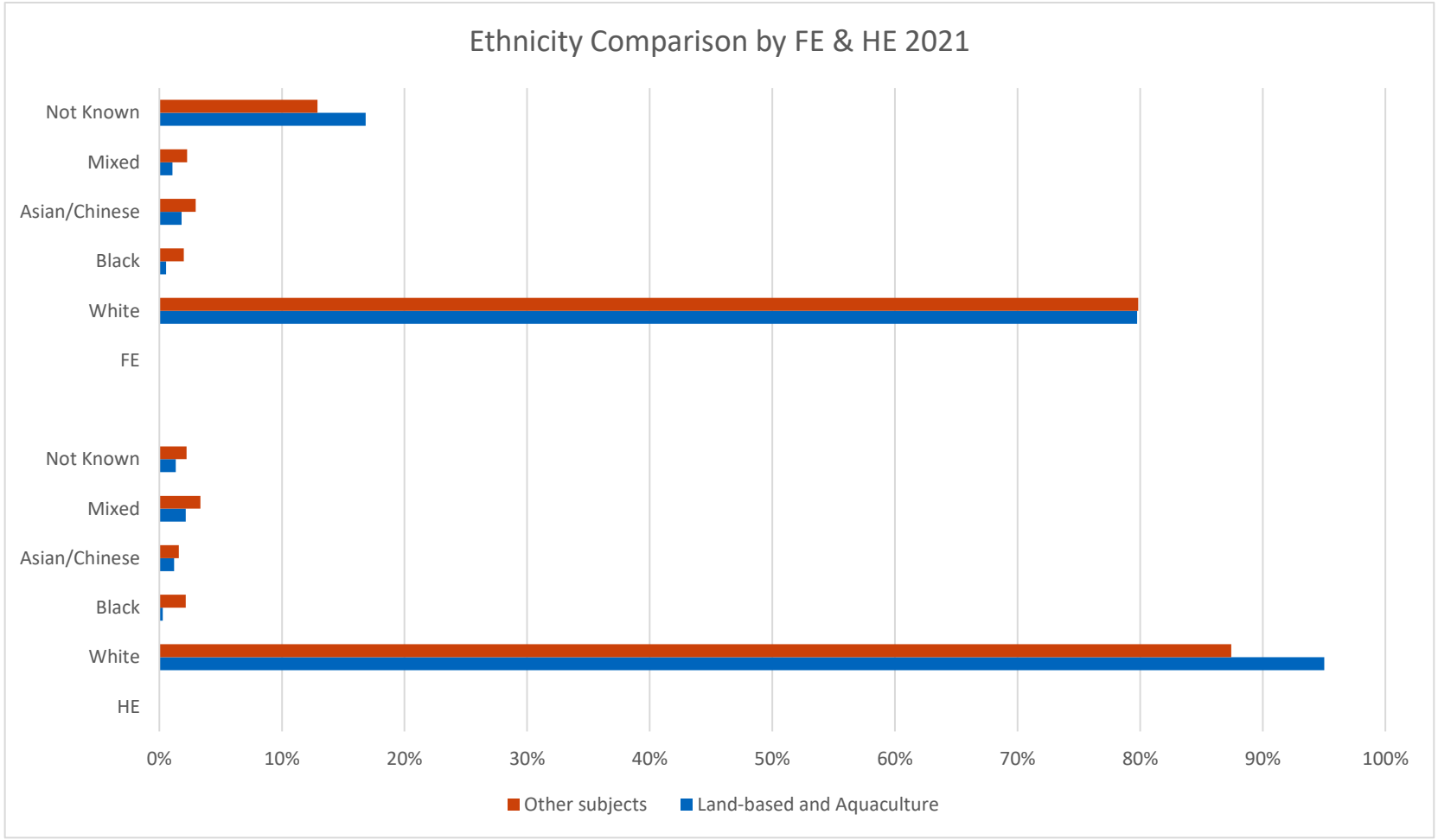
Source: HESA and SFC data 2022

5.7.2 Education provision FE/HE relevant protected characteristics

Graph 5 compares the land-based Sector FE and HE ethnicity mix, with other subjects to identify any significant features of the provision (see Appendix 10 for more details). The broad picture in percentage terms, is one very similar to that of other subjects with perhaps more (8%) white enrolments at HE than other subjects. However, the numbers of minority ethnic enrolments in the HEI Sector are 135 compared to 21,845 in other subjects and direct percentage comparisons must be treated with care. The Sector does need to engage more widely and reach out to underrepresented groups.

"Being what you see"- not enough people from minority groups represented in the sector"

Graph 5: HE/FE Ethnicity Comparison



Source: HESA and SFC data 2022

Recommendations

- Ensure learning from interventions such as the Women in Agriculture Taskforce and Women in Scottish Aquaculture is used to inform actions to attract more women into sectors where there is a gender imbalance.
- Ensure learning from interventions support other groups which are under-represented in the Sector.
- Sector 'Industry Leadership Groups' (or equivalent) to establish what help or interventions would enable their industries to meet fair work requirements.

5.8 Regional Variation in education provision

The report data and stakeholder feedback confirms that learner interest and access to nature-based education and training is influenced by their location. More rural schools undertake SfW and NPA's courses, FE course uptake[34] is focused around regional availability, with HE course uptake generally less regional. SRUC and UHI have a number of regional delivery sites which allow a wider national access to many Sector courses (see Appendix 11).

[34] National Strategy for Land-based Education and Training – SFC 2015

The New Entrants to Farming Programme[35] is one example of support available to those wishing to enter the agriculture sector and some larger Aquaculture employers have taken steps to minimise some of the rural issues for example installing private internet networks, working with local community partnerships and providing modular housing. However, transport, affordable housing, childcare and health care issues, remain a significant barrier to those who may wish to study, work and live in rural Scotland.

The recent Highland and Islands Enterprise (HIE) research[36] has identified a wide range of rural issues which impact upon studying, living and working across Scotland's different rural areas. Similar issues are identified within wider youth reports[37] and many of the land-based industry reviews referenced within this report.

The impact of 'digital isolation', separation from peers and family during study, work placement and employment in rural communities cannot be overstated. These have a significant impact on employee/trainee wellbeing and the 'attractiveness' of many land-based job roles. The need for greater 'pastoral care' and training support of young and MA apprentices, by providers and employers, was raised by stakeholders as a critical issue which can affect MA learner uptake, retention and success.

There are some industry specific challenges too, with forestry programmes now only available at SRUC Barony and UHI Inverness and Aquaculture now solely work-based. Eight Scottish universities do offer full or part-time Aquaculture related degrees and UHI provide the only Forestry degree programme in Scotland. Forestry is particularly vulnerable in the HE context due to the longitudinal nature of forest research which means the majority is undertaken by the national body; Forest Research,[38]. This is understandable, but due to the combination of low student numbers and limited opportunities for research funding, there is only one Forestry degree provider in Scotland, England and Wales respectively, and this is unlikely to increase in the immediate future.

Short industry upskilling courses are very much driven by local demand and the availability of qualified instructors[39], which have cost and availability implications for remote rural industries and learners.

Scottish Government policies to support those who wish to study and work in the rural land-based sector, will need to be more focused and innovative, if they are to have any sustainable impact on the Sector recruitment and skills shortages.

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[35] The New Entrants to Farming Programme – Farm Advisory Service (FAS) 2022

[36] My Life In The Highlands and Islands Research October 2022

[37] The Rural Youth Project – 2018 Survey Report

[38] https://www.forestresearch.gov.uk/about-us/

[39] Instructor and Assessor Network Mapping Project - Lantra - 2017

Recommendation

- Support the retention of critical Higher Education provision in areas such as forestry and aquaculture by developing innovative ways to extend the reach of their delivery.

6. Sector initiatives and impacting policies

Almost all Sector reports from Scottish Government and regional and sectoral skills action plans, recommend much greater collaboration between Scottish Government, its agencies, non-government agencies, industry and education providers. There is a need to reduce duplication of effort and associated costs.

Most sectors have developed a range of strategies and 'tool kits' to promote their sector, agreed upon and informed by the associated Skills Groups. These are in the main administered and supported by Lantra and/or SDS and support employers such as Forestry[40] or Agriculture[41].

Industry sector bodies, membership organisations and agencies within the scope of this review, have undertaken a range of research activity to gather LMI data, identify industry training issues/gaps and propose future solutions. The sample of industry specific reports are provided to demonstrate the range of recent papers produced to inform and support the Sector and provide evidence to funding agencies and the Scottish Government: Agriculture[42] [43], Horticulture[44] [45], Aquaculture[46] [47], Forestry[48], Biodiversity and Environmental Conservation[49] [50].

[40] Working with Trees and Timber A toolkit for forestry careers

[41] Agricultural Employers' toolkit - A guide to apprenticeships, training and placements for farming employers - Lantra Scotland

[42] NFUS Briefing Paper - Labour Supply – 2022

[43] NFUS Briefing Paper - Education and Skills in Farming and Crofting 2021

[44] 2019 Horticulture Sector Skills Survey –Sub-Sector Report: Ornamental Plant Production

[45] Unlocking green growth: A plan from the ornamental horticulture& landscaping industry 2021

[46] Review of Practical, Operational Aquaculture Training across the UK January 2020

[47] Sustainable Aquaculture Innovation Centre (SAIC) - Lantra 2022 Skills Review

[48] 'Finding Forestry' Creating a space that enables growth communication and connection for the forestry sector in the UK (2022)

[49] NatureScot Research Report No. 1257 Supporting a Green Recovery: an initial assessment of nature-based jobs and skills

[50] Nature-based jobs and skills for net zero - an initial assessment

In addition, many sectoral skills action plans are being implemented and this review has identified a several common themes across the plans.

In line with recommendations from the Young Person's Guarantee Initial Report[51] and in keeping with the principles of No One left Behind[52], an Employer Recruitment Incentive Framework has been published. The Framework[53], developed in partnership between the Scottish and Local Government, outlines the national minimum standards for publicly funded recruitment incentives available to support people of all ages who meet the required eligibility criteria whilst also embedding fair work principles into our support measures. The Framework came into effect from 1st April 2021.

Local Employability Partnerships operate across all 32 local authority areas, all with associated Delivery Plans and are a key partner in the design and delivery of employability services in Scotland. There is clearly a need to collaborate and align any new initiatives with current structures and interventions, particularly through the Scottish Government's No One Left Behind policy direction, where support (cross-sectoral) can be given to participants in land-based activity.

6.1. Emerging employer implications

The wide range of reports referenced above combined with evidence from Commission stakeholder meetings confirmed the following common themes:

- As with all other industries the Sector employers recognise that the employee pool of young people is getting smaller and the recruitment net must be cast to a wider audience.
- The need to attract more women and other adult returners into the Sector will only be possible if a more flexible approach to working practices can be adopted.
- Women in Scottish Aquaculture[54] (WiSA) and Women in Agriculture initiatives have confirmed the untapped potential and huge industry benefits to be gained by recognising women as a key part of the available workforce.

[51] https://www.gov.scot/publications/youth-guarantee-no-one-left-behind-initial-report/

[52] https://www.gov.scot/publications/no-one-left-behind-delivery-plan/

[53] ttps://www.employabilityinscotland.com/media/p3xfxhmv/employer_recruitment_incentive_framework.pdf

[54] https://wisa.sustainableaquaculture.com/

- Adopting the principles of ‘fair work’ can present challenges to small employers within the Sector, particularly the forestry contracting sector and family farms. It is now an ‘employee’s market’ where choice and fair working conditions are now a reasonable expectation. The need to seek collaborative and innovative solutions has never been greater.
- The Sector will need to support and actively engage in the development of education and training programmes to ensure they meet the changing needs of the different land-based industries.
- The Sector needs to increase engagement to support School work placements/events, uptake of Modern Apprentices (MA’s) and recognition that Continuing Professional Development (CPD) and upskilling of the current workforce have real business benefits.

“No more pointless strategies which achieve little”,

“’Anchor’ ownership to drive change”

6.2. Industry solutions and support needed

The Commission recognise that the Sector will need levels of support to address some of the common themes. Stakeholder feedback and skills action plans identified a range of possible options and mitigating solutions which could be considered:

- Working collectively within local communities to establish childcare facilities, planning a workable harvest rota or flexible shift patterns.
- Exploring how busy peak periods can be balanced with time off at a later date or the local co-ordination of a more shared workforce.

- The need to have some central HR or accessible local source of support to help small rural businesses navigate the training options/initiatives/recruitment and possible funding sources.
- Reducing the well documented barriers to taking on a Modern Apprentice (MA). These included less bureaucratic paperwork, greater flexibility and some financial incentives to support mentoring.
- To support and incentivise upskilling/CPD training across all land-based industries.

"Low skills and high skills are all needed – pathway for jobs and CPD development of new skills"

"Employers are not aware of many support packages/and placement incentives"

6.3 Future needs

Due to the complexity of the nature-based sector and the state of flux of the associated policies and strategies, both sector specific and skills related, it is not possible to map out exactly the future skills requirements of the Sector with any certainty. As a result, it is important that the organisations that will be delivering such programmes are able to be flexible around the creation of new learning. The sector may have to contribute to the development of new learning pathways and qualifications which will allow learners to gain employment in new roles. However, the Commission acknowledges the research currently underway to clarify new land-based industries green jobs and how labour demand may change over time[55].

"More connected approach to policy from Scottish Government, not siloing issues such as agriculture, food, land reform and education into unrelated parts of government"

Recommendation

➢ Annually review recommendation progress, whilst sharing best practice and lessons learned.

[55] Climate change, the land-based labour market and rural land use in Scotland -SRUC 2022

7. Conclusions and context for the recommendations

As might be expected, this review has considered a variety of forms of evidence as to the scale and nature of the challenges facing the Sector. Data on enrolments, apprenticeships, levels of study and gender were gathered from a range of sources and in a variety of forms. Interviews were held with key bodies and individuals, research and skills assessment and action plans were scoured and digested. Stakeholder engagement sessions were held, in which a diverse range of sector representatives and education professionals participated.

Throughout the work of the Commission, the importance of a robust evidence base was emphasised (and sought), however it was interesting that it was the engagement sessions that really brought out the cross-cutting themes and presented the clearest indications of where the solutions lay.

During the engagement sessions participants repeatedly remarked how useful the conversations were and how good it was to have the opportunity to learn from those in other industries, who had faced similar challenges but taken a different approach. For those in industry to meet with those in education, and for both to share their frustrations around the current delivery of, and support for, nature-based learning experiences, and to discuss what the ideal might look like. Indeed, there are indications that such discussions have already led to further meetings around potential new initiatives.

That is not to say that the analysis has not been important and the identified knowledge gaps should not be filled. There is no need to wait for such work to conclude before implementing the Commission's recommendations, but as changes are implemented and as our young people engage more with their environment and seek out more innovative nature-based solutions to our climate crisis, such gaps will become more problematic.

Indeed, it is important that all recommendations are implemented if we are to truly do justice by our land and waters and ensure that their future custodians are well supported in their role.

It will not be easy. At the time of publishing our report, the context in which we are operating could hardly be more challenging. A series of in-depth skills reviews are in progress, and the structures and organisations that emerge when this is complete, may have very different approaches and aims. The Sector itself is changing, with a greater emphasis than ever before on how we manage our natural resources in a sustainable and yet productive way. At the same time, the 'Cost of Living Crisis' has brought more attention to food security and reducing waste.

So, the recommendations are also realistic. Some will require additional resource, but the Commission is confident that this will be offset by the benefits the recommendations will bring to Scotland's wellbeing economy and by ensuring we have the right people, with the right skills to meet our climate and nature commitments.

A repeated plea throughout this work was that it must not be another ‘talking shop’. That changes had to be made, and that if ever there was an ideal time for that to happen, it was now. But the changes won’t happen in a vacuum. The pandemic, EU-Exit and international tensions have already changed the context in which the Sector is operating and there is nothing to suggest that the context won’t change again whilst the recommendations are being implemented.

So most important of all, the final recommendation is to continue the conversation. To keep learning from each other and building on that increased understanding. To work collectively as one Sector, whilst recognising and celebrating that which makes each of our industries unique. To come together regularly to review and reassess and to use the collective knowledge gained to adjust our path accordingly.

8. Recommendations

It is recognised that to successfully deliver the recommendations below, Scottish Government, its agencies and public sector bodies must work in partnership with sector representatives. Consequently, some of these recommendations will need to be delivered in partnership and led by the most appropriate organisation. We have suggested who we think might be best placed to take this forward but emphasise again the importance of working collaboratively.

Perception and Promotion

No:	What	Why	Who	Impact	Success measure	Evidence
1	Work towards the reframing of the land-based sectors as nature-based.	The terms associated with the Sector are not fully inclusive. Land based excludes aquaculture and fisheries, and Rural or Countryside excludes the urban greenspaces and much of the community food projects.	Lantra in partnership with key sector organisations, Skills Groups[56] and Industry Leadership Groups (ILGs).	"Nature based" becomes recognised by learners and stakeholders as a multifaceted sector with many opportunities for growth.	"Nature based" used collectively and positively by all of the sector leads to a greater emphasis on sustainability and a recognition of the importance of Natural Capital. More pupils who select 'nature based' career paths at 16, enter roles in what was land based.	Stakeholder engagement (Education and Training Workshop-2,3,4,5,7) (Employers Skills and Skills Gaps workshop – 3,4) Interviews Adoption by NatureScot research report 1257

[56] Including Aquaculture, Skills for Farming, Horticulture, Forestry and the Skills Action Plan for Rural Scotland Implementation Steering Group

1.1	Develop an effective communications strategy to support the reframing of the Sector.	There is a strong need to change the perception of the Sector with regard to the personal, social and environmental value offered by careers and jobs in the Sector supporting our food industry, climate change and nature commitments.	Lantra in partnership with key sector organisations, Skills Groups and ILGs.	Effective re-branding of the Sector over time, changes perceptions and increases the interest in the Sector by key influencers, young learners and adult returners.	Increased career interest, more learners entering Sector Education providers and increased employee pool.	Stakeholder engagement (Education and Training Workshop - 1,3,4,7) (Employers Skills and Skills Gaps workshop – 3,4,5) (Awareness & Perception workshop- 1,3) (Learning for sustainability Workshop- 2) Interviews Adoption by NatureScot research report 1257

Schools						
No:	**What**	**Why**	**Who**	**Impact**	**Success measure**	**Evidence**
2	Establish clear progressive experiences for nature-based learning and climate literacy across all levels of Curriculum for Excellence.	There is no consistency of approach, delivery or progression experiences available to all school learners in relation to learning outdoors and nature-based learning.	Scottish Government and Education Scotland.	School learners more engaged with an integrated delivery of the curriculum especially in STEM subjects using the 'outdoor classroom'.	Increased delivery of outdoor education across school phases and greater learner interest in the environment they live in.	Stakeholder engagement (Education and Training Workshop - 1,2,3,4,7) (Learning for sustainability Workshop-1) (Learning for sustainability Workshop-4) Interviews Royal Highland Educational Trust (RHET) data Outdoor & Woodland Learning Scotland (OWLS) data

No:	What	Why	Who	Impact	Success measure	Evidence
2.1	Identify ways to support an increase in Sector school/college partnership learning pathways, offered and undertaken by schools.	There is a need to enable some funding to be re-directed to support the development of more nature-based school college partnerships and wider uptake of current and new learning pathways.	Scottish Funding Council (SFC) and Education Providers.	Increased college school engagements and learning pathway opportunities for S4-S6 learners.	An increase in the uptake of land-based learning pathways at school and progression to further land-based learning opportunities.	Stakeholder engagement (Education and Training Workshop - 1,2,3,4,5,7) (Awareness & Perception workshop- 1,2,3) (Learning for sustainability Workshop- 2,4) Interviews Scottish Qualifications Authority (SQA) uptake data Education Provider data SRUC internal research

No:	What	Why	Who	Impact	Success measure	Evidence
2.2	Provide on-going Career Long Professional Learning (CLPL) support for school-based staff and volunteers across all education authorities, supported by Education Providers to improve their knowledge and understanding of the opportunities within the Sector. Include practical training in supporting learning in the natural environment.	There is a need to enable greater levels of support to be re-directed to training which supports secondary school teachers and careers staff understanding of Sector career opportunities. School staff can be less confident delivering outdoor learning in the natural environment.	SFC, Education Scotland, General Teaching Council for Scotland (GTCS) and Education Providers.	Increased confidence and understanding of careers and job roles within the Sector among careers advisors and teachers. More confident delivery of outdoor learning opportunities.	Increased staff confidence in the delivery of outdoor learning experiences. Increased nature-based interest shown by 16+ Data Hub and Tertiary Education Provider applications data.	Stakeholder engagement (Education and Training Workshop -2,3, 6,7) (Learning for sustainability Workshop-1,4) NatureScot report 779 – teaching, learning and play outdoors. Interviews 16+ Data Hub RHET Data OWLS Project data Education Provider data

No:	What	Why	Who	Impact	Success measure	Evidence
3	Ensure that the Learning for Sustainability (LfS) Action Plan refresh encompasses strong progressive learning experiences relating to nature-based learning.	The learner entitlement to LfS contained within Curriculum for Excellence (CfE) does not appear to be undertaken consistently across all Scottish secondary schools.	Scottish Government, Education Scotland and Education Authorities.	Wider understanding of key environmental issues and climate change mitigation measure which can be implemented locally, nationally & internationally.	A greater consistency of LfS policy implementation across all 32 Local Education Authorities.	Stakeholder engagement (Education and Training Workshop - 3, 4, 6,7) (Learning for sustainability Workshop-1) Interviews
3.1	Establish a robust approach to monitoring quality of the curriculum delivery of Learning for Sustainability, including the quantity and quality of nature-based and outdoor learning.	Little understanding of the level of the current engagement in outdoor learning, especially at Secondary level.	Education Scotland and Education Authorities.	Evidence to support a more robust policy and investment framework to support outdoor learning.	Increase the quality of the learning experience spent on outdoor learning.	Interviews Stakeholder engagement (Education and Training Workshop - 1,3,6) Need to fill evidence gap – no data currently captured

No:	What	Why	Who	Impact	Success measure	Evidence
3.2	Promote the delivery of more outdoor learning by supporting local authorities and colleges to undertake a review of their estate to identify the potential for carbon reduction, climate change mitigation and the creation of accessible nature spaces.	The Learning Estate Strategy sets out the strategic approach for managing Scotland's learning estate and states that schools should be greener and the use of outdoor learning environments should be maximised. There is currently no consistent application of this strategy.	Scottish Government, Learning through Landscapes and NatureScot.	A better understanding and appreciation of the local environment among school pupils and the local community. A greater understanding of the support required to develop at the national level.	Whilst increased outdoor learning could simply be a matter of working more closely with local land owners, a map of the requirements at the national level will allow for more strategic planning and implementation of improvements.	Interviews Stakeholder engagement (Education and Training Workshop - 1,7) (Learning for sustainability Workshop-2) Need to fill evidence gap – no data currently captured other than for new estate

Further and Higher Education and Training						
No:	**What**	**Why**	**Who**	**Impact**	**Success measure**	**Evidence**
4	Ensure funding to support core and innovative nature-based education and training programmes, to ensure sustainable provision to allow for fluctuating uptake.	The current model which supports high volume learner demand (at lower credit value) and impedes the increased uptake in high impact curriculum areas such as nature based 'green skills'.	Scottish Government, SFC, Education Providers.	Increased pressure to support and promote nature-based learning opportunities.	Increased numbers of students studying or training in priority areas.	SFC, HESA and SQA Data Interviews Stakeholder engagement (Education and Training Workshop - 2,3,4,5) Education Provider course data SRUC internal research Sector reports – Aquaculture, Forestry, Horticulture, NFUS briefing papers NatureScot research report No. 1257 SDS Sector Skills Assessments - Agriculture, Forestry and Fishing

No:	What	Why	Who	Impact	Success measure	Evidence
5	Ensure that accreditation bodies (at all curriculum levels) have sufficient capacity to respond timeously to review existing awards and develop new awards, guaranteeing the skills and knowledge requirements of the Sector are met.	There is currently limited capacity for SQA and other awarding bodies to ensure any new land-based qualifications are developed quickly, are fit for purpose and address an identified sector need (without further splitting an overcrowded offering). There is no cohesive revision of most awards to ensure they remain fit for industry, as many may have a low uptake.	Scottish Government, SQA, the Quality Assurance Agency for Higher Education (QAA) and City & Guilds.	Courses fit the needs of the sector as well as policy. Courses are regularly reviewed and flexible enough to allow for movement between roles. Identified skills gaps by sector Industry Groups are acted upon.	Nature-based qualifications regularly reviewed and updated in a cohesive and structured way.	Review dates for SQA units and course validations SQA NextGen development SQA External Verifier feedback Interviews Sector reports – Aquaculture, Forestry, Horticulture, NFUS briefing papers Stakeholder engagement (Education and Training Workshop - 1,3,6)

No:	What	Why	Who	Impact	Success measure	Evidence
6	Contribute to the Skills delivery landscape independent review, ensuring that the complex needs of the Sector are understood and addressed.	There are multiple barriers to apprenticeship recruitment for small and medium sized enterprises (SMEs) and contractors operating within the Sector. There are also barriers to career changers, who discover the Sector later in life and then may face discrimination, as potential employers would struggle to access funding to support their training. Training and support often lack flexibility to meet individual employee needs.	Lantra, other nature-based industry bodies and Education Providers.	More flexible rules and support available for nature-based apprentices (at all levels) and their employers,	Sustainable support mechanisms in place (administrative and financial) which incentivise rural apprenticeship uptake for new entrants as well as career changers.	Stakeholder engagement (Education and Training Workshop -2) (Employers Skills and Skills Gaps workshop - 1,2,3) Sector reports: Aquaculture, Forestry, Horticulture, NFUS briefing papers Lantra Research reports: Aquaculture, Forestry, Foundation Apprenticeships, Instructor networks, MA delivery SDS Apprenticeship data

No:	What	Why	Who	Impact	Success measure	Evidence
7	Contribute to the Skills delivery landscape independent review, ensuring that the 16+ Data Hub captures the wide range of job roles undertaken across the Sector to allow for effective monitoring and impact.	The job titles used on career pages and in Standard Industrial Classification (SIC) codes do not accurately reflect the nature of the roles and in some cases suggest gender restrictions.	Lantra, SDS, NatureScot.	Alignment of revised SIC codes and course titles will better track those keen to work in the Sector whilst at the same time promoting them as 16+ options.	Course titles and promotion will more accurately reflect content and the roles that the learners will be able to undertake Research and trend analysis will be easier by industry as well as for the Sector.	Stakeholder engagement (Employers Skills and Skills Gaps workshop - 1,2,3, Interviews Commission meeting 24/2/21 Sector reports: Aquaculture and Forestry My World of Work 16+ Data Hub

No:	What	Why	Who	Impact	Success measure	Evidence
8	Support the retention of critical Higher Education (HE) provision in areas such as forestry and aquaculture by developing innovative ways to extend the reach of their delivery.	No HN progression routes are available to any general Aquaculture related degrees and there is only one specialist forestry degree in Scotland. Both industries support the need for flexible higher-level qualifications and would like to see Technical and Graduate apprenticeships. The loss of specialist training facilities also remains a concern.	Scottish Government, SFC, SDS, Education Providers.	A wider range of specialist HE provision available to support the Sector's needs, and encourage more work based learning and adult returners. Retention of all existing specialist training facilities.	Increase interest and employment within the industry sectors at a supervisory and management level.	UCAS College and University websites Interviews Stakeholder engagement (Education and Training Workshop -1,3,5) (Employers Skills and Skills Gaps workshop – 2,3,4) Sector reports: Aquaculture and Forestry SDS Sector Skills Assessments - Agriculture, Forestry and Fishing -2022

Funding and Policy						
No:	**What**	**Why**	**Who**	**Impact**	**Success measure**	**Evidence**
9	For the new Agriculture Scotland Bill, as part of Tiers 3 and 4, to include provisions to enable support to fund upskilling/Continuing Professional Development (CPD) training for farmers and employees to support priority, quality non-legislative training towards a just transition to a green economy.	The agriculture sector does not have a minimum training requirement in order to practice. There is a clear need for CLPL to implement system changes and nature-based solutions beyond the current innovation proposals. The new Agriculture Bill should recognise Education & Training as key, to supporting understanding and change in the sector.	Scottish Government.	A better understanding of what production system changes and mitigation measures should be implemented to meet NetZero aims. A more highly qualified, trained, diverse and flexible workforce.	Land managers and custodians are qualified and trained to implement best practice.	NFUS Briefing papers Scottish Government Agriculture Census 2021 Stakeholder engagement (Education and Training Workshop – 3) (Employers Skills and Skills Gaps workshop – 2,3,4,5) Teagasc Machinery Ring and other Skills Training Provider data

No:	What	Why	Who	Impact	Success measure	Evidence
10	Strongly recommend that Scottish Government incentivise uptake of structured Education and Training programmes to support the Agricultural sector.	Additional structured 'support payment' training incentives similar to the Irish 'Green Certificate' model should be considered to encourage a much greater uptake of training by farmers and their employees. Agriculture Census data confirms a low level of engagement with formal training initiatives.	Scottish Government.	Sustainable funding available for agriculture sector specific training, which can be tailored to the needs of the Sector without impacting on national skills projects.	Supporting employer engagement with training, young people and adult returners into the agriculture industry, particularly where specific skills shortages have been clearly identified.	(Employers Skills and Skills Gaps workshop -3,4) Interviews Teagasc Scottish Government Agriculture Census 2021 Machinery Ring and other Skills Training Provider data Education Provider course data

Data and Labour Market Intelligence						
No:	**What**	**Why**	**Who**	**Impact**	**Success measure**	**Evidence**
11	Amend the annual compulsory Agriculture Census to include specific Labour Market Intelligence (LMI) questions, which can be used by Skills Development Scotland (SDS) and others to inform the Sector's skills needs more accurately.	.The current Agriculture Census does not capture important LMI data which would be very useful to inform the sector. Employee, recruitment and training needs data could easily be incorporated into the mandatory census. .	Scottish Government.	A greater understanding of the skills gaps the sector faces as well as the economic contribution and the trends over time.	LMI data captured by the census is used to inform the agriculture sector policy in relation to training needs, skills gaps and recruitment.	Evidence gap – no detailed LMI data captured in Scottish Government Agriculture Census

No:	What	Why	Who	Impact	Success measure	Evidence
11.1	Identify opportunities to add LMI questions to other Sector surveys sent out by the Scottish Government or related agencies. .	.There are naturally occurring opportunities for efficient LMI data capture within the other Scottish Government surveys or related agencies,	Scottish Government.	A greater understanding of the skills gaps faced by other nature-based sectors and more informed policy formulation.	Other naturally occurring Scottish Government nature-based industry surveys are adapted and LMI data is used to inform training needs, skills gaps and recruitment	Interviews Sector reports: Aquaculture, Horticulture, Forestry NatureScot Research Report No 1257 SDS Sector Skills Assessments - Agriculture, Forestry and Fishing -2022

No:	What	Why	Who	Impact	Success measure	Evidence
12	Undertake research which identifies key transferable skills required across different job roles within the Sector.	.There is a lack of understanding and recognition of the transferrable skills which could be harnessed across the different sectors to support often seasonal 'green jobs and opportunities to recognise prior learning (RPL).	Scottish Government, SQA.	Increased opportunities for seasonal employment across the Sector and a more flexible workforce. An improved understanding of skills gaps.	More people employed to use their skills sets across different job roles which support the Sector.	Stakeholder engagement - (Education and Training Workshop -3) (Employers Skills and Skills Gaps workshop – 1,3,4) (Awareness & Perception workshop-2) (Learning for sustainability Workshop-4) Interviews Evidence gap – no current sector analysis available.

Just Transition						
No:	**What**	**Why**	**Who**	**Impact**	**Success measure**	**Evidence**
13	Ensure learning from interventions such as the Women in Agriculture Taskforce and Women in Scottish Aquaculture is used to inform actions to attract more women into sectors where there is a gender imbalance.	Although there is a relatively even balance between males and females studying at the HE level in the sector, there are still more males working in land-based roles, and many more at the FE level. The diversity of the sector in terms of other protected characteristics is also low.	Lantra in partnership with key sector organisations.	Changed perceptions about what the nature-based sector is, and the opportunities it presents in terms of careers and lifestyle.	Increased diversity of those undertaking learning and training in the sector, increased retention post study.	Stakeholder engagement (Education and Training Workshop -5) (Employers Skills and Skills Gaps workshop - 2,3) (Awareness & Perception workshop-1,2,3) Interviews HESA, SFC data SAAB Gender Commission Report 2022 Women in Farming and the Agriculture Sector - RESAS 2017

No:	What	Why	Who	Impact	Success measure	Evidence
13.1	Ensure learning from interventions support other groups which are under-represented in the Sector.	The additional barriers faced by those with disabilities, childcare and / or care commitments were frequently communicated during consultation with stakeholders. The challenges around reducing the impact of these barriers in rural areas are also significant.	Lantra in partnership with key sector organisations, Local Employability Partnerships and Industry Leadership Groups.	Increased availability of childcare, flexible working around seasonal peaks, shared labour pools, and drawing on best practice across sectors and internationally.	More women entering the sector, reducing the current recruitment challenges, increasing sector resilience through a more diverse workforce and implementation of fair work targets.	Stakeholder engagement - (Education and Training Workshop -4,5) (Employers Skills and Skills Gaps workshop – 4,5) (Awareness & Perception workshop- 1,2,3) Interviews HESA, SFC and Education Provider data

No:	What	Why	Who	Impact	Success measure	Evidence
14	Sector 'Industry Leadership Groups' (or equivalent) to establish what help or interventions would enable their industries to meet fair work requirements.	There is a need for a more collective approach to identifying the common fair work challenges across the different nature-based industries and what intervention or support is required to address these. The opportunity to focus and speak/lobby with one agreed voice should have a greater resonance.	Industry Leadership Groups.	A clearer lobbying message and voice to influence support and implementation of industry based solutions, sharing best practice.	An increase in employer understanding and adoption of fair work actions leading to an increased interest/employment in nature-based jobs.	Stakeholder engagement - (Employers Skills and Skills Gaps workshop – 1,2,3,5) Interviews Sector reports: Aquaculture, Forestry, Horticulture, NFUS briefing papers Skills for Farming Group Industry Liaison Groups

Review						
No:	**What**	**Why**	**Who**	**Impact**	**Success measure**	**Evidence**
15	Annually review recommendation progress, whilst sharing best practice and lessons learned.	There is a need to regularly review recommendation progress and ensure effective implementation. Sharing best practice to support the Sector.	Scottish Government.	Sectoral change leading to increased nature-based learning opportunities and interest/ employment within the Sector.	Achievement or progress towards the desired recommendation outcomes.	Stakeholder feedback

9. Acknowledgements

Advanced Learning and Skills - Analysis Education Analytical Services
Commission Members
Confederation of Forest Industries (UK) Ltd (Confor)
Education Scotland
Higher Education Statistics Agency
Lantra
National Farmers' Union of Scotland
Ringlink Scotland Ltd
Royal Highland Education Trust
Rural & Environmental Science and Analytical Services
Secretariate to the Commission
Scottish Forestry
Skills Development Scotland
Scottish Funding Council
SRUC
Stakeholder Participants
Scottish Qualifications Authority
Sustainable Aquaculture Innovation Centre
Teagasc
The University of the Highlands and Islands
16+ Data Hub Partners

10. List of Abbreviations and Acronyms

CfE	Curriculum for Excellence
C&G	City and Guilds
CLPL	Career Long Professional Learning
CITB	Construction Industry Training Board
CPD	Continuing Professional Development
ELC	Early Learning Centre
FA	Foundation Apprenticeship
FBAASS	Farm Business Accredited Adviser Scheme Scotland
FE	Further Education
GTCS	General Teaching Council for Scotland
HE	Higher Education
HECoS	The Higher Education Classification of Subjects
HEI	Higher Education Institute
HESA	Higher Education Statistics Agency
HIE	Highland and Islands Enterprise
HN	Higher National
HNC	Higher National Certificate
HND	Higher National Diploma
IAgrE	Institute of Agricultural Engineers
ILG	Industry Leadership Group
LEAF	Learning About Forests
LMI	Labour Market Intelligence
LfS	Learning for Sustainability
MA	Modern Apprenticeship
NC	National Certificate
NFUS	National Farmers' Union of Scotland
NPA	National Progression Award
NPORS	National Plant Operators Registration Scheme
NPTC	National Proficiency Test Council
NRS	National Records Scotland
RESAS	Rural & Environmental Science and Analytical Services
RHET	Royal Highland Education Trust
RPL	Recognition of Prior Learning
SAAB	Scottish Apprenticeship Advisory Board

SAIC	Sustainable Aquaculture Innovation Centre
SAYFC	Scottish Association of Young Farmers Clubs
SDS	Skills Development Scotland
SCQF	Scottish Credit and Qualifications Framework
SFC	Scottish Funding Council
SG	Scottish Government
SIC	Standard Industrial Classification
SfW	Skills for Work
SLE	Scottish Land and Estates
SME	Small or Medium Sized Enterprise
SOC	Standard Occupational Classification
STEM	Science Technology Engineering and Maths
SQA	Scottish Qualifications Authority
UHI	The University of the Highlands and Islands

Appendix 1

Commission membership

Dr Liz Barron-Majerik, Director, Lantra Scotland (co-chair)

Bernard Chisholm, (Co-chair, resigned April 2022)

James Wylie, Executive Director of Education, Leisure and Housing in Orkney Islands Council (nominated by ADES) (Co-chair from May 2022.)

Amy Jo Reid, Chair, Agricultural and Rural Affairs Committee, Scottish Association of Young Farmers Clubs

Andy Leitch, Deputy Chief Executive, Confor

Chris Brodie, Director of Regional Skills Planning and Sector Development, Skills Development Scotland

Claudia Rowse, Deputy Director of Sustainable Growth, NatureScot

David Thomson, Chief Executive, Food and Drink Federation Scotland

Gail Robertson, Development Manager, Ringlink

George Jamieson, Education and Skills Manager, National Farmers Union Scotland

Heather Jones, Chief Executive, Sustainable Aquaculture Innovation Centre

Ishabel Bremner, Chair of the Scottish Local Authorities Economic Development Group (SLAED)

Jamie Newbold, Academic Director, Scotland's Rural College (SRUC)

Lesley Laird, Director, EQUATE Scotland (resigned August 2022)

Rachel Cowper, Chief Operating Officer, The Crichton Trust

Steven Grier, Chair, Scottish Apprenticeship Advisory Board (SAAB) Employer Equalities Group

Appendix 2

Education and skills reviews and overarching national policies

Climate Emergency Skills Action Plan 2020-2025

Fair Work: Action Plan

Future Skills Action Plan: Scotland's Future skills action plan

Gender Equality Taskforce in Education and Learning

Horticulture Sector Skills Survey 2019 - Ornamental horticulture & landscaping industry 2021

Independent Review of Qualifications and Assessment

Just Transition Commission

Learner Pathways: A Key to Successful Curriculum Design

Learning for Sustainability Action Plan

National Discussion on Scottish Education

National Islands Plan

Nature-based jobs and skills Action Plan 2022-2023

Nature-based jobs and skills for net zero - an initial assessment

No One Left Behind Delivery Plan

OECD Review of Scotland's Curriculum (2021)

Putting Learners at the Centre (2022)

School Age Childcare Progress Report (2021)

School College Partnership Review (2021)

Scotland Food & Drink Skills Investment Plan 2nd Edition

Scotland's National Strategy for Economic Transformation 2022

Scottish Forest & Timber Technologies Skills Action Plan 2020

SDS Career Review (2022)

SDS - Sectoral Skills Assessment Agriculture, Forestry & Fishing (November 2022)

SFC - Review of Coherent Provision and Sustainability

Skills Action Plan for Rural Scotland (2019-21)

Skills Delivery Landscape: Independent Review

Skills for Farming Group – Ongoing skills initiatives

Skills Review for the Aquaculture sector in Scotland - HIE 2018

Sustainable Aquaculture Innovation Centre (SAIC) - Lantra 2022 Skills Review

The Scottish Agriculture Bill: Tier 3&4 Proposals for 2025

The Wellbeing and Sustainable Development (Scotland) Bill (WSD Bill)

Appendix 3

Stakeholder event questions

Commission to review land-based learning

Education and Training Stakeholder Event – 1 September 2022

Discussion questions for break-out groups

We are sharing in advance the questions to be explored in the break-out discussions at the stakeholder event.

1. How are you currently engaged with education and training in the land-based sector?

2. What education and training is available for the land-based sector from early years onwards?

3. Where are the gaps in the content of education and training currently on offer? Is seasonality an issue?

4. Overall, what evidence is there that the sector responds quickly enough to change or does not? What is the role of the qualifying/funding bodies support/allow this? Are there other barriers or enablers?

5. What is there to ensure consistency of understanding among learners, educators, influencers and employers on skills and knowledge required?

6. What should the new qualifications/quality assurance body have at its core to ensure flexibility for the land-based sector?

7. Is there clarity about meta-skills and fair work requirements for future changes in learning journeys and pipeline of employment? What are the key learning requirements for (a) lifelong learners and (b) career changers? What would increase accessibility into pathways at all stages?

8. Regarding the learning journey from Early Years onwards:
    - How can our education system develop the meta-skills (core/essential) skills required for employment in land-based and aquaculture?
    - What land-based learning is there at S1 to S3 level at school? Does it need to increase? How can this be done?
    - Where in the learning journey do young people have the chance to develop/test their land-based skills in practice?

9. Outdoor Learning:
    - What is the content and proportion of outdoor learning in teacher training?
    - How effective is the training for staff to adapt to the new Outdoor Learning regulation on time outdoors?
    - Are college courses including the regulations on outdoor time into their training?

10. Would making the connections with key issues improve the attractiveness to young people to land use and aquaculture (Climate change, renewable energy, biodiversity, food security, food production, environment, health, cooking, research and technology)

11. Are future leaders being supported and developed? Is leadership capacity rurally being built? Are there resilience issues?

Commission to review land-based learning

Employers, Skills and Skills Gaps Event – 2 September 2022

Discussion questions for break-out groups

We are sharing in advance the questions to be explored in the break-out discussions at the stakeholder event.

1. How are you currently engaged with the land-based and aquaculture sector?

2. What are the main or most important skills gaps in your sector? Is this being addressed? Can you give examples of how?

3. To what extent are posts in the sector poorly paid.

4. What are the difficulties in addressing this and having Fair Work practices, particularly for microenterprises and SMEs?

5. Could changes to contracts/commissioning be made that would help with Fair Work requirements?

6. What are the challenges are there to around the size of companies and building capacity in the land-based sector where there are many small businesses? What are the differences between a land-based SME and a similar SME in joinery, for example?

7. To what extent do short-term tenders impact on SMEs ability to succeed and be sustainable?

8. What are the problems for local and national recruitment for the sector? Are vacancies advertised, if so, where is effective? If not, how are posts are filled?

9. To what extent and how is seasonality an issue in all of the above?

10. To what extent are practical access (including quality accommodation, kit, transport) for on-site education in land-based sectors a barrier to people taking up opportunities?

11. Accommodation/travel. What has been the effect of fewer providers following mergers?

12. What is the standard of accommodation, site facilities, practical kit, equipment and does this affect take up of places?

13. To what extent are costs of retraining if re-careering a barrier? What other are there?

14. What are the barriers to recruiting apprentices? Are there specific issues for micro-businesses in constant demand for example need time to train?

15. Is there a disproportionate reliance on short course training? Does the employee have to pay for this to get employed?

16. Where do people thinking about working in land-based sectors get information, advice and support? How do they know how to access the support?

17. Is there any mandatory requirement for training?

18. Have you offered or supported work experience for a new entrant or school pupil? Is so – how did it go? Did you experience any challenges during the process?

Commission to review land-based learning

Awareness and Perception of the Sector Event – 22 September 2022

Discussion questions for break-out groups

We are sharing in advance the questions to be explored in the break-out discussions at the stakeholder event.

1. How are you currently engaged with the sector?

2. What do you think is the current perception of the sector at primary and secondary school age level and post-school?

3. Do you think the perception is different within minority ethnic communities and other under-represented groups?

4. How can we encourage exposure and awareness of jobs in the sector for example, with senior school students through employability awards, pathways to rural work, rural/industry partnerships?

5. How do you think this would be best measured and impacts interpreted?

6. Would the approach be different for those looking to choose a career and those looking for opportunities for career change?

7. How are secondary school pupils currently able to engage with land-based and aquaculture businesses? Is there a 'space' for this in the curriculum?

8. How do the sectors currently empower/support young people on making their career choices?

9. Is time of year/seasonality an issue for example, for jobs, school food production, course starts?

Stakeholder event Learning for Sustainability and the future of learning in Scotland's land-based and aquaculture sectors – 3 October 2022

Aims

- What does the current education and skills system for the land-based sectors look like?
- What might an ideal education and skills system for the land-based sectors look like?
- How to get there

Questions

Education and Skills

1. What education and training are you aware of that is currently available for the land-based sector from early years onwards?

2. What is there (if anything) to ensure consistency of understanding among learners, educators, influencers and employers on skills and knowledge required? What else is required?

3. What are the main or most important skills gaps related to the land-based sector from the perspective of your sector? Is this being addressed? Can you give examples of how.

4. Regarding the learning journey from Early Years onwards:
    - How can our education system further develop the meta-skills (core/essential skills) required for employment in land-based and aquaculture settings?
    - What land-based learning is there at S1 to S3 level at school? Does it need to increase? How can this be done?
    - Where, in their learning journey, do young people have the chance to develop/test
    - their land-based skills in practice?

Awareness and Perception of the Land-based and Aquaculture Sectors

5. Where and how do people thinking about working in land-based sectors get information, advice and support? How do they know how to access the support?

6. How can we further encourage exposure and awareness of jobs in the sector for example, with senior school students through employability awards, pathways to rural work, rural/industry partnerships?

7. How are secondary school pupils able to access engagement with land-based and aquaculture businesses? Is there a 'space' for this in the curriculum?

8. How do we empower young people on career choice in these sectors?

Appendix 4

Organisations represented at stakeholder engagement workshops

Education and Training – 1 September 2022

Borders College
Chartered Institute of Ecology and Environmental Management (CIEEM)
Commission Members (Representing the Commission)
Confor
Dumfries & Galloway Council
East Ayrshire Council Learning Outdoors Support Team
East Ayrshire Coalfield Environment Initiative EAUC (Alliance for Sustainability
Leadership in Education) Scotland
Forestry and Land Scotland
Glasgow City Council NRS
Just Transition Commission
Landworkers' Alliance
Lantra Scotland
Learning for Sustainability Scotland
Learning through Landscapes
National Farmers Union Scotland
Pasture for Life
Royal Highland Education Trust (RHET)
Royal Botanic Garden Edinburgh
Scottish Aquaculture Innovation Centre
Scottish Forestry
Scottish Forestry Trust
Scottish Funding Council
Scottish Government
Scottish Land & Estates
Scottish Local Authorities Economic Development Group (SLAED)
Scottish Qualifications Authority
Scottish School of Forestry - UHI Inverness
SCQF Partnership
Skills Development Scotland
South of Scotland Enterprise
SRUC
Scottish Schools Education Research Centre (SSERC) Ltd
The Food Life
UHI Inverness
University of Edinburgh

Employers, Skills and Skill Gaps - 2 September 2022

Borders College
Chartered Institute of Ecology & Environmental Management
Close the Gap
Commission Members - (Representing the Commission)
Confor
DFN Project SEARCH
Forestry and Land Scotland
General Teaching Council for Scotland
Glennon Brothers
Institute of Chartered Foresters
Landworkers Alliance
Lantra Scotland
Learning for Sustainability Scotland
Learning through Landscapes
National Farmers Union Scotland
NatureScot
Queen Margaret University
Renfrewshire Council
Royal Botanic Garden
Salmon Scotland
Scottish Aquaculture Innovation Centre
Scottish Forestry
Scottish Government
Scottish Forestry Trust
Scottish Funding Council
Scottish Land & Estates
Scottish Local Authorities Economic Development Group (SLAED)
Skills Development Scotland
SOSE
SQA
SQA Accreditation
SRUC
SSERC Ltd
The Food Life
UHI
WWF Scotland

Awareness and Perception Workshop - 22 September 2022

Chartered Institute of Ecology and Environmental Management
Commission Members (Representing the Commission)
FOTA Duke of Edinburgh Award
Growbiz
Inspiring Scotland
Lantra Scotland
Learning for Sustainability Scotland
NatureScot
Queen Margaret University
Royal Botanic Gardens Edinburgh
RSPB
Scottish Forestry
Scottish Forestry Trust
Scottish Local Authorities Economic Development Group (SLAED)
SRUC
SQA
UHI
Scottish Government

Learning for Sustainability Scotland workshop – 3 October 2022

Aberdeenshire Council
City of Edinburgh Council
Commission co-chairs – (Representing the Commission)
Dunblane Primary
Dundee and Angus College
Edinburgh Napier Students' Association; LfSS Steering Group
Fife Council
Horizon ESI
Independent
Kemnay Academy
KG Language Solutions
Lantra
Levenmouth Academy
LfSS
National Trust for Scotland
NatureScot
North Ayrshire Council
Nourish Scotland
Penicuik High School
Royal Botanic Gardens Edinburgh
Royal Highland Education Trust (RHET)
RSPB
RSPB Scotland
Scotland’s Food and Drink

Scottish Government
Scottish Qualifications Authority
Social Enterprise Academy
The Green Team
Tutor
University of Edinburgh
University of Glasgow
University of St Andrews and Learning for Sustainability Scotland
University of Stirling
University of Strathclyde
University of the Highlands and Islands
Zero Waste Scotland

Appendix 5

School uptake of environmental science by Local Authority area

Local Authority	National 3	National 4	National 5	Higher
Aberdeen City	0	0	0	0
Aberdeenshire	0	10	10	10
Angus	0	30	40	30
Argyll & Bute	0	(c)	(c)	20
Clackmannanshire	(c)	15	(c)	(c)
Dumfries & Galloway	0	40	30	0
Dundee City	(c)	(c)	10	15
East Ayrshire	0	150	15	35
East Dunbartonshire	0	0	0	5
East Lothian	10	15	20	0
East Renfrewshire	0	10	0	0
Edinburgh, City of	5	15	25	20
Falkirk	10	15	0	0
Fife	5	30	15	40
Glasgow City	5	40	0	0
Highland	5	20	30	5
Inverclyde	0	0	0	0
Midlothian	0	0	0	0
Moray	0	10	25	30
Na h-Eileanan Siar	0	10	0	0
North Ayrshire	0	0	10	35
North Lanarkshire	0	45	15	40
Orkney Islands	0	0	0	0
Perth & Kinross	0	(c)	10	25
Renfrewshire	(c)	(c)	(c)	10
Scottish Borders	0	0	30	25
Shetland Islands	0	0	0	0
South Ayrshire	0	5	30	50
South Lanarkshire	0	0	(c)	35
Stirling	15	25	5	0
West Dunbartonshire	0	0	0	0
West Lothian	0	0	0	10

Appendix 6

Land-based and aquaculture training and careers searches 2017-22

	2017	2018	2019	2020	2021	2022	Total
Land-based training searches (Lantra Awards)	0	101,515	1,465,719	1,204,554	1,172,628	923,929	4,868,345
Land-based careers searches (Lantra Scotland)	0	3,817	13,098	31,266	39,151	24,038	111,370
Aquaculture careers searches (Lantra Scotland)	0	225	435	664	1,183	1,822	4,329
Aquaculture Training Searches (Lantra Awards)	0	116	182	16	29	9	352

Animals, land and environment job profiles. April 2021 to March 2022.

SDS: My world of work

Job Profile	Page views
Veterinary surgeon	12,239
Veterinary nurse	8,376
Zookeeper	7,929
Animal care worker	7,729
Dog handler	5,810
Farm worker	4,346
Dog groomer	4,138
Agricultural engineer	4,086
Tree surgeon	3,856
Oceanographer	3,852
SSPCA inspector	3,638
Animal technician	3,529
Agricultural consultant	3,159
Gamekeeper	3,116
Horse riding coach	3,028
Geoscientist	2,994
Meteorologist	2,736
Assistance dog trainer	2,734
Horse groom	2,476
Ecologist	2,464
Jockey	2,404
Environmental consultant	2,108
Fish farm worker	2,013
Climate scientist	1,934
Cemetery worker	1,910
Farm manager	1,894
Farrier	1,730
Countryside ranger	1,700
Gardener	1,606
Landscaper	1,582
Forest worker	1,512
Rural surveyor	1,355
Environmental health officer	1,276
Countryside officer	1,248
Forest officer	1,199
Greenkeeper	1,180
Wind turbine technician	1,124
Fishing vessel skipper	1,093
Fence installer	920
Horticultural worker	852
Pest control technician	760
Environmental manager	624

Appendix 7

Land-Based Courses available 2022 at SCQF Levels 4-8

Rural Skills

- Skills for Work Rural Skills SCQF Level 4
- NPA Beekeeping SCQF Level 5
- NPA Crofting SCQF Level 5
- NPA Local Food Production SCQF Level 6
- NC Rural Skills SCQF Level 4
- NPA Rural Skills SCQF Level 5
- SVQ in Estate Maintenance SCQF Level 5
- SVQ in Estate Management SCQF Level 6
- SVQ in Rural Land Use and Management SCQF Level 8

Agriculture

- HNC/D Agriculture SCQF Level 7/8
- HNC Poultry Production SCQF Level 7 (replacement qualification under development)
- **NextGen** HNC Agriculture SCQF Level 7 (HND SCQF Level 8 under development)
- **NextGen** HNC Agricultural Technology SCQF Level 7 (HND SCQF Level 8 under development)
- NPA Investigation of Modern Agriculture
- NC Agriculture SCQF Level 6
- SVQ Agriculture SCQF Level 5
- SVQ Agriculture Crops SCQF Level 6
- SVQ Agriculture Livestock SCQF Level 6
- SVQ Mixed Farming SCQF Level 6
- SVQ in Land-based Engineering (Agriculture) SCQF Level 5
- SVQ in Land-based Engineering (Agriculture) SCQF Level 7

Horticulture

- NC Introduction to Horticulture SCQF Level 4
- Cemetery Operations SCQF Level 6
- HNC Garden Design SCQF Level 7
- HND Garden Design SCQF Level 8
- HNC Horticulture SCQF Level 7
- HND Horticulture SCQF Level 8
- NPA Horticulture SCQF Level 4
- NC Horticulture SCQF Level 5

- Next Gen HNC Horticulture SCQF Level 7 (HND SCQF Level 8 under development)
- HND Horticulture with Plantsmanship SCQF Level 8
- HNC Landscape Management SCQF Level 7
- PDA Production Horticulture SCQF Level 6
- HNC Golf Course Management SCQF Level 7
- HND Golf Management SCQF Level 8
- NC Greenkeeping SCQF Level 5
- SVQ Horticulture Level 1
- SVQ in Horticulture SCQF Level 5
- SVQ in Landscaping SCQF Level 5
- SVQ in Landscaping SCQF Level 6
- SVQ in Parks, Gardens and Green Space SCQF Level 5
- SVQ in Parks, Gardens and Green Space SCQF Level 6
- SVQ in Production Horticulture SCQF Level 6
- SVQ in Sports Turf SCQF Level 6
- SVQ in Sports Turf: Green Keeping SCQF Level 5

Aquaculture

- HNC Fish Farming SCQ Level 7
- NPA Aquaculture SCQF Level 4 / SCQF Level 5
- SVQ Aquaculture SCQF Level 5
- SVQ Aquaculture SCQF Level 7
- SVQ Aquaculture Management SCQF Level 9
- CBQ for New Model Apprenticeship Aquaculture SCQF Level 5 (under development)
- CBQ for New Model Apprenticeship Aquaculture SCQF Level 7 (under development)

Animal Care

- HNC Animal Care SCQF Level 7
- HND Animal Care SCQF Level 8
- NC Animal Care SCQF Level 5
- NC Animal Care: An Introduction SCQF Level 4
- NPA Beekeeping SCQF Level 5
- PDA Quality Improvement in Veterinary Practice SCQF Level 7
- HNC Rural Animal Health SCQF Level 7
- HND Rural Animal Health SCQF Level 8
- NPA Racehorse Care and Management SCQF Level 6
- NPA Racehorse Exercise and Performance SCQF Level 5
- NPA Racing Yard Routine SCQF Level 5
- NPA Specialist Racehorse Care SCQF Level 5

- NPA Thoroughbred Preparation SCQF Level 5
- PDA Competition Horse Care SCQF Level 7
- PDA Equine Breeding SCQF Level 7
- HNC Equine Studies SCQF Level 7
- HND Equine Studies SCQF Level 8
- NPA Horse Care SCQF Level 4
- NC Horse Care SCQF Level 5
- NPA Horse Care SCQF Level 6
- NPA Leadership for the Racehorse Industry SCQF Level 6
- NPA Zoo Animal Behaviour and Welfare SCQF Level 6 (expanded NC under development) [developed in partnership with Dundee and Angus College and Camperdown Wildlife Centre]

Environment

- NC Countryside Management SCQF Level 5
- PDA Ecological Surveying SCQF Level 7
- HNC Environmental Management SCQF Level
- HND Environmental Management SCQF Level 8
- HNC Wildlife and Conservation Management SCQF Level 7
- HND Wildlife and Conservation Management SCQF Level
- HNC Rural Business Management SCQF Level 7
- HND Rural Business Management SCQF Level 8
- SVQ in Environmental Conservation SCQF Level 5
- SVQ in Environmental Conservation SCQF Level 7

Forestry

- HNC Arboriculture and Urban Forestry SCQF Level 7
- HND Arboriculture and Urban Forestry SCQF Level 7
- Award in Chainsaw Felling Large Trees SCQF Level 6 [suite of occasional chainsaw user qualifications developed in partnership with industry group HCTA]
- Award in Chainsaw Felling Small Trees SCQF Level 6
- Award in Chainsaw Maintenance and Use SCQF Level 6
- Award in Clear Individual Windblown Trees SCQF Level 6
- Award in Clear Multiple Windblown Trees SCQF Level 6
- Award in Hand Winch Operations SCQF Level 6
- Award in Mobile Elevated Working Platform Limbing Operations SCQF Level 6
- Award in Powered Pole Saw Operations SCQF Level 6
- Award in Wood Chipper Operations SCQF Level 6
- HNC Forestry SCQF Level 7
- HND Forestry SCQF Level 8

- PDA Forestry SCQF Level 7
- SVQ in Arboriculture SCQF Level 6
- SVQ in General Woodland and Forestry Treework SCQF Level 6
- SVQ in Trees and Timber SCQF Level 5
- NPA Woodland Operations SCQF Level 6

Game and Wildlife Management

- HNC Game and Wildlife Management SCQF Level 7
- NC Gamekeeping SCQF Level 5
- SVQ in Game and Wildlife Management - Deer SCQF Level 5
- SVQ in Game and Wildlife Management - Deer SCQF Level 7
- SVQ in Game and Wildlife Management - Game Rearing SCQF Level 5
- SVQ in Game and Wildlife Management - Game Rearing SCQF Level 7
- SVQ in Game and Wildlife Management – Gamekeeping SCQF Level 7
- SVQ in Game and Wildlife Management – Lowland SCQF Level 5
- SVQ in Game and Wildlife Management - Upland/Grouse SCQF Level 5

Appendix 8

College and HEI Codes

FE-level provision

Superclass
Group Q Environment Protection/Energy/Cleansing/Security
QA Environmental Protection/Conservation
QB, Energy Economics Management/Conservation
QC Pollution/Pollution Control

Group R Sciences and Mathematics
RF Earth Sciences
RG Land and Sea Surveying/Cartography
RK Agricultural Science

Group S – Agriculture, Horticulture and Animal Care
SA Agriculture/Horticulture (general)
SC Crop Protection/Fertilisers/By products
SD Crop Husbandry
SE Gardening/Floristry
SF Amenity Horticulture
SG Forestry/Timber Production
SH Animal Husbandry
SJ Fish Production/Fisheries
SK Agricultural/Horticultural Engineering/Farm Machinery
SL Agricultural/Horticultural Maintenance
SM Rural/Agricultural Business Organisation
SN Veterinary Services
SP Pets/Domestic Animal Care
SQ Land Based Studies

HE-level provision

Code List E Subject codes (for HE programmes only)

Subject codes

Group C
C101 Biology
C102 Applied Biology
C103 Environmental Biology
C104 Marine Biology
C105 Botany
C106 Zoology

Group D
D101 Veterinary Sciences
D102 Animal Husbandry Group

D103 Animal Nursing
D104 Agriculture
D105 Fish Farming and Water Keeping
D106 Crop Production (including grassland – forage course)
D107 Horticulture
D108 Vegetable/Flower Production
D109 Floristry
D110 Agricultural Marketing and Merchanting
D111 Farm Business Administration and Management
D112 Turf Culture/Green Keeping
D113 Forestry
D114 Food Science
D115 Food Technology/Manufacture
D116 Food Hygiene
D117 Gamekeeping Sporting Management
D118 Natural Resources
D119 Other Agricultural Subjects
D201 Fisheries
D202 Fishing Crew
D203 Sea Fishing

Group F
F501 Geology
F506 Env Science

Group H
H104 Environmental Engineering
H107 Agricultural Engineering
H110 Marine Engineering

HESA Student data - CAH/HECOS codes - '05', '06' and '26' (Science based)

05-Others in veterinary sciences

05-Veterinary medicine and dentistry

06-Agricultural sciences

06-Agriculture

06-Animal science

06-Food and beverage production

06-Food and beverage studies (non-specific)

06-Food sciences

06-Rural estate management

06-Forestry and arboriculture

26-Geography (non-specific)

26-Others in geographical studies

26-Physical geographical sciences

26-Earth Sciences

26-Environmental sciences

Appendix 9

Modern Apprenticeship starts by occupation grouping 2013/14 to 2021/22

	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22
Administration and related	2175	2451	2359	2154	1811	1826	1558	581	1109
Animal Care, Land and water based	470	394	270	298	296	290	238	164	274
Automotive	1051	1118	1203	1118	1085	1187	1159	510	978
Chemicals and biotechnology related	57	65	35	19	30	23	31	41	47
Construction and related	1816	1704	1458	1255	1339	1515	1604	1074	1448
Creative and cultural skills	269	319	207	353	221	134	161	52	111
Engineering and energy related	1816	1704	1458	1255	1339	1515	1604	1074	1448
Financial services	429	502	759	752	931	862	663	268	357
Food and drink	1023	1064	1250	1111	1251	1221	1217	846	901
Hospitality and tourism	3279	2940	2773	2987	2766	2574	2388	904	1416

Management	1034	829	783	666	557	855	723	531	680
Other Manufacture	31	26	203	293	355	177	152	74	114
IT and other services	609	845	1100	1302	2107	2331	2352	1783	2798
Personal services	996	965	1007	936	831	848	606	284	589
Retail and customer service	3072	2886	2718	2683	2263	2074	1708	520	843
Sport, health and social care	3008	3047	3323	3295	3628	4019	5446	4880	5751
Transport and logistics	1530	1683	1476	1106	1570	1223	1452	1110	1445
Total	**25284**	**25247**	**25818**	**26262**	**27145**	**27270**	**27875**	**18655**	**25401**

Source: Skills Development Scotland

Appendix 10

HEI and FE Gender Balance and Protected Characteristics

Enrolments on Land-Based and Aquaculture courses at Scottish HEIs: 2020-21

	Full Time			Part Time			All		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
05-Others in veterinary sciences	365	25	390	30	-	30	400	25	425
05-Veterinary medicine and dentistry	1325	300	1625	150	40	190	1475	340	1815
06-Agricultural sciences	10	10	20	55	25	80	65	35	100
06-Agriculture	800	425	1225	145	140	285	945	560	1505
06-Animal Science	135	15	150	140	25	165	275	45	320
06-Food and beverage production	25	105	130	15	20	35	35	125	160
06-Food and beverage studies (non-specific)	140	35	175	5	-	5	140	35	175
06-Food sciences	55	30	85	-	-	-	55	30	85
06-Forestry and arboriculture	25	80	105	15	40	55	40	120	160
06-Rural estate management	85	80	165	40	30	70	125	115	240
26-Earth sciences	555	520	1075	85	75	160	635	595	1230
26-Environmental sciences	470	345	815	285	230	515	755	570	1325
26-Geography (non-specific)	120	75	195	5	10	15	125	85	210

26-Others in geographical studies	40	50	90	10	10	20	55	60	115
26-Physical geographical sciences	725	430	1155	105	95	200	830	525	1355
All	**4875**	**2525**	**7400**	**1085**	**740**	**1825**	**5955**	**3265**	**9220**

Source: HESA Student data, SG analysis

Gender Data Comparison

	Other subjects	Land-Based	Total	Land-Based %
Female	138,723	2620	141,343	40
Male	129,991	3819	133,810	59
Other	2428	39	2467	1
Total	**271,142**	**6478**	**277,620**	

Source: HESA Student data

Modern Apprenticeship – starts by gender 2021/22				
Frameworks	Number of Starts			
	Female	**Male**	**Prefer not to say/in another way**	**Total**
Agriculture	14	58	0	72
Aquaculture	7	70	0	77
Aquaculture Management Technical Apprenticeship	0	23	0	23
Equine	9	0	0	9
Game and Wildlife Management	0	9	0	9
Horticulture	13	196	0	209
Land-Based Engineering	0	50	0	50
Rural Skills	0	5	0	5
Trees and Timber	5	20	0	25
Wood and Timber Industries	0	12	0	12

Source: Skills Development Scotland

Ethnic Group FE	Other subjects	Land-Based	Total
Asian	8060	115	8175
Black	5435	35	5470
Mixed	1800	35	1830
Not known	34975	1090	36070
Other	4360	35	4395
White	216,515	5165	221,680
Total	**271,140**	**6480**	**277,620**

Source: Scottish Funding Council

Enrolments at Scottish HEIs by subject and key characteristics: 2020/21		
Personal Characteristics	**Land-based and Aquaculture**	**Other subject**
Sex		
Female	71%	59%
Male	29%	41%
Other	0%	0%
Total	**100%**	**100%**
Age (as at 31 August)		
20 and under	31%	33%
21 to 24	29%	30%
25 to 29	18%	14%
30 and over	22%	24%
Total	**100%**	**100%**

Ethnicity (UK domiciled only)		
1) White	95%	87%
2) Black or black British (Caribbean, African), Other black background	0%	2%
3) Asian or Asian British (Indian, Pakistani Bangladeshi)	1%	3%
4) Chinese	0%	1%
5) Other Asian background	0%	1%
6) Other (including mixed)	2%	3%
7) Not known/not recorded	1%	2%
Total	**100%**	**100%**
Disability		
Disability recorded	19%	15%
No known disability	81%	85%
Total	**100%**	**100%**

Source: HESA Student data

Enrolments at Scottish HEIs by subject and key characteristics: 2020/21

Personal Characteristics	Land-based and Aquaculture	Other subject	Total
Sex			
Female	3555	163,500	167,060
Male	1425	113,410	114,835
Other	10	965	975
Total	**4995**	**277,880**	**282,875**
Age (as at 31 August)			
20 and under	1570	92670	94240
21 to 24	1435	81990	83425
25 to 29	885	37580	38465
30 and over	1100	65640	66740
Total	**4995**	**277,880**	**282,875**
Ethnicity (UK domiciled only)			
1) White	3530	184,445	187,975
2) Black or black British (Caribbean, African), Other black background	10	4530	4540
3) Asian or Asian British (Indian, Pakistani Bangladeshi)	25	6930	6955
4) Chinese	10	1560	1570
5) Other Asian background	10	1760	1770
6) Other (including mixed)	80	7065	7140
7) Not known/not recorded	50	4690	4735
Total	**3715**	**210,975**	**214,690**

Disability			
Disability recorded	955	41180	42135
No known disability	4040	236,700	240,740
Total	**4995**	**277,880**	**282,875**

Source: HESA Student data, SG analysis (Based on CAH/HECOS codes: ‘05’ and ‘06’

Appendix 11

HEI enrolments by Local Authority & SRUC FE enrolments by campus

Enrolments on Land-based and Aquaculture courses at Scottish HEIs, by LA or prior to study: 2020/21

	University of Abertay Dundee	Edinburgh Napier University	University of Edinburgh	University of Glasgow	SRUC	University of the Highlands and Islands	All
Aberdeen City	5	-	10	10	45	5	85
Aberdeenshire	5	5	15	15	120	15	185
Angus	15	5	5	5	30	5	65
Argyll and Bute	-	-	5	10	25	45	95
City of Edinburgh	10	20	45	30	100	10	235
Clackmannanshire	5	-	-	-	10	-	25
Dumfries and Galloway	5	5	5	25	125	20	180
Dundee City	35	-	-	5	10	-	55
East Ayrshire	-	5	5	15	40	-	65
East Dunbartonshire	5	-	5	20	25	5	60
East Lothian	-	5	10	5	25	-	45
East Renfrewshire	-	-	5	15	15	-	35
Falkirk	5	5	5	5	35	-	60
Fife	30	20	15	15	105	5	200
Glasgow City	5	5	5	50	80	10	175
Highland	10	10	15	10	40	115	205

Inverclyde	-	-	-	5	10	-	15
Midlothian	-	5	15	-	35	-	55
Moray	-	5	-	5	25	25	65
Na h-Eileanan Siar	-	-	-	-	5	10	15
North Ayrshire	-	-	5	10	40	5	55
North Lanarkshire	-	10	5	15	40	-	90
Orkney Islands	-	-	-	-	5	20	30
Perth and Kinross	20	5	10	10	45	15	105
Renfrewshire	5	5	5	20	20	-	55
Scottish Borders	5	5	20	10	65	10	115
Shetland Islands	-	-	-	-	5	25	35
South Ayrshire	-	-	5	10	40	-	65
South Lanarkshire	5	5	15	30	70	5	135
Stirling	5	5	5	15	20	5	65
West Dunbartonshire	-	-	-	10	5	-	15
West Lothian	-	10	10	10	45	-	85
All	**165**	**145**	**265**	**375**	**1295**	**355**	**2785**

Source: HESA Student data, SG Analysis
Figures have been rounded to the nearest 5
Based on CAH/HECOS codes: ‘05’ and ‘06’
Based on FPE (full-person equivalent). Note: this proportions a student’s time when they are on a split course.
Note: Universities with less than 100 removed from table but included in total.

SRUC FE Enrolments by Campus

Enrolments to Land-based/Aquaculture courses at SRUC 2011/12 to 2020/21

	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21
Aberdeen	0	0	0	37	30	231	441	291	242	236
Ayr	0	0	0	382	445	265	369	449	184	15
Barony	2214	1857	1268	1623	1231	1348	1229	1497	836	698
Elmwood	954	755	760	814	731	723	849	755	656	361
Oatridge	2009	1774	2139	1668	1935	1791	2044	1804	1132	1143
SRUC unknown	0	0	0	71	47	30	52	0	0	0
Total	**5177**	**4386**	**4167**	**4595**	**4419**	**4388**	**4984**	**4796**	**3050**	**2453**

Source: HESA Student data

Disclaimer: *While every effort has been made to ensure the accuracy of the data supplied we cannot accept any responsibility for the accuracy of the original source*

Scottish Government
Riaghaltas na h-Alba

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