Forestry Workforce Research

August 2021

Forestry Skills Forum

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on behalf of the Forestry Skills Forum

by

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1 Executive Summary

This report investigates the status of employment, education and skills in forestry in England and Wales. It follows a similar report undertaken in Scotland in 2019 to build a complete picture across Great Britain.

The research which underpins this report delivered a large quantity of qualitative and quantitative information on the current 'state of play' of the forestry workforce in England and Wales and establishes the outlook for the sector considering ambitious government targets for tree planting and woodland management.

The following methodology has been utilised for this research:

- The methodology of the 2019 Scotland report[1] was used for quantitative data to ensure consistency
- ONS and pre-existing industry data (i.e. FC statistics and training provider data) was used where possible to act as a baseline
- An on-line survey to assess levels of employment; movement of labour within the sector; training and future training needs
- Training providers completed a second online survey, covering what courses & curriculum they offer and what they would like to offer in the future
- Interviews were undertaken with industry leaders, membership organisations, larger businesses, and educational establishments to give a strategic overview of employment & skills
- Data from OFQUAL and HESA for Further and Higher Education courses

The results showed an optimistic outlook in the growth of the sector and individual businesses, but a lack of confidence in training & skills provision. As a result, many larger employers have set up their own internal, bespoke training programmes, whilst many smaller businesses offer only ad-hoc training. Neither of these solutions address the wider structural training & educational needs of the sector.

Within the training and skills provision, the survey and interviews also point to a lack of cohesiveness in the sector that must be addressed urgently if forestry is to meet the predicted needs of society.

Opinions regarding future provision pointed to a need to return to more robust training of focussed forestry skills, whether that be practical or managerial, producing better operators, better silviculturists and more business focussed new entrants & employees. It was felt that

[1] A Review of the Future of The Forestry Workforce in Scotland, 2019 – Claire Glaister for Lantra & The Scottish Forestry and Timber Skills Group.

the skills required of a career in forestry are undersold rather than focussing on the highly skilled person a new entrant can become; whether that is a chainsaw operator handling difficult sites a harvester can't get to or a specialist silvicultural expert.

Quantitative forecasts of future workforce needs were undertaken to provide an indication of the future demand over the next ten years, from a 2019 baseline. The totals, including additional need due to attrition, are outlined below.

England

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	1,188	1,759	2,148	48	81
Forestry Supervisor	101	165	212	64	110
Professional Forester	52	95	128	84	148
TOTAL	1,341	2,019	2,488	51	86

Wales

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	273	458	432	68	58
Forestry Supervisor	33	60	57	82	72
Professional Forester	16	37	36	135	125
TOTAL	322	555	524	72	63

Amongst the report recommendations the most important include:

- Forestry should 'sell itself' better to attract a wider variety of employees. This marketing and promotion should start at school and continue through Further Education/Higher Education (FE/HE) and beyond.
- There needs to a be an acknowledgement of the skills which are needed in the sector with a concentration on core, focussed forestry skills whether that be forestry specific practical skills or silvicultural knowledge.
- Alongside these focussed skills it was felt there was a lack of general business/commercial skills or empathy becoming endemic in new entrants as well as a continued lack of digital skills. This needs to be addressed at all levels of training.
- There are numerous forestry training and education pathways including FE, HE, internal programmes and ad-hoc courses. There is felt to be a lack of cohesion and debate over the value of some of these. Clear routes need to be developed though forestry education that should boost the level of FE/HE provision and include non-accredited courses.
- Provision at FE level is at a crisis point which only innovative and radical action will address.

2 Introduction

The forest industry in England and Wales comprises a diverse range of businesses, from tree nurseries and timber growers, through to harvesting companies and primary processing activities in sawmills, panel mills and a range of other timber users. The industry supplies timber and other wood-based products to markets primarily in the UK (although around 6% of production is exported), as well as providing numerous leisure and recreation opportunities and a wide range of environmental benefits, such as flood alleviation and long-term carbon sequestration and storage.

In economic terms the sector makes a relatively modest contribution to the UK, accounting for just 0.04% of Gross Value Added (GVA) in 2015[2]. This figure rises to 0.23% of total UK GVA once UK-based wood and paper manufacture are included, although this also includes the processing of imported timber into higher value products for end consumers. The contribution of forestry to the UK economy has been growing for the past two decades, and in 2015 its GVA was measured as £794m, a significant increase from the 2010 figure of £391m[3].

UK Forestry GVA	**2000**	**£396m**	**2010**	**£391m**	**2015**	**£794m**
% of Total GVA	2000	0.03%	2010	0.03%	2015	0.04%
UK Wood Manufacturing GVA	**2000**	**£3.305bn**	**2010**	**£2.61bn**	**2015**	**£3.94bn**
% of Total GVA	2000	0.21%	2010	0.16%	2015	0.17%
UK Paper Manufacture GVA	**2000**	**£5.87bn**	**2010**	**£5.87bn**	**2015**	**£5.37bn**
% of Total GVA	2000	0.37%	2010	0.25%	2015	0.23%

Figure 1 Contribution of the Forest and Timber Industries to UK GVA [4]

Forest Research statistics show that timber imports to the UK accounted for 77% of the sawn wood market, 49% of the wood panel market and 56% of the paper market[4], with sawn wood and wood panels showing a steady rise in imported tonnage over the last decade. More softwood was imported into the UK in 2020 than either 2019 or 2018 (6.6m[3] in 2020)[5]. At the same time, there is an increasing realisation that offshoring our carbon footprint by importing timber (and many other products) is highly undesirable in an era where man-made climate change is having a direct impact on the UK and countries around the world.

[2] Forest Europe, 2020: State of Europe's Forests 2020
[3] https://www.ons.gov.uk/economy/grossvalueaddedgva
[4] Figures for 2017 extracted from www.forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/forestry-statistics-2018/trade/apparent-consumption-of-wood-products-in-the-uk on 8 July 2021
[5] Timber Trade Federation, Timber Demand and Supply in the UK - Market Statement, 2021

There is a growing desire, both within government and the forestry sector to increase the capacity of the UK forest industry, to grow more trees and help combat the impact of climate change through carbon sequestration, improving biodiversity, flood alleviation and the provision of raw materials to domestic markets - particularly construction and energy - as an alternative to carbon intensive products such as concrete and steel or the burning of fossil fuels. A 'double upside' of increasing UK timber production is the creation of high quality, skilled jobs throughout the supply chain.

According to the latest (2019) ONS figures in the Annual Business Register and Employment Survey (ABR), direct employment in the forestry sector in England and Wales currently stands at 10,750 and 1,850 individuals respectively, while primary timber processing employs a further 9,600 in total, broken down as 8,500 in England and 1,100 in Wales[6]. Direct forestry employment includes SIC Codes *02100 (Silviculture and other forestry activities)*, *02200 (Logging)* and *02400 (Support services to forestry)*, and includes both private and public sector employees, while employment in processing encompasses *16100 (Sawmilling and planing of wood)* and *16210 (Manufacture of veneer sheets and wood-based panels)*. Employment in secondary timber processing and the paper industries has been excluded from this survey.

There are limitations in the ONS data set which need to be understood and accounted for in its analysis and interpretation, the most important of which is the exclusion of the self-employed and businesses not registered for PAYE or VAT. As an industry with high proportions of self-employment and micro-enterprises, it is likely that a significant number of those working in forestry are not captured by the ONS ABR data. There is no readily available means of determining this at a statistically accurate level, but the latest (2020) *State of Europe's Forests*[7] report states that 69.6% of those working in the forestry sector in the UK were classed as employees (i.e. not self-employed) in 2015, a percentage which rises to 81% in timber processing (primary and secondary). The different way in which these figures are presented by sector in the Forest Europe report and the ONS data means direct comparison is not possible, but we believe that employment in direct forestry activities is markedly different to the officially reported UK figures.

The 2017 Forestry Skills Study for England and Wales, produced by RDI Associates for the Forestry Skills Forum, made a bespoke query to ONS to capture both employees and self-employed workers, and found significant differences between the employee and total workers *"beyond what might be expected from differences in scope"*[8]. The report suggests that the relatively small sample size could be introducing a sampling error; interpretation of applicable SIC codes could be occurring between surveys; and as those completing the survey self-report their SIC code, this could also introduce and/or mask changes.

[6] Figures for 2019, extracted from www.nomisweb.co.uk on 23 June 2021
[7] Forest Europe, 2020: State of Europe's Forests 2020
[8] RDI Associates 2017, A Forestry Skills Study for England and Wales, Royal Forestry Society

This last point is particularly relevant to forestry workers, as many contracting businesses are multi-skilled, and in a year where forestry activity has been low, they may derive more of their income from non-forestry sources, such as fencing, arboriculture or other land-based activities, and so classify themselves as something other than a forestry business. This, and the fact that forestry and timber processing is a relatively small sector in terms of overall businesses and worker numbers, can mean that large percentage shifts can appear in the data, even when the available workforce in the sector has remained largely static.

3 Research

3.1 Purpose, Scope & Objectives

The research which underpins this report was intended to deliver a large quantity of qualitative and quantitative information on the current 'state of play' of the forestry workforce in England and Wales and establish the outlook for the sector in light of ambitious new government targets, particularly those for tree planting and woodland management. The scope of the research included:

- Current labour supply issues;
- Projected demand for the next decade based on three projections of woodland creation and management;
- Skills gaps and shortages in the current labour force;
- The key occupational roles required to deliver increases in woodland creation and management over and above business as usual;
- Current further and higher education provision for the sector;
- Current practical training provision for the sector.

The primary challenge identified was that to meet new targets for woodland creation and their requirements for ongoing management and maintenance, the recruitment and training of a significant number of new professional foresters, supervisors, operatives and associated occupations could be required.

This research encompasses the whole forestry supply chain in England and Wales - from nurseries through to forest management and timber extraction - to build as robust a picture as possible of the workforce challenges facing businesses working in the sector. The objective of this work is to inform and guide the types and scale of support which the sector will need for it to scale up and meet the challenges of the future.

3.2 Methodology

There are two components to the methodology adopted for this research - primary data gathering in the form of industry surveys and interviews, and a 'future gazing' exercise which

used broadly the same modelling methodology as the 2019 Lantra report *A review of the future of the forestry workforce in Scotland*[9]. The 'future gazing' has also been underpinned by the information gathered through the surveys and interviews.

For the primary data gathering, two surveys were developed, one aimed at businesses and the other at training providers. The two surveys were created using Google forms for ease of distribution and analysis and were promoted using a wide range of forest industry specific channels, including direct emailing to contacts, repeated posts on Twitter, LinkedIn and Facebook, and inclusion in e-newsletters from trade associations and professional bodies including the ICF, Confor, RFS, FCA, REA and others.

The two surveys were constructed to avoid leading questions and were intended to be completed in under 5 minutes to encourage responses. The surveys were beta tested and modified based on feedback from the wider project team before being finalised. For those that wished to provide more information, opportunities were provided for them to give open text responses throughout the surveys, as this was felt to be a potentially important way of capturing deeper insights into the sector.

The online surveys were bolstered by structured phone interviews with key individuals drawn from across the forest industry in England and Wales. The target list for these interviews was put together by the project team from their knowledge of the sector, and attempted to cover all facets of the industry, from nurseries to primary processors. Individuals were approached by email (a first email and subsequent reminder) with those responding then interviewed over the phone.

In addition to industry interviews, we also undertook further research to provide quantitative and qualitative information on current Further and Higher education provision for the sector in England and Wales. This involved a literature review, an extensive online search and in-depth interviews with representatives of relevant organisations and individuals. The key issues discussed with providers were:

- The structure of FE and HE forestry qualifications in England and Wales and planned/potential future developments;
- Current provision of FE and HE forestry qualifications in England and Wales, and planned/potential future developments;
- Current and recent applications (demand) for FE/HE courses;
- Applicant backgrounds and motivations for choosing their courses/career;
- FE/HE Institutions' interaction with employers on curriculum development, industry placements, etc.;

[9] GR Forestry Consultancy 2019, Lantra & Scottish Forest and Timber Technologies Skills Group

- Employers and their representatives' views on FE/HE education provision – their appropriateness and fitness for purpose, the quantity, general availability (geographic spread) and related issues.

Also in relation to FE and HE provision, we reviewed and summarised the responses to the survey and interviews and held interviews with representatives of the following organisations, which given their varied nature, consisted of tailored questions rather than a standard set:

- City & Guilds
- ICF
- Confor
- Sparsholt College
- Bangor University
- University of Cumbria
- Forestry Commission
- BSW Group
- Scottish Forestry

Interviews, on a personal basis, were also undertaken with the following:

- Chris Starr (external verifier for Coleg Cambria)
- Richard Hunter (ex-Askham Bryan College Newton Rigg campus)
- Jim Waterson (ex-Harper Adams University)

The second element of the research was the 'future gazing', which used a modified version of the methodology used in the 2019 Scottish survey referenced above, and which was based on published figures in industry forecasts, statistics and targets for tree planting, felling and processing. As with the Scottish research, when calculating these figures, due to the current uncertainty of potential increases in productivity and operational efficiencies, no account has been taken of the advances in technology/impact of innovation in the period up to 2027 that have been predicted by industry stakeholders; it is widely anticipated however that the industry will improve both its productivity and operational efficiency over time, particularly in the harvesting and primary processing sectors.

It should also be noted that whilst technological advances and operational innovation may enable some forestry activities to be carried out on sites which are currently less accessible or operationally challenging (e.g. remote areas and/or difficult terrain), the potential impacts of working in these areas (e.g. lower machinery outputs, longer haulage distances, etc…) have also been excluded from the calculations made in this study.

A literature search was carried out on skills and employment within forestry. The available information is extremely limited, especially when compared to comparable sectors such as

agriculture or construction. The review provided mainly baseline information from which to assess change or current condition.

The review used published reports, online information and interviews, with particular reference to the following key documents:

- England Trees Action Plan 2021 - 2024[10]
- Forestry Skills Study (2017)[11]
- Forestry Skills Plan 2019 – 2024[12]
- Forestry Skills Forum Annual Report (2019)[13]
- Green Jobs Taskforce Report[14]
- Trees and Timber Task Force: recommendations (2021)[15]
- Woodland Creation in Wales Report for the Welsh Land Management Forum (2020)[16]
- Woodlands for Wales – The Welsh Government's Strategy for Woodlands and Trees[17]

As well as the following online resources:

- Careers in Forestry[18]
- Institute of Chartered Foresters Education & Careers[19]
- FE and HE Institution websites
- City & Guilds Qualifications and Apprenticeship[20]
- HESA (HE Statistics Authority)[21]
- OFQUAL (FE Statistics)[22]

3.3 Survey

The business survey went live on 7 June 2021 and ran until 1 July, attracting 147 responses, around two thirds of which were received in the first three days after it was issued. The training provider survey was launched at the same time and received 17 responses.

[10] https://www.gov.uk/government/publications/england-trees-action-plan-2021-to-2024
[11] https://rfs.org.uk/insights-publications/rfs-reports/forestry-skills-study-report-for-england-and-wales-2017/
[12] https://www.confor.org.uk/media/247374/forestry-skills-plan-2019-2024.pdf
[13] https://www.lantra.co.uk/forestry-skills-forum
[14] https://www.gov.uk/government/groups/green-jobs-taskforce#green-jobs-taskforce-report
[15] https://gov.wales/trees-and-timber-task-force-recommendations
[16] https://gov.wales/sites/default/files/publications/2021-07/woodland-creation-wales-report_0.pdf
[17] https://gov.wales/sites/default/files/publications/2018-06/woodlands-for-wales-strategy_0.pdf?_ga=2.260394827.792111835.1625657101-2029655740.1625657101
[18] https://rfs.org.uk/learning/colleges-and-universities/careers/
[19] https://www.charteredforesters.org/what-we-do/education-careers
[20] https://www.cityandguilds.com/qualifications-and-apprenticeships#
[21] https://www.hesa.ac.uk/data-and-analysis/students
[22] https://www.gov.uk/search/research-and-statistics?organisations%5B%5D=ofqual&parent=ofqual

The survey was bolstered by interviews with individuals and businesses identified by the project team as potentially having useful insights into their segment of the forest industry, and while these looked at strategic issues and opportunities which are discussed in Section 3.5, some parts of their responses have been included here where relevant.

The full results of the surveys and interviews, including all answers to qualitative questions (non-attributable) are set out in a separate appendix to the main report.

The first questions in the survey required the respondent to classify the organisation that they worked for, the number of employees and on whose behalf they were responding.

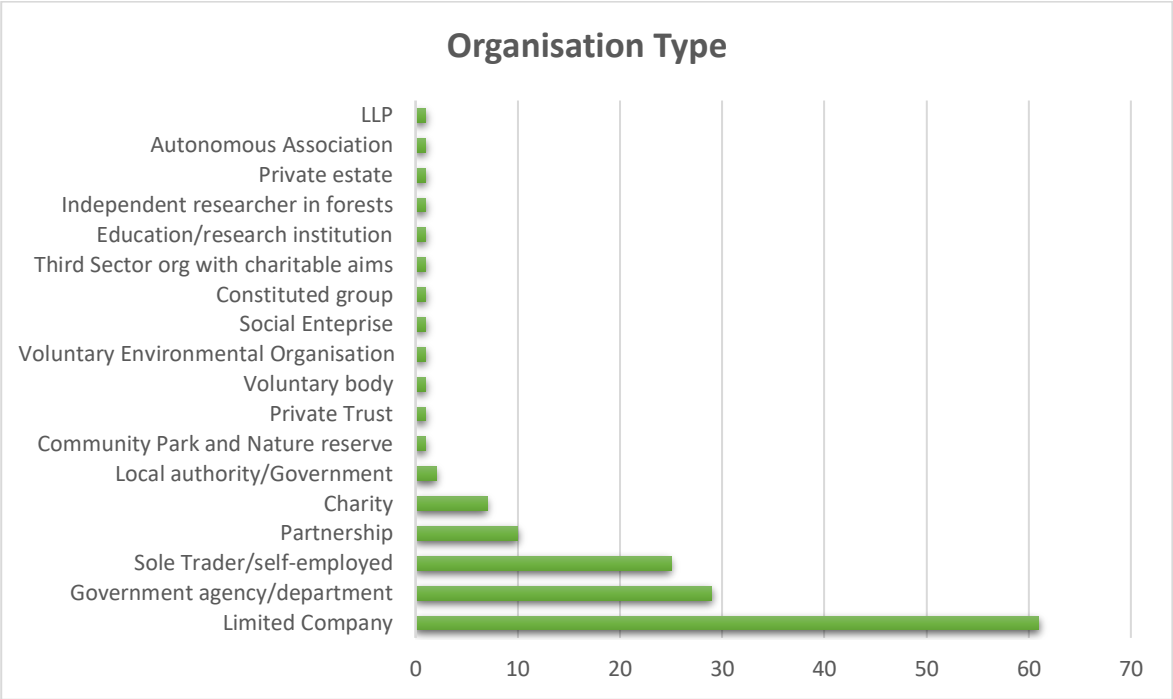

Figure 2 Organisation Type

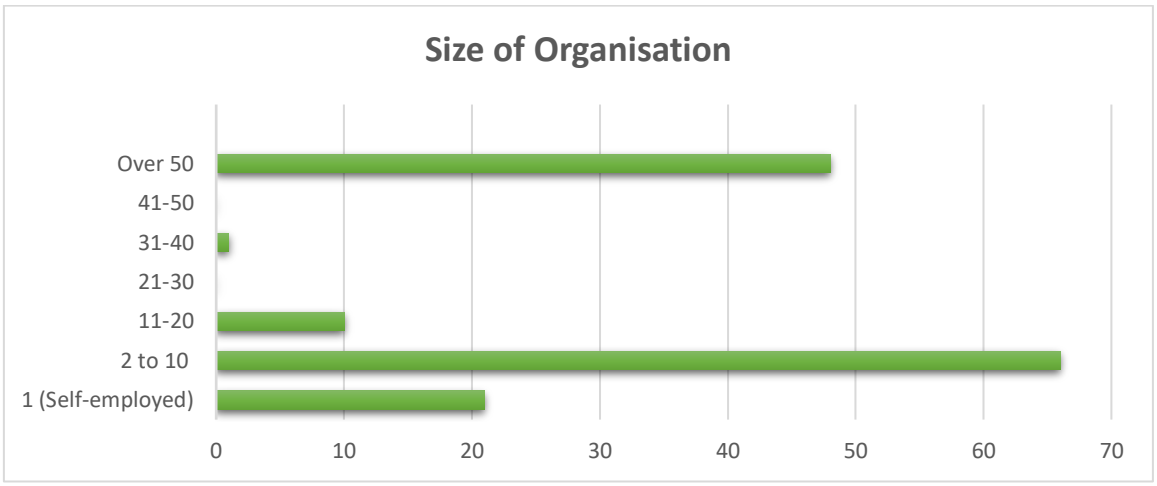

Figure 3 Organisation Size

The responses to 'size of organisation' may have been skewed - in part – by the number of employees as bigger organisations typically have in office-based roles which facilitated participation in the survey. Of the 147 respondents, 36 provided no named organisation (likely self-employed individuals without a company name), and 6 identifiable organisations provided multiple responses, totalling 19 individuals (15 public sector, 4 private sector).

We believe that the more innovative organisations are also more likely to respond to surveys of this nature as they generally feel the value of engagement in opportunities to drive forward their sector. For example, 7% of respondents described their business as *"agroforestry"*, which is almost certainly higher than the actual proportion of agroforestry businesses in the sector.

Limited companies comprised the largest group, providing over 60 of the total number, however, of the 128 responses from unique organisations, 87 were from organisations with less than 10 employees or sole traders. This reflects historic patterns in forestry enterprises, which are characterised by micro-enterprises and high levels of subcontracting. This has clear implications for business growth in the sector, for new entrants and skills development.

There was a spread of sub-sectors represented in the survey and many organisations employ people across several parts of the industry e.g. forest management, harvesting, haulage & primary processing, showing a degree of horizontal integration. Whilst the largest single sector was "management, supervision or consultancy"; establishment, harvesting and ground preparation combined, i.e., the bulk of practical employment in the industry, were the largest overall, as might be expected.

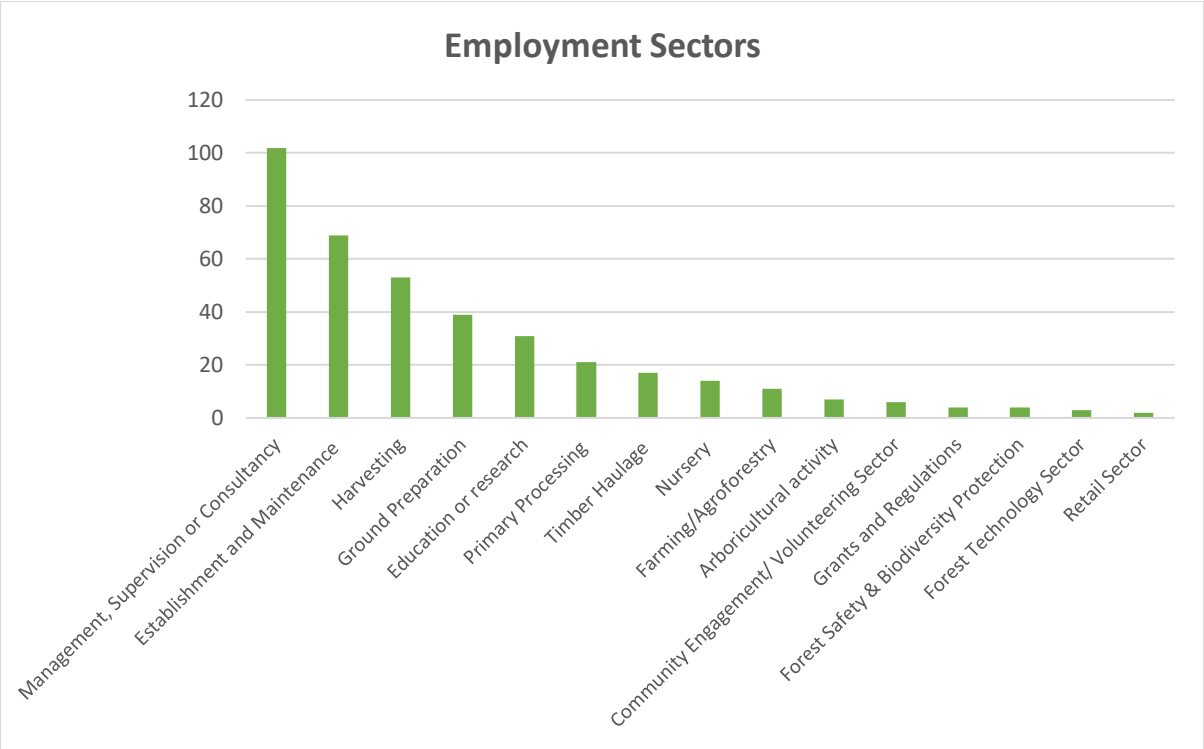

Figure 4 Survey respondent employment sectors (self-classified)

Respondents were asked about the number of non-PAYE contractors that they used, including self-employed, agency and seconded workers. The vast majority (87) used between 0 and 10 contractors, while the remaining 22 respondents used greater than 10.

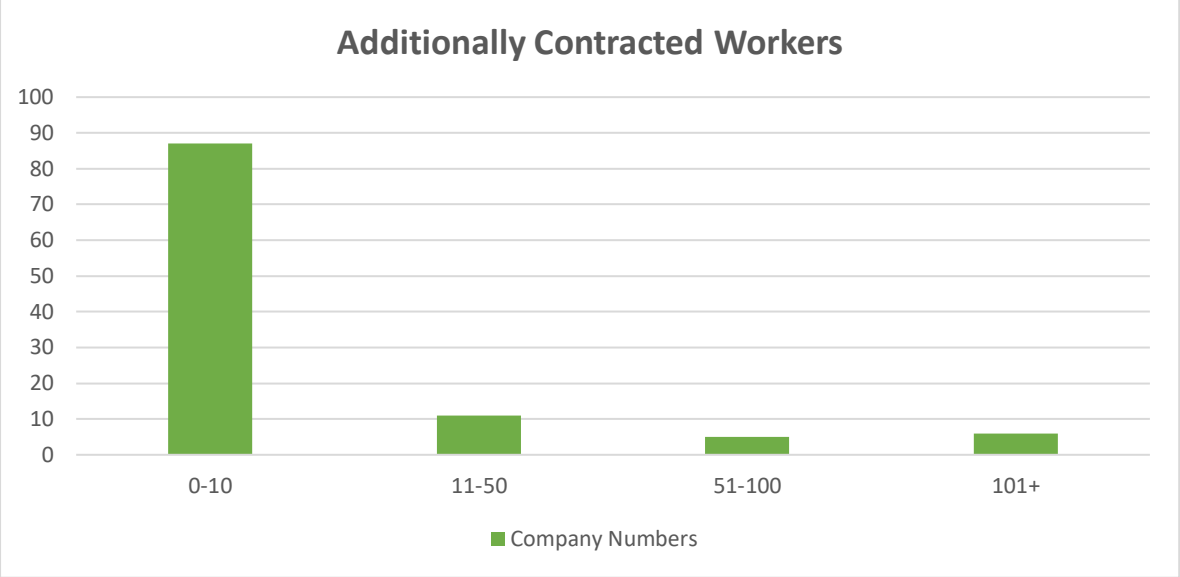

Figure 5 Additionally contracted workers

It is well known that using contractors substantially decreases the administrative burden on organisations, including the need to provide training or CPD. So, with 6 organisations reporting that they used over 100 contractors in their workforce, the importance of subcontractor-based business models in the sector and the structural weaknesses in the sector are clear.

Workforce skill level was assessed against the standard English and Welsh government criteria of Levels 1-7, where Level 1 is basic training in core skills, going up to postgraduate training at Level 7. We asked what percentage of employed staff fell into each skills category.

	0%	1-20%	21-40%	Over 41%
Level 1	53	22	11	61
Level 2	44	30	21	52
Level 3	45	36	24	42
Level 4	39	50	17	39
Level 5	45	47	25	31
Level 6	40	31	29	48
Level 7	61	52	16	17

Figure 6 Skills levels across respondent businesses

The results show consistency of employment across all skill levels. This highlights a concern that came up during the interviews of an imbalance in skill levels and number of staff. One would expect there to be far fewer employees at higher skill levels than in lower levels, as generally on-the-ground workforces are larger than management or office-based staff. The

reasons for this aren't clear from the survey but could be because of the number of on-the-ground staff who are degree holding career-changers and could potentially be considered overqualified for the work they do.

The survey then turned to the issue of staff turnover. The responses show that a majority of companies are only losing between 0 and 10% of staff per year but given the dominance of micro-enterprises and individual self-employed contractors in the sector and sample, we believe that it is more than likely that the majority of these businesses are experiencing zero turnover year on year because of their size (i.e. a sole trader cannot report a staff turnover on a headcount of just one), and that they are maintaining workforce flexibility through the use of subcontractors.

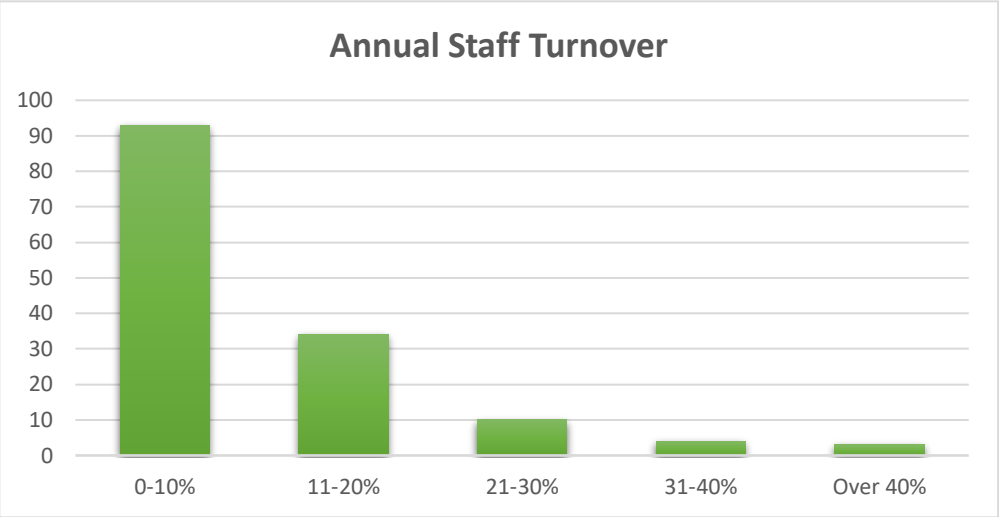

Figure 7 Annual Staff Turnover

The average figure for workforce turnover in the UK is approximately 15%[23] and while the figures from the survey seem to be broadly in line with this, an average count of 28 (which equates to close to 20%) suggests a slightly higher than UK average turnover figure. A relatively high number (12%) of respondents indicated that annual staff turnover was 30% or more, which in a larger business is a very large number of positions to fill each year, and which in a smaller organisation could be indicative of a retention issue inherent to their business. Overall, just over 50% of all businesses surveyed indicated that they had unfilled vacancies, with 33% putting the number of unfilled vacancies at between 1 and 5, while 13% reported a figure of 11+, suggesting that larger organisations are also experiencing recruitment issues. However, our interviews suggest the current increase in recruitment in public sector bodies could be influencing this figure.

Respondents were then asked to indicate how long it took to fill new or vacated posts. Most sat at between 1 and 3 months, which is typical for most businesses/sectors, although a significant number did report taking over 6 months to fill a vacancy (19 respondents) and one

[23] Current figure, extracted from www.monster.co.uk on 7 July 2021

indicated that it had taken over a year to get someone into post. Some useful insights into this issue were provided by respondents in the in-depth interview process and are covered in the next section.

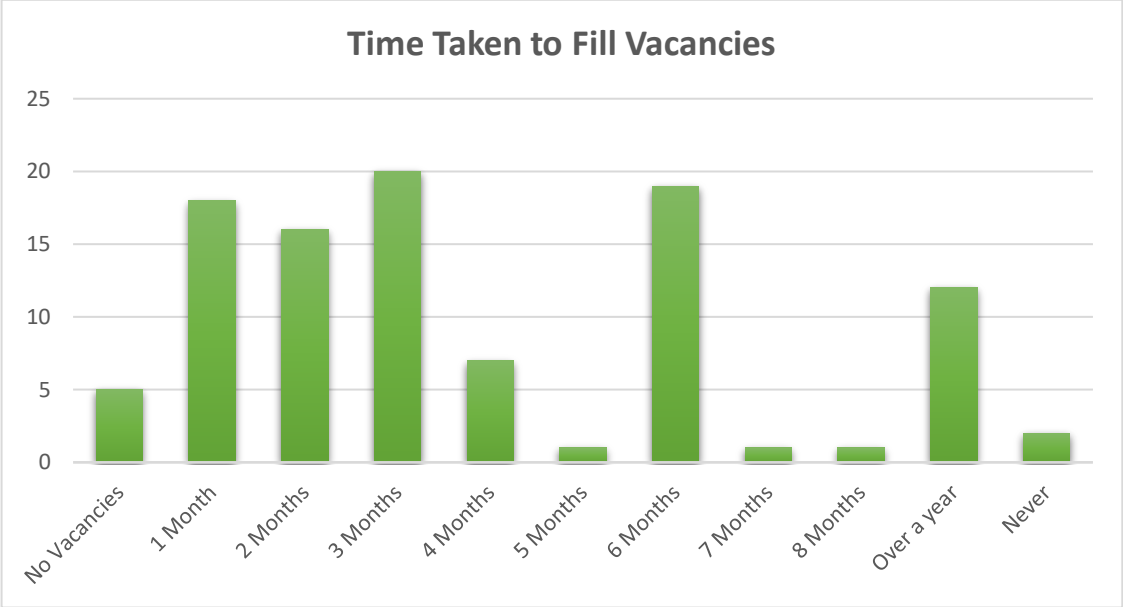

Figure 8 Online Survey - Time Taken to Fill Vacancies

Where survey respondents provided an answer to the question *"If you have unfilled vacancies, why do you think this is?"* by far the largest proportion (40% of the total) gave some variation of *"Lack of skills/experience"* as their primary reason, with *"Pay"* occurring as the second most frequent response at 14%. This question was a free text answer and allowed respondents to provide more detail than would have been the case with a menu-driven question. The full set of answers is available in the appendices however particular issues included:

> *"Lack of skilled forest managers, difficulty getting sufficient breathing room to take on staff to be trained on the job"*
>
> *"Trees and timber sector has reported loss of expertise and poor replacement for 20 years"*
>
> *"People, particularly younger workers, over value their skills. Refuse to work for the pay available and reluctant to work outdoors in winter"*
>
> *"No apprenticeship schemes locally. Education system has missed out the value of technicians, too much focus on degrees"*
>
> *"Lack of awareness of Forestry as a sector and the lack of younger people wanting to undertake a vocational role"*

If you do have unfilled vacancies, why do you think this is?	
Reason Categories	**Frequency**
Lack of skills/experience	39
Pay	14
Demand/competition	12
Internal issue	11
No interest in role	7
Location issues	7
Not aware	4
Training issue	3
COVID-19	1

Figure 9 Online Survey - Reasons for Unfilled Vacancies

These responses highlight both a skills gap and a pay gap in the sector which are presenting a barrier to forestry businesses and organisations meeting their staffing needs. This was a point which came up again in the interviews. Reference was made by interviewees to the movement of people between businesses and to the public sector with perceived better pay and conditions cited as a factor. Similar reasons are also mentioned as driving people out of the sector altogether. One interview respondent provided a useful perspective on the salary issue, noting that his organisation was seeing a *"resetting of forestry salaries in a very short period of time"*, and that *"the value of individuals has escalated across the whole industry, making it a candidates market"*. The idea of assigning values to skills is obviously not new but is of increasing importance & interest to both employees and employers as the market for good staff becomes more competitive.

While there is clearly a problem with recruitment and retention in the forestry sector, and this is a recognised and well-documented long-term issue, the shortage of skilled staff is an issue being experienced across the whole of the UK. The Recruitment and Employment Confederation and accountancy firm KPMG stated that *"the number of available workers [in the UK] plunged in June at the fastest rate since 1997"*[24], basing their assessment on a survey of over 400 recruitment firms, while a survey of members from the British Chambers of Commerce showed similar issues, stating that 70% of firms that had tried to hire staff in the three months to June had struggled to do so[6].

We also asked about the reasons given by/for those leaving organisations, which can be broadly summed up using the words of a couple of the respondents - that working in forestry involved *"high commitment and poor reward"* and that there was a general *"lack of opportunities - there are easier ways to earn a living"*.

[24] Extracted from www.theguardian.com/business/2021/jul/08/uk-employers-struggle-with-worst-labour-shortage-since-1997 on 8 July 2021

Reason	Frequency
Pay Too Low	9
Increased Workload	4
Career Development	3
Usual Turnover/Contractors	3

Figure 10 Online Survey - Reasons for Leaving the Sector

More than half of survey respondents (57%) believed that their business would grow during the next 12 months, and the overall mood was very positive in this regard. Specific reasons provided for this positive outlook included the impact of ash dieback, the increasing demand for public access to woodland, ambitious new planting targets and forecasted increases in timber harvesting. Grouped together into general categories, Figure 11 below presents the primary reasons for anticipated growth:

Reason	Frequency
Increased Activity/Growth in Business	28
Increased External Demand	16
Increased Workload	11
Usual Turnover	15
Grant Increase	3
Graduate training	3
COVID	3

Figure 11 Online Survey - Reasons to Expect Growth

The survey concluded with a focus on skills and training, asking respondents a range of questions about training provision available to employees in their organisation; the general provision of training for the sector (both for new entrants and CPD); the skills levels in the industry at present; the skills needed for the future and how well they believe existing provision/providers will be able to meet these needs.

Of the 147 respondents to the survey, 135 provided an answer to the question *What training opportunities does your organisation offer?* Of these, 21 responded that training was not available to them or their colleagues or the training was extremely limited, while the remainder outlined a very wide range of training opportunities on offer. Provision varies dramatically between organisations, with one respondent noting that training was available from apprenticeships to PhD level, while others stated that training was more typically focused on the practical and technical skills required for forest operatives, such as certificated chainsaw courses.

The responses provided by those completing the survey are difficult to categorise due to the open text nature of the question, but we have presented the results grouped by broad headings in Figure 12.

What training does your organisation offer?	
CPD/Internal	58
No/Extremely Limited	21
Lantra/NPTC	13
Health and Safety	10
Graduate/Apprenticeships	10
Any	8
ICF	3
IT/GIS	3

Figure 12 Online Survey - Training Offered by Organisations

A follow-on question then asked whether the respondent felt their workforce was over skilled, appropriately skilled or under skilled for the job that they did. Reassuringly, 72% felt that their workforce was appropriately skilled for the job, while just over 5% felt they were over skilled and 2% didn't know, leaving 21% stating that their workforce was under skilled. This is a significant proportion of the respondents overall and indicates that there is a need for training provision for the existing forestry workforce.

Respondents were then asked what training they would like to offer to their employees or undertake themselves in the case of sole traders/micro businesses. This was an open text response question which generated 122 responses:

What training would you like to offer?	
Category	**Frequency**
Graduate/Apprenticeships	18
Practical Courses	16
Land Management/ Forest Mensuration	15
CPD/ Development	12
Business skills/IT/GIS	10
Carbon/Climate Resilience	4
General Management	3
Community/Heritage Training	2

Figure 13 Online Survey - What Training Would You Like to Offer Employees

There is no particular pattern or trend identifiable from the answers, which include responses which are more focused on the delivery model : e.g. short release courses; apprenticeships; graduate programmes; and flexible learning; as well as responses which highlighted specific skills and competencies that would be required, e.g. GIS and other data and remote sensing

technologies; harvester operator training; contract management and negotiation; working with communities; and the core practical 'tickets' required by forestry operatives.

There is, however, a repeated theme around the need for structured training programmes such as graduate schemes and apprenticeships rather than training being viewed as something which is *ad hoc* and based on immediate needs of the business. This demonstrates the long-term thinking (and action) which is required in the industry to bring in new employees and provide them with the right skills set to meet the needs of a growing forestry sector and is also prevalent in the responses to the final question in the survey: *What skill sets do you think will be required in your area of forestry in the future?*, which garnered 219 responses in total:

Category:	Frequency:
General Agroforestry & Silvicultural Knowledge:	35
Practical Skills- Machine operations & Hand tools:	32
PC/GIS/Tech:	28
Land/ Forest Management & Design:	15
Social Forestry- Community Engagement/Heritage Training:	12
General Management:	11
Carbon/Climate Resilience:	9
Disease & Pests:	6
Ecology:	5
Multidisciplinary	3
Graduate/Apprentices:	2

Figure 14 Online Survey - What skill sets do you think will be required …?

The responses to this 'future skills' question are particularly important to understand and analyse, as they should inform the future development of skills and training provision for years to come.

An extraordinarily long list of future skills needs was identified by respondents, with obvious inclusions around practical skills, forestry and silvicultural knowledge featuring heavily, while the 'softer' side of forestry skills was also prominent, with community engagement, communication, interpersonal skills, dealing with organisations (which we assume to mean NGO's) and managing difficult situations all mentioned. These business skills tie in with comments made during several of the interviews, which highlighted the changing role of the forester and forest manager and the increasing diversity of roles that now sit under "forestry", which includes a great deal more interaction with the public than was historically the case.

Tree pests and diseases were also mentioned by multiple respondents, alongside plant health control and management, and the need to deal with ash dieback, with one respondent making

a call for more trained tree officers to deal with the likely 15 year "headache" that this disease presents to the industry.

As might be expected, core IT skills were mentioned, along with topics such as the use of drones in forestry, AI and machine learning which are being seen more and more in applications across the forest industry.

Carbon and its sequestration in trees featured for several respondents, as did the need for commercial skills and administration, with one respondent outlining their *"plan to bring someone onto the team in the near future - to deal with unholy amount of administration on the office-side bureaucracy associated with forestry"*.

The final question asked: *Do you think courses available through higher/further education and practical training providers covers all the skills your organisation needs now and in the future?* It received 137 responses, 37 of which were negative, 28 of which were positive, and the remainder were either *not sure* (or equivalent) or were too heavily qualified to sit comfortably as a clear *no* or *yes*. This question is difficult to analyse given the very broad range of individuals and organisations that responded, which means it is not possible to attribute specific responses to particular segments of the forest industry. That said, the following responses provide some useful insights into the current training provision, how well it is meeting needs, and how accessible it is to forestry businesses:

> *"Don't know what's available or where to find out centrally"*
>
> *"Not really, from a forestry perspective I do not think the higher education courses give enough focus or attention to the productive / commercial aspects of forestry which ultimately is what the processing sector requires. Also, from a practical perspective, I think the forestry sector needs to look at apprenticeships and on-the-job training for operators to address a serious impending issue with an ageing workforce, especially in harvesting and timber haulage"*
>
> *"Yes, but better links need to be developed between secondary / high schools when young people are making career choices to promote forestry and land based higher / further education courses"*
>
> "*There appears to be current mismatch between the demand for professional foresters and the number of students / courses available"*
>
> *"Yes, but more focus should be given to promoting forestry as a career"*
>
> *"Mainly, but not always at a practical level. More practical field training and or/work placements would be beneficial for all levels of higher/further education"*

"No. The breadth of knowledge is significantly lower than it was even 10 years ago with many students not having a recognition of all the processes involved in effective forest management"

"Generally yes. But the quality and accessibility may be limited in parts of the UK. So it's not just about what's available but also where. It's also fair to say that many skilled trainers, who gained these over a long period are coming towards the end of their careers"

3.4 Interviews

Over the period of the contract, 13 individuals responded to requests for interviews from the project team. The original long list had around 40 individuals, but a number either did not respond or were not able to spare the time to speak in the short timeframe of the work. The individuals were selected because either they or their company plays a significant role in forestry in England and/or Wales, and they are typically thought of as having insights and useful opinions on the forestry sector. A structured questionnaire was used to carry out telephone interviews, with direct entry of the responses into a Google form.

Most of those interviewed thought the sector was generally under-skilled when asked about new entrants, so much so that having internal training programmes is becoming an increasing popular way of meeting the needs of businesses. These internal programmes are, on the one hand, thought of as an imposition forced on the business by a lack of accessible and high-quality training, but were also something that businesses were obviously proud of having developed, as it meant businesses could train staff how they wanted to. These courses have no common standard though may contain accredited elements. Their bespoke nature makes them well suited to the originating organisation but in their current unstandardised form cannot address the wider structural needs of the industry.

Areas of skills development perceived as needed were mixed, perhaps due to the range of sub-sectors represented in the interviews, but almost everyone interviewed highlighted *"commerciality"* or *"business sense"* as an area that new entrants at all levels increasingly don't have. This crystallises around the idea that, whatever the focus of the employee, they need to understand that both the employer and client need to operate efficiently and cover costs as a minimum. A focus on the biological and environmental side of forestry in education and training, rather than on commercial aspects, is seen as a shortcoming which is at the root of this problem.

One respondent had the view that the sector was, in fact, very highly skilled but that there is a perception that qualifications and knowledge needed is low, so the sector is perceived as a place for low skilled workers. For instance, the technical and craft -based skill level needed by a good harvester is undersold, and, consequently, the type of new entrant that is attracted to

the role isn't one that necessarily fills requirements needed to optimise use of the machine or potential volumes extracted. The same was also seen as true for chainsaw operators, who are now often called to only the most difficult jobs (steep ground, storm damage, etc..). In this regard, forestry can be seen to be suffering from an image problem and is not seen as an attractive career for the brightest and best in any roles, whether that's managing a forest or working in a machine.

The interviews highlighted that there is a general shortage of skilled people in all areas of tree breeding and planting, and that this applies to nurseries and to finding people with the skills and personal attributes to spend days at a time outside planting in all weathers.

We asked if it was a problem that people increasingly come into the industry without formal forestry qualifications and received a mixed response. It was felt that new entrants had an aptitude for land-based work they could be trained, however, there is a strong opinion that there is a lack of silvicultural skills and experience in both lowland and upland forestry among the majority of new entrants.

General suitability of candidates for forestry roles and core skills came up in many of the interviews. One employer had received 130 applications for 2 harvesting posts, but only a third of applicants were seen as having the basic attributes which gave the company the confidence that they would benefit from the focussed training which would be required to turn them into productive operators. Having to train new recruits in basic core skills can be time consuming and can lead to businesses missing opportunities or seeing margins eroded.

When asked if FE/HE/short course providers were ensuring adequate coverage, there was almost universal disappointment at the levels of provision for the forestry sector, and at the rapidly disappearing number of FE/HE courses. This was highlighted as a major concern by many respondents given the rate of growth observed in the sector, government tree planting targets and the wider issues impacting on recruitment and retention across the sector.

There was speculation by some that short course and FE providers only provided the courses they thought the industry needed rather than what the industry wanted, indicating a disconnect between industry and education establishments. For instance, basic chainsaw courses are common but specialist courses are rare even though chainsaw operators are increasingly used in specialist applications. This is also true for lack of courses on steep-slope or difficult-site harvesting. There were also opinions expressed that many courses provided "tick box" qualifications rather than ensuring the individual was adequately trained and could meet the needs of a prospective employer. One example given of this was in chainsaw training, where a trainee on a Forestry Commission training course would historically be kept in the course for a number of days longer until the teacher was confident they were not just ticking the assessment boxes, but were actually a safe, competent and efficient operator. This could be likened to Trada timber-grading courses where, to pass the course, candidates don't

just have to demonstrate the minimum legal requirements/skills to grade but also must demonstrate they can do so at a speed to be useful and cost-effective to their employer.

The cost penalty for training was highlighted as a barrier to workforce upskilling within businesses. It is not just the cost of training that needs to be covered but also the cost of time spent when employees are away and not earning for the business, and the overall lower productivity of inexperienced new recruits. The issue was also raised of businesses losing staff to other businesses once they are better skilled, or the member of staff leaving to set up on their own. This latter point is relatively common in the forestry sector due to its employment structure being based largely around subcontracting.

The interviewees believe that there is a limited pool of new recruits available to the sector, that forestry is in competition within and outwith the sector and is not just competing for new recruits with other forestry businesses, but also with agriculture, aquaculture, construction and other sectors where practical trades make up a high proportion of the labour force. This was highlighted within the haulage industry, where HGV drivers can't train until they are 18, yet individuals who would typically pursue a career as a driver are school leavers at 16, meaning they go into other fields until later in their lives.

Business efficiency and profitability are heavily affected by the lack of skills. For instance, a digger-driver working on forest roading without skills in forest engineering may take twice as long and use twice as much fuel as a proficient driver. Likewise, new planting schemes will be held back by the lack of skills if take-up of government support and targets increases and there is a lack of skilled planters who can plant efficiently to meet demand.

Government and industry were felt to lack a promotional or marketing strategy that engages people at an early age and inspires and encourages them to pursue a career in forestry. The potential Confor plan for a centralised practical training school/hub was highlighted as a potentially vital industry led initiative. This idea of how we market ourselves as an industry came up repeatedly in the interviews.

Discussions with interviewees around the future skills required in forestry centred around the increased complexity of land use management and the "forgotten" skills in practical work. These practical skills were typically "craft" based, i.e. proficient highlining/skylining and new digital aspects of forest planning and management. One respondent highlighted the fact that it will soon be possible to drive a harvester from the comfort of a sofa at home, yet very few people in the sector have the skills to do this.

3.5 Education Review

Further Education

Provision of forestry training at further education level (i.e. school leavers at age 16-18 who are not on an apprenticeship or engaged in undergraduate study) is undertaken primarily at Level 2 or 3, and that courses are provided by several FE colleges across England and Wales which are shown in the map at Figure 5.

In England, school leavers aged 16 - 18 must do one of the following:

- stay in full-time education, for example at a college or 6th form;
- start an approved apprenticeship or traineeship;
- spend 20 hours or more a week working or volunteering, while also studying in part-time education or approved training;

In Wales school leavers of 16+ are under no obligation to undertake further study or remain in any form of approved training.

FE courses in forestry are designed and accredited by Pearson (BTEC) and City and Guilds[25] (in conjunction with the National Land Based College[26]), and typically they consist of Level 2 and 3 qualifications in Forestry and Arboriculture, although some centres are still utilising earlier Level 2 and 3 QCF qualifications in Forestry and Arboriculture.

Figures 15 and 16 indicate the number of completions at Level 2 and 3 of courses which include forestry and arboriculture in the course title. This will include completions of courses which relate to arboriculture only as data relating to individual pathways in not centrally collected. Discussions with colleges and anecdotal evidence indicates that the proportion of completions which relate to forestry specific pathways is less than 10% of the total.

The data for 2019 and 2020 in Figure 16 (Completions for Wales) is known to be incorrect. This may be due to Covid 19 related delays in reporting, or the effect of rounding, which for returns of less than three can result in false zeros for a whole year as the data is published[27] quarterly.

[25] https://www.cityandguilds.com
[26] https://nlbc.uk
[27] https://www.gov.uk/government/statistical-data-sets/vocational-qualifications-dataset

Figure 15 Level 2 & 3 Qualifications England

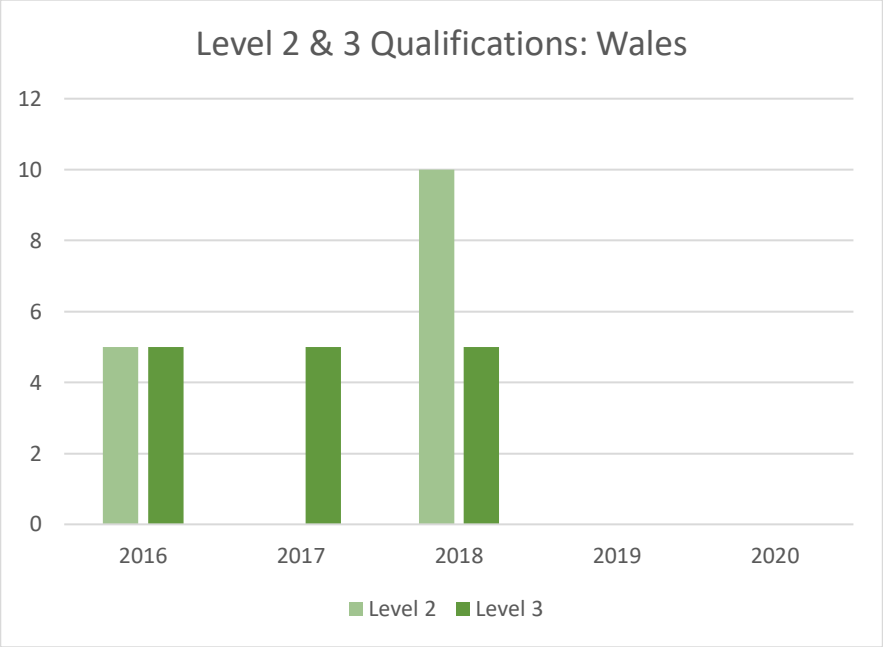

Figure 16 Level 2 & 3 Qualifications Wales

Qualifications at Level 2 and at Level 3 are offered as Forestry and Arboriculture courses which typically combine both theory and practical elements. These courses require an average of 18 hours of contact time per week, which means that most students attend three days per week, while working - often in a forestry or arboriculture business - on the other two, although students who have not obtained the required level of attainment in Basic Skills (English and Maths) also must study these core skills in parallel to their forestry and arboriculture course.

The Level 2 courses identified feature a common syllabus across arboriculture and forestry, with all students studying the same topics, although colleges may place a greater emphasis on particular topics, depending on the interests or expertise of their teaching staff.

Level 3 courses are offered with the option of pursuing either a forestry (Forest Operative) or an arboriculture (Arborist) pathway in the second year. Courses consist of several mandatory core modules which are common to both pathways, plus several optional (or specialist) modules studied only by those students on the respective pathway. Colleges can offer both or just one pathway, and what they offer depends on staff availability, expertise and interests, equipment and resource availability, and demand from students. In reality, most Level 3 provision is via the arboriculture pathway, as colleges find that there is less student demand for forestry, and the equipment (forwarders, harvesters, etc.) and resources (woodlands) necessary for the forestry pathway are more expensive and/or less readily available from industry partners.

The largest provider of Level 3 (forestry pathway) in England was the Newton Rigg campus of Askham Bryan College in Cumbria, which closed in 2021. This leaves a significant hole in the provision of practical training for forestry students, a fact which was highlighted repeatedly during the many discussions and interviews which informed this report.

Work placements and/or experience is not a requirement of Level 2 or 3 courses, but most students do some form of practical work, either employed or voluntary. Some colleges (e.g. Sparsholt) have a formal industry placement programme in place, whereby they will find a placement for each student for one or two days per week during their studies.

'Licence to practice' qualifications (commonly referred to as 'tickets') are generally not included in FE courses, but much of the teaching of the actual skills is, and students can then pay for the assessment element themselves. This is due to FE funding not being available to qualifications which would 'guarantee immediate employment', and the link between practical licences to practice, such as chainsaw and pesticide tickets, puts these courses into that category. We believe that this may be a potential cost barrier to students considering careers in forestry and arboriculture.

In addition, colleges do not recruit 16-year-olds to courses with a practical element (e.g. chainsaw, pesticide application, etc.) because of the requirement for one-to-one supervision, which is problematic and expensive to provide.

From September 2023, Level 3 courses in Forestry and Arboriculture in England are due to be replaced by a T Level in Agriculture, Land Management and Production, which will have a specific 'Tree and Woodland Management and Maintenance' specialism pathway. T Levels launched in 2020 and are two-year courses which follow on from GCSE's and are equivalent to 3 A levels. They have been theoretically designed in collaboration with employers so that the content meets the needs of industry and prepares students for work, further training or study.

T Levels are based on the same standards as apprenticeships and are approved by the Institute for Apprenticeships and Technical Education (IATE)[28]. It is expected that the total time required for a T Level will be around 1,800 hours over the two years, including a mandatory industry placement of 45 days duration (as a minimum) focused on developing the practical and technical skills required for the occupation. Employers can offer placements as a block, day release or a mix of these, and can discuss sharing part of the placement with another employer if necessary. This is a significant increase of time and industry engagement compared to most current technical education courses.

T Levels attract varying levels of funding from government, depending on the needs of the syllabus, and it has been confirmed that the Forestry and Arboriculture T Level will attract the highest level of funding available, reflecting the practical requirements of the courses - equipment, site visits, small group tuition, etc…, which will enable course delivery to include chainsaw and other 'tickets' for students. Unlike existing Level 3 qualifications, the Forestry & Arboriculture T Level will feature a common syllabus for all students and there will not be individual pathways.

List of Available FE Courses

The following information details all those courses at FE level which include forestry in the formal course title (as of 06/07/21) and has relied on information taken from individual college websites. Other courses such as arboriculture and countryside management may include an element of forestry skills but have not been included here.

The courses listed are 'offered' but may not be provided if student numbers do not meet the minimum required to make the course economically viable to run.

A '?' under 'Forestry Pathway Offered?' column indicates that this information is not available online and/or the college has not responded to our enquiry. Courses at Level 3 have been excluded from this list where the college has confirmed that only the Arboriculture pathway is offered, or where this is indicated in their online information.

Institution	Course(s)	Forestry Pathway Offered?
Bridgewater and Taunton College	• Forestry and Arboriculture Technical Certificate Level 2	Common Syllabus
Capel Manor College	• Arboriculture and Forestry Intermediate Diploma Level 2 • Arboriculture and Forestry Advanced Diploma Level 3 (1st Year)	Common Syllabus ?

[28] https://www.instituteforapprenticeships.org/t-levels/

	• Arboriculture and Forestry Extended Diploma Level 3 (2nd Year)	?
Coleg Cambria	• Level 2 Technical Certificate in Countryside, Forestry and Wildlife • Level 3 Tilhill Advanced Technical Extended Diploma in Forestry and Arboriculture	Common Syllabus Forestry
Grwp Llandrillo Menai (Glynliffon)	• Countryside management (Including Forestry) Level 2 • Countryside management (Including Forestry) Level 3	Common Syllabus Common Syllabus
Cornwall College (Bicton College)	• Technical Certificate in Forestry and Arboriculture Level 2 • Advanced Technical Certificate in Forestry and Arboriculture Level 3	Common Syllabus ?
Derby College	• Diploma in Arboriculture and Forestry Skills Level 2	Common Syllabus
Easton College	• Extended Diploma in Forestry and Arboriculture Level 3	?
Herefordshire, Ludlow & North Shropshire College – (Holme Lacy campus)	• Forestry and Arboriculture Level 2	Common Syllabus
Moulton College	• Forestry and Arboriculture Level 2 Diploma	Common Syllabus
Plumpton College	• Technical Certificate in Forestry and Arboriculture Level 2 • Advanced Technical Extended Diploma Level 3	Common Syllabus ?
Reaseheath College	• Level 3 Advanced Technical Extended Diploma in Forestry and Arboriculture • Technical Baccalaureate in Forestry and Arboriculture	? ?

Sparsholt College	• Arboriculture and Forestry Level 2 Technical Certificate • Forestry Level 3	Common Syllabus Yes
Suffolk New College (Otley College)	• Arboriculture (Forestry and Tree Care) Level 2 Technical Certificate	Common Syllabus

Figure 17 Available FE Courses

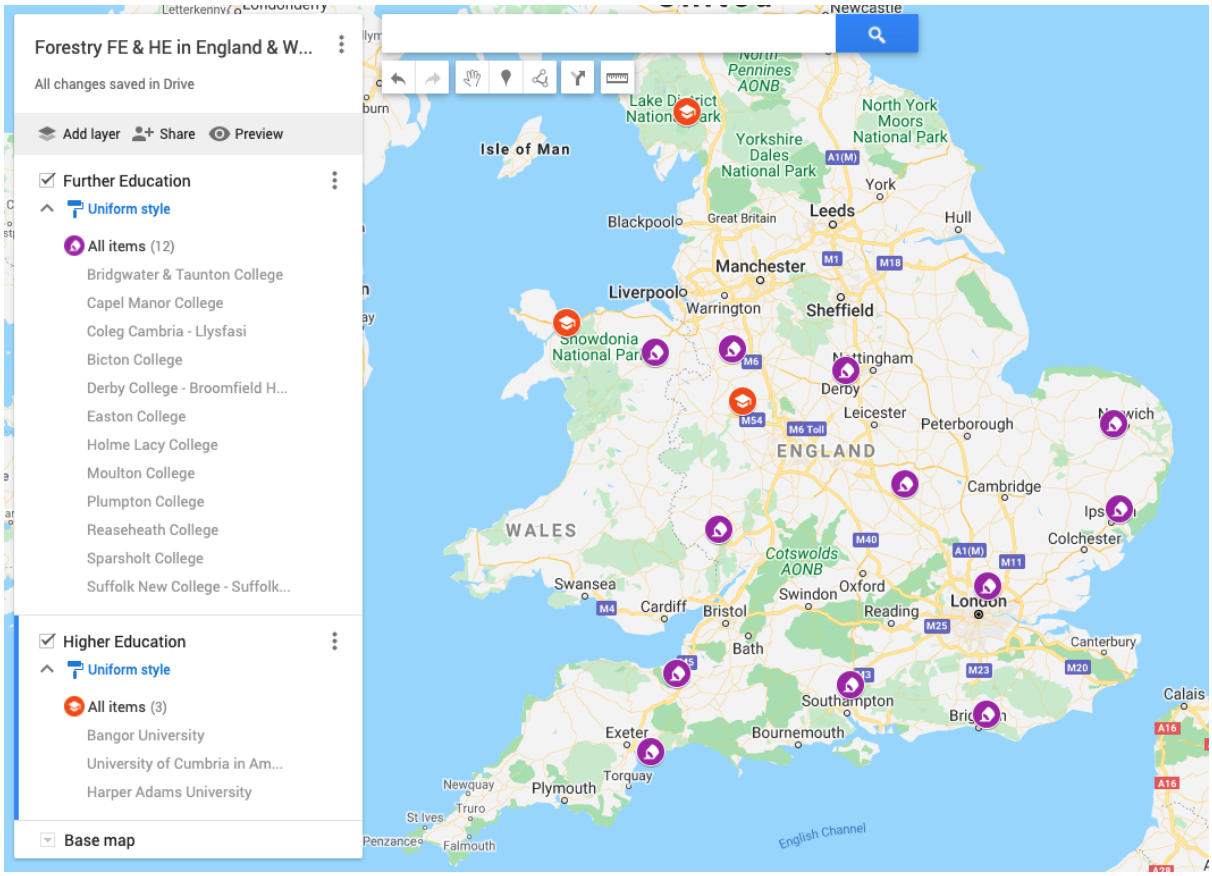

Figure 18: Location of FE and HE Institutions Offering Forestry

Higher Education

Higher Education (HE) qualifications in forestry are provided at three institutions in England and Wales and are accredited by the Institute of Chartered Foresters (ICF) :

- Bangor University
- Harper Adams University
- University of Cumbria

The University of Cumbria forestry course pages on the UCAS website - used by many students as a first port of call when working out where to study - state that their course is *"the only professional forestry BSc (Hons) in England"*[29].

In addition, Coleg Cambria have recently announced that they intend to provide a Foundation Degree (FDSc) in Forestry, in conjunction with Tilhill Forestry, from September 2021. The degree will be accredited by Bangor University, but at the time of writing is not yet open to applications.

The FDSc is essentially the first two years of a BSc and is designed to offer a quicker route to employment for students. It can also offer an option to undertake a further year of study and obtain a BSc. Uptake of the FDSc at Cumbria has not been as great as anticipated (in line with experience of FDSc qualifications in other disciplines), perhaps due to a lack of awareness and understanding by employers of where this qualification sits in general.

In Scotland, the University of Highlands and Islands (UHI) provide a range of forestry HE qualifications, some of which are available through distance learning and part time, and which are delivered to students across the UK. It is also understood that SRUC are developing a Forestry HE course (possibly an FDSc) for delivery at the Barony Campus.

Other HEIs, such as the Birmingham Institute of Forest Research[30], provide opportunities for doctoral postgraduate research in forestry which represents an important route for many graduates and postgraduates from other institutions to extend their education and knowledge prior to entering work, research or teaching positions.

Most of the HE courses at both undergraduate and postgraduate level offer a placement or sandwich year option (mandatory at the Scottish School of Forestry). Placement years offered as part of an undergraduate degree are part of the validated degree programme, whereas for postgraduate degree they are not. Graduates who have undertaken this option appear to obtain employment more easily - often with the same employer, and employers place significant value the experience gained during the placement.

Higher Education providers that offer placements as part of a degree course report that they invest considerable resources in finding and managing them, and while there has not generally been a shortage of placement opportunities for undergraduate students choosing to do one, rising student numbers generally, and in particular those wanting to undertake a placement year, means that institutions are concerned that they may start to experience shortages. Anecdotally, employers appear less keen to provide placement opportunities for postgraduate students. The reasons for this are uncertain but HE staff speculated that it may be due to the

[29] Extracted from https://digital.ucas.com/coursedisplay/courses/08927bb7-f1cc-0589-8af2-a85bb7976df3?academicYearId=2021 on 8 July 2021
[30] https://www.birmingham.ac.uk/research/bifor/index.aspx

perception that postgraduate students have less developed experience or knowledge of forestry, or that as it is not a validated (and therefore, mandatory) part of the degree programme, with the associated funding made available, the university is not involved in managing the placement with the result that a higher burden is placed on the employer themselves.

In addition to work placements, HE providers highly value the involvement of industry in curricula development, teaching and other practical elements. It is thought that this raises the attractiveness of the course to potential applicants, who place an increasingly high priority on the employment prospects for those completing courses.

Several forestry courses are offered as joint degrees with environmental or conservation subjects, which although it broadens the employment prospects for graduates, does bring them into competition with a greater number of other graduates.

HE providers report increased interest in undergraduate forestry courses in recent years, but only to a limited extent (~10-20%). However, as reported in the 2017 Forestry Skills Study, numbers remain considerably higher than reached in the 2000's and early 2010's, and applications for postgraduate courses are significantly higher than in recent years - typically outnumbering undergraduate numbers.

While there is increased interest in forestry HE courses, the rate of increase is significantly lower than other environmental subjects, which have attracted attention because of, for example, media coverage of climate change and the biodiversity crisis. Applications for the Zoology undergraduate degree at Bangor University has seen a 200% increase in applications in recent years, with many applicants citing television programmes and media coverage as the inspiration for their interest.

This reflects an ongoing concern that despite a few notable initiatives, forestry is still largely 'invisible' to school age children (and their parents), and even if they are aware of it, it is regarded as low skilled and low paid. Forestry can also be portrayed in the media in a negative light, with the subject rarely appearing - certainly in national media - outside of the deforestation of the Amazon basin and other environmentally sensitive subjects, while tree planting initiatives are seen more as the domain of conservationists rather than foresters.

Ideas to address this include:

- ensuring forestry is included in the national curriculum within relevant subjects;
- developing engaging materials that can be utilised in the teaching of subjects such as biology, maths, environmental sciences, geography etc.;
- raising the UCAS tariff requirements for forestry courses, which some believe would increase its attractiveness to potential applicants - the current tariff is relatively low and

implies that the courses and careers that result from pursuing forestry are undemanding rather than aspirational. If this was to be done it would be necessary to ensure that alternative paths to HE, such as higher-level NVQs or T-Levels, remain an option in order to ensure that students from different backgrounds are not excluded.

Despite overall increases in numbers, uptake of forestry courses remains relatively low compared to most other HE subjects, even though providers report high levels of employment for graduates, with most obtaining jobs prior to graduation and competition for the 'best' students, in particular those with work placement or wider 'life' experience.

Those we spoke with reported a decrease in movement of students from England and Wales to study in Scotland, and vice versa. This is thought to be due to the different funding models adopted by the nations, and other issues regarding devolution.

Compared to many other HE programmes; forestry is reported as attracting a wider variety of people of different ages and backgrounds and seems particularly popular with career changers. The MSc courses are noted as being attractive to people with first degrees in other disciplines and/or work experience, and who want a career change but cannot afford to finance a three-year undergraduate degree and miss out on three years of employment. For example, Bangor University reports very strong interest in their MSc programmes, with approximately 150 registered participants at any one time (of which ≈ 30% - 40% are overseas students). Unlike the undergraduate programmes, a high proportion are female (≈ 30% - 40%), which provides a greater degree of diversity in what is still a very male-dominated profession. Bangor estimates that of part time students, approximately half are already in the sector but want recognition for their skills and experience, while career changers represent another significant proportion, with a not insignificant number (≈10%) 'just curious'.

One area on which Higher Education institutes are rated is the proportion of their graduates who go on to get a graduate-level job after leaving the course. A graduate-level job is determined by agreed criteria[31], rather than whether the job vacancy asks for one. Forestry is ranked relatively low in these criteria and is effectively not considered a graduate level profession. While the extent to which this might influence a providers' decision whether to invest in forestry courses and/or applicants' interest is thought to be limited, it is indicative of the way forestry is viewed as a profession.

In England, the Forestry Commission have recently engaged a Development Woodland Officer Programme Manager to create an internal training programme for new Woodland Officers. This appointment reflects the organisation's current need to recruit significant numbers of staff and their experience of increasing difficulties in recruiting people with forestry

31 https://www.ons.gov.uk/methodology/classificationsandstandards/standardoccupationalclassificationsoc/soc2020/soc2020volume1structureanddescriptionsofunitgroups#main-areas-of-revision-from-soc-2010-to-soc-2020

qualifications and/or experience. The programme is yet to be agreed in detail, but the outline concept is that new recruits will be offered a two-year contract, during which they will be offered training, and at the end of the two years they may be offered permanent contracts.

Whilst the training will include the organisation's own business needs (e.g. internal processes, grant schemes, etc…) it is also intended that core forestry skills will make up a large part of the programme. The extent to which this training will be internal or external, and whether it will be accredited (e.g. receiving ICF accreditation) is yet to be decided. The scope for trainees to have short work placements with other employers will be investigated and may form part of the programme. The programme will also support existing Woodland Officers who do not have a traditional forestry qualification or background, and the potential for the programme to offer spare capacity to non-FC employers is recognised and has not been ruled out, as has the likelihood that at the end of their two-year development programme, some trainees may decide to leave the FC and gain employment with other employers or become self-employed.

List of Available HE Courses

This list is correct as of 06/07/21 and has relied on information taken from individual university websites. The courses listed are 'offered' but may not be provided if student numbers do not meet the minimum required to make the course economically viable to run.

University	Course(s)	ICF Accreditation
Bangor University	BSc (Hons) Forestry (placement year option)	8
	BSc Conservation with Forestry (placement year option)	6
	BSc Geography with Environmental Forestry (placement year option)	?
	MFor Forestry (8 points)	8
	MSc Agroforestry and Food Security (distance learning option)	5
	MSc Environmental Forestry	6
	MSc Forestry **(**distance learning)	5/6
	MSc Forestry and Environmental Management (TRANSFORM-M)	?
	Sustainable Forest and Nature Management (SUFONAMA)	6
Harper Adams University	BSc Countryside Management	5
	BSc Countryside and Environment Management	5
	MSc Forest Protection with Conservation	6
University of Cumbria	BSc Forest Management (sandwich year option)	8
	BSc Forestry (Top-up)	?

	BSc (Hons) in Woodland Ecology and Conservation (sandwich year and foundation year options)	7
	FDSc Forestry (5 points)	5

Figure 19 List of Available Higher Education Courses

Apprenticeships

Apprenticeships in their current form are a relatively new development in the forestry sector. The basic operating concept is that the apprentice obtains an apprenticeship position with an employer and receives a wage, while participating part-time in formal 'off the job' training with an approved apprenticeship training provider. This training can be provided at the employer's place of work or on a day or block release basis and is usually supplemented with online provision. Off the Job Training normally must be a minimum of 20% of the apprentices' working hours.

Employers report generally high levels of satisfaction with apprentices once they have found a suitable candidate. However, they also report that there are significant barriers to recruitment, including a general lack of training providers/centres providing forestry apprenticeships. It is believed that this is primarily caused by the low level of demand in any one part of the country not making a large enough cohort for it to be viable for training providers to deliver. Furthermore, the requirements placed on the employer by the apprenticeship programme, such as supporting training on the job, administration and cost, can be onerous for the many micro-businesses which make up the great majority of the forestry contracting sector.

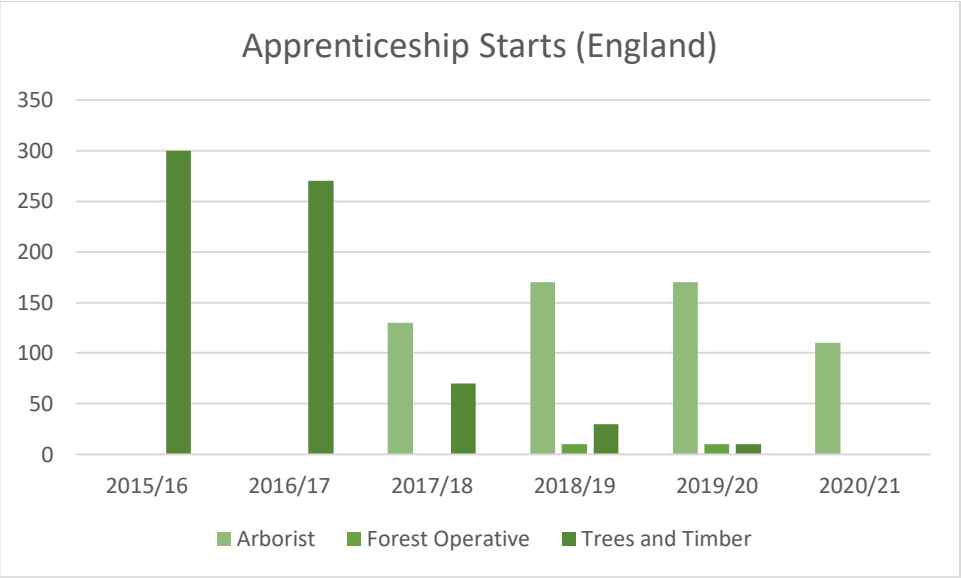

Figure 20 Apprenticeship Starts (England)

Figure 21 Apprenticeship Achievements (England)

Figures 20 and 21 indicate the total number of apprenticeship starts and achievements in England. Prior to 2017, apprenticeships followed the Trees and Timber Framework which included routes for both arboriculture and forestry. Data to show the numbers for separate routes is not available, but an indication of the quantum can be obtained from comparing the numbers for Arborist and Forest Operative starts post 2017.

Since 2017, Forest Operative (Level 2)[32] apprenticeships have been approved for delivery in England. This programme provides for a basic level of core competency, plus a choice of two pathways (i) Establishment & Maintenance or (ii) Harvesting. For those who have not previously attained them, there is also a requirement for functional skills (literacy & numeracy). The employer is also required to fund and enable obtaining certificates, through time off, in areas such as First Aid and on the safe operation of relevant equipment. Apprenticeships at this level must be at least 12 months in duration, and typically take 18-24 months.

Apprenticeship training can be provided either by the employer (sub-contracted to approved suppliers where necessary) acting as an 'Employer Provider', or by a 'Main Provider' which are primarily FE colleges or other training organisations.

Forestry England is approved as an Employer Provider (since 2019) and is the largest employer and trainer of Forestry Operative Level 2 apprentices in England. Since 2013 they have recruited 70 apprentices (prior to 2017 the apprentices undertook the Trees and Timber framework), 35 of whom are still employed by the FC, 16 still in training and others employed elsewhere in the sector. The latest intake of 14 apprentices started in September 2020 with an additional 2 starting recently, who will also receive recreation training such as play and trail

[32] https://www.instituteforapprenticeships.org/apprenticeship-standards/forest-operative-v1-0

inspection and public access and safety as well as all the forestry skills contained within the apprenticeship[33]. Of the first batch of 8 Forest Operative apprentices, 4 have passed their EPA (End Point Assessment), 1 failed, 1 left to work for Forestry & Land Scotland and 2 were promoted within the FC (and consequently had to leave the apprenticeship programme). As an Employer Provider, FE delivers its own training other than First Aid, using external assessors for various courses.

Other main Providers for the Forestry Operative Level 2 in England and their place of delivery are shown in Figure 22.

Provider	Location	At apprentice's workplace	Day release	Block release
Plumpton College	East Sussex	☒	☑	☑
Lynher Training	Cornwall	☒	☒	☑
The SMB Group	Leicestershire	☒	☑	☑
Herefordshire, Ludlow & North Shropshire College	Herefordshire	☒	☒	☑

Figure 22 Level 2 Forestry Operatives - Main Providers

Additionally, a Professional Forester Degree (Level 6) apprenticeship has been approved, and a standard and assessment plan agreed. Discussions are currently under way regarding the level of funding that will be made available, and two providers have expressed an interest in running the programme, subject to an acceptable level of funding being secured. The earliest likely start date for delivery is Spring 2022 and the anticipated typical duration would be three years.

3.6 Short Courses

The sector is heavily reliant on the provision of accredited short courses which fulfil many practical training requirements and contribute substantially to Health & Safety legislation and Forest Industry Safety Accord guidance.

These courses are covered by a great many providers and sub-contractors to provide training, however design and accreditation is largely through one of three organisations: Lantra, City & Guilds (incorporating NPTC) and SEG.

[33] Pers Comms, Forestry England 13/07/21

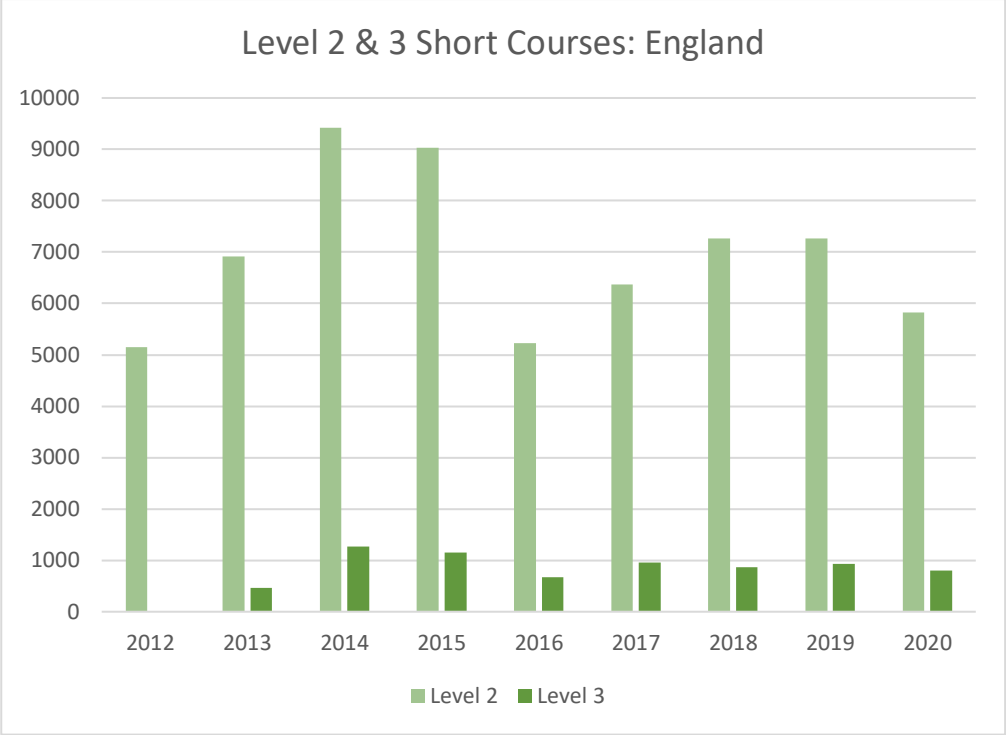

Figure 23 Level 2 & 3 Short Courses: (England)

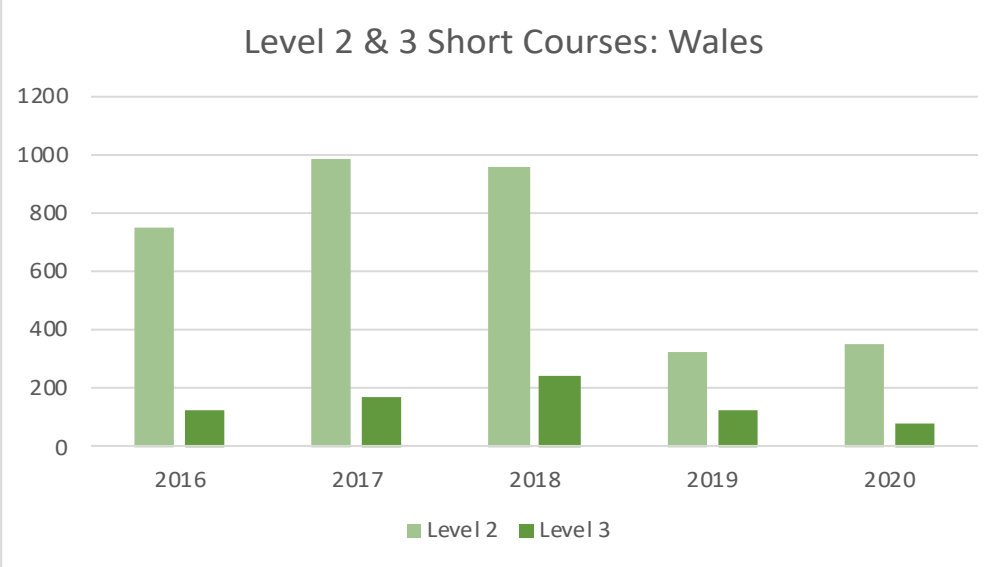

Figure 24 Level 2 & 3 Short Courses (Wales)

Analysis of the results from a simple search of the Ofqal database of Regulated Qualifications for forestry revealed:

- 73 entry level courses; 74 at level 1; 284 at level 2 and 186 at level 3, largely being delivered through short-course provision. A further 15 were at level 4 and above
- Of these 341 were registered as “no longer available” or “no longer awarded”
- 5 were registered as “not yet available”
- There were no short courses dealing with woodland creation

4 Analysis

4.1 Current Labour Market and Supply

The results of the survey describe employers' views on current labour supply. Further evidence of the increased demand for labour within the forestry sector is highlighted in Figure 25 which indicates the numbers of positions advertised through the ICF Vacancy Service for the years 2016 to 2021 (the 2021 data is based on a pro rata calculation from the numbers to date). This reveals a 441% increase over this period.

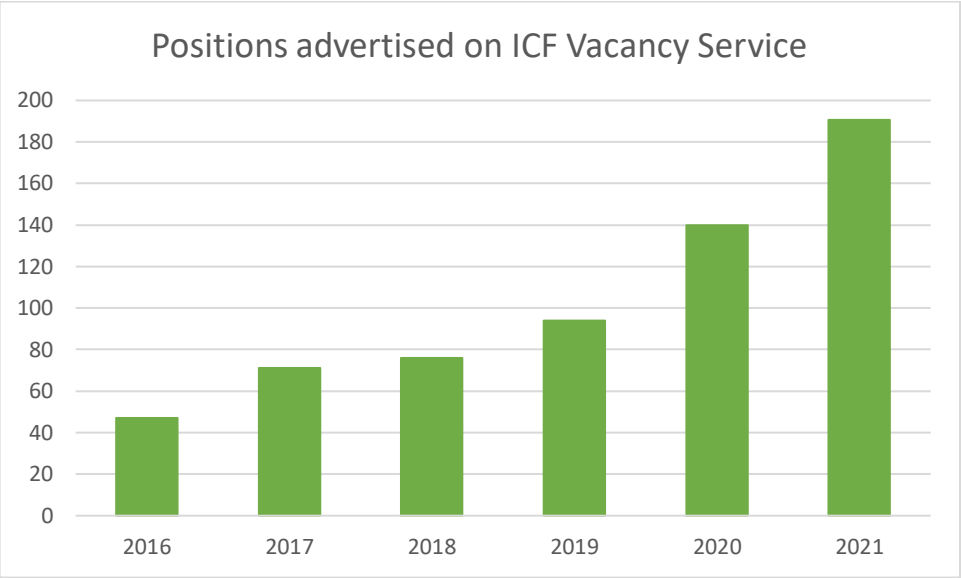

Figure 25 Numbers of positions advertised by the ICF Annually (2016-21)

Whilst there is only weak evidence[34] of links between business size and their ability to grow, the great majority of High Growth Firms (HGF) are in the SME sector and employ over 10 people. This contrasts starkly with the figures in Figure 3 which indicate that the great majority of business within the forestry sector employ 10 or less people. The reasons for this are mixed but it is in part due to the business principal having limited time for business development activities given that they are operationally active. Within these business development activities comes employee recruitment, development and training. Thus whilst business may have significant scope to expand in terms of potential work, they do not have the ability to do so without taking on 'work ready' employees, which, as earlier discussion indicates, is increasingly challenging for them to achieve.

[34] Exeter Business School et al (2014). UK Innovation Survey: Innovative Firms and Growth. BIS, London

4.2 Projected Labour Demand

It should be noted that the majority of information used to review the potential gap between the current workforce and the capacity required to deliver future work programmes is based on a range of forecasts, targets and informed assumptions as limited or no statistically reliable information is available. As such, any numbers which are provided in this report are **indicative** and should only be used as a guide. A more meaningful percentage-increase in workforce requirements is given to suggest the scale of change.

The data is presented separately for each country and for three sub-sectors; Harvesting, Restocking and New Woodland Creation. A total across these sub-sectors is provided for each country.

Within each sub-sector the data is split into three 'roles'; Forest Operative, Forestry Supervisor and Professional Forester. These titles are taken from the Institute of Apprenticeships & Technical Education Occupational Maps[35] and are being adopted for the development of all technical education in England. Whilst they do not necessarily reflect the terminology or actual structure of businesses in the forestry sector, they provide a useful framework against which to record current and projected numbers. In particular, the distinction between Forestry Supervisor and Professional Forester is largely unknown in England and Wales and these figures should possibly be added together. These terms are not in use in Wales but to provide a comparison, the data has been presented in the same format.

England

Harvesting

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	975	1,146	1,192	18	22
Forestry Supervisor	69	81	84	18	22
Professional Forester	34	40	42	18	22
TOTAL	1,078	1,268	1,318	18	22

Restocking

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	135	159	165	18	22
Forestry Supervisor	20	24	25	18	22
Professional Forester	8	9	9	18	22
TOTAL	163	192	199	18	22

[35] https://www.instituteforapprenticeships.org/occupational-maps/

New Woodland Creation

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	78	335	553	327	605
Forestry Supervisor	12	50	83	327	605
Professional Forester	9	40	66	327	605
TOTAL	100	425	702	327	605

Total

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	1,188	1,640	1,910	38	61
Forestry Supervisor	101	155	192	54	90
Professional Forester	52	90	118	74	128
TOTAL	1,341	1,885	2,219	41	66

Wales

Harvesting

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	224	225	180	0	-19
Forestry Supervisor	26	26	21	0	-19
Professional Forester	13	13	10	0	-19
TOTAL	262	263	211	0	-19

Restocking

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	47	47	38	0	-19
Forestry Supervisor	7	7	6	0	-19
Professional Forester	3	3	2	0	-19
TOTAL	57	57	46	0	-19

New Woodland Creation

Role	2019[36]	2025	2030	% +/- to 2025[37]	% +/- to 2030
Forest Operative	3	159	159	n/a	n/a
Forestry Supervisor	0	24	24	n/a	n/a
Professional Forester	0	20	20	n/a	n/a
TOTAL	3	203	203	n/a	n/a

Total

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	273	431	377	58	38
Forestry Supervisor	33	57	50	72	52
Professional Forester	16	36	32	125	105
TOTAL	322	523	460	62	43

Figure 26 Projected labour demand to 2025 and 2030

The Effect of Attrition

Regarding workforce attrition, it has been assumed that an attrition rate due to retirement of 10% by 2025 and 20% (in total) by 2030 could be anticipated because of the age profile of the workforce. This was based on information derived from the surveys; from data gathered from the Institute of Chartered Foresters membership and a number of large employers, providing a % of members/staff who were within 10 years of retirement.

Forecasts of attrition due to other factors (e.g. transfer to other industries) has not been included in any calculations; it is noted that ***A review of the future of the forestry workforce in Scotland*** report used a rate of 20% for this attrition category.

England

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	1,188	1,759	2,148	48	81
Forestry Supervisor	101	165	212	64	110
Professional Forester	52	95	128	84	148
TOTAL	1,341	2,019	2,488	51	86

[36] Due to rounding in the spreadsheet, the area planted in 2019/20 produces figures of 0 for the Forestry Supervisor and Professional Forester roles.
[37] Due to the area of new woodland creation in 2019/20 (80ha), a % uplift has been omitted.

Wales

Role	2019	2025	2030	% +/- to 2025	% +/- to 2030
Forest Operative	273	458	432	68	58
Forestry Supervisor	33	60	57	82	72
Professional Forester	16	37	36	135	125
TOTAL	322	555	524	72	63

Figure 27 Projected labour demand adjusted for predicted workforce attrition to 2025 & 2030

4.4 Further and Higher Education Provision

Further Education

Although several providers at FE level are listed as providing the forestry pathway, we believe that the number who provide the forestry pathway at Level 3 is probably much lower, and although this information is not available on college websites and is not collected centrally, it may be the case that there are as few as 2 or 3 colleges offering forestry training at this level. Although in theory the arboriculture ('arb') pathway should provide some of the core skills required of a forester, and an appreciation of others, it will inevitably be limited by the resources which the college can provide and degree of interest or expertise of the staff.

Those FE colleges we spoke with have reported a slight increase in applications for forestry courses, but not to any significant level. Arboriculture courses remain more popular (by a ratio of around 2:1), because arb is more visible to students, more attractive and provides greater employment opportunities (at least in much of lowland/urban England). The closure of Newton Rigg has further limited the available options at Level 3 and means that in England there is no identifiable provider of forestry FE in the Midlands or north of the country. This is particularly important because, unlike HE, most FE students are aged 16-18 and continue to live at home and commute to college, and thus it limits the options for most students.

Interviewees reported that good quality vocationally skilled FE staff are in great shortage, with most colleges having difficulty in recruiting suitable people. This is thought to be due to the nature of the industry and those working in it, i.e. people want to be 'doing things' rather than 'talking about them'. This may also go some way to explaining why there are fewer forestry pathway courses than arb, i.e. foresters are fewer and even more difficult to recruit to FE teaching roles.

Some of those interviewed/surveyed felt that the introduction of T Levels would be likely to exacerbate the issues highlighted above because a common syllabus has to be delivered (i.e. arboriculture and forestry), but as many colleges have no dedicated forestry staff or resources, and they would be too expensive to acquire for such small courses, they may consider it not viable to deliver the forestry components. Furthermore, the T Level syllabus requires only an *"appreciation of"* many forestry skills, whereas it requires actual experience of arboriculture

skills. This is thought to be due to the cost to the college to provide them, e.g. the cost of harvester training/experience versus experience of a MEWP or woodchipper.

Most employers reported dissatisfaction with the availability and quality of students coming out of FE colleges at present, and many stated that new entrants lack the required technical skills, an appreciation of the actual forestry work environment and an understanding of commercial imperatives in forestry. Very little practical experience is held by most students, and this shows in their lack of 'work readiness', and the more technical skills such as skylining, harvester operation, etc…, are virtually non-existent in FE students, and so have to be taught 'on the job' at significant cost to the employer. This presents a barrier to growth for typical forestry businesses, as the availability of adequately trained new employees holds back their ability to recruit and expand and creates a feedback mechanism – businesses are put off expansion because of the shortage of suitable new employees, which in turn sends signals to potential forestry trainees that the sector is stagnant and offers few employment opportunities in practical roles compared to other trades.

T-Levels do have the potential to improve the quality of students because industry placements are compulsory and the overall level of contact hours and funding is set to increase. However, they are yet to be introduced for forestry and arboriculture, and when they are, will take time to 'bed in' and establish themselves as a route to forestry employment. Their success also depends on a suitable number of work experience opportunities with appropriately trained mentors. Due to these factors, it is likely to be 2025 at the earliest before their impact can be assessed.

It is considered likely that colleges not wanting to or being able to recruit 16-year-olds may be a cause of early skills 'leakage' from the sector, i.e. a 16-year-old who was keen to pursue forestry as a career may pursue an alternative career choice because there isn't a local option, and they are keen to leave education. It is possible that some of these will undertake an apprenticeship instead, where they are about to undertake practical work because they are supervised one to one (in theory), but that also relies on local provision and businesses being willing to take them on.

The requirement for students to study basic skills (maths and English) alongside their chosen specialism is seen as a limiting factor for many of the courses. This is because these basic skills are often taught on a fixed regular timetable, which then precludes the student from taking blocks of practical work or work experience.

During our research we reviewed several innovative models for provision across Europe and further afield[38]. Further investigation of these could provide lessons for England and Wales.

[38] e.g. https://www.stuff.co.nz/waikato-times/news/300363940/forestry-course-guarantees-graduates-work-as-sector-struck-by-shortage

Higher Education

Although applications for forestry courses at HE level are increasing, this appears to be a time of flux for the institutions concerned. The University of Cumbria has recently lost two members of lecturing staff, and Harper Adams has lost its only dedicated forestry member of staff (and are thus not offering their postgraduate courses for 2021 entry). While both institutions appear keen to continue with provision, the reality is that forestry provides relatively low numbers of students compared to most other subject areas and is therefore likely to be an area of low priority for investment in what are essentially financially independent institutions.

The range of courses offered, including MSc's, 'top-up' BSc's and FDSc's reflect that forestry is currently often a second career choice for many people, or a late specialism for those with more general first degrees.

The introduction of an FDSc at Coleg Cambria, and potentially similar provision at SRUC Barony, offers further variety and extent of provision, although the poor take up for the FDSc at Cumbria does not bode well for these courses. The employer links at Coleg Cambria may mean that the course is perceived differently by students, and therefore receives greater interest.

As reflected in the 2017 Forestry Skills Study, employers report dissatisfaction with both the availability and 'work readiness' of graduates. This includes both their technical knowledge, such as silviculture or mensuration, and their wider business skills. Whether this is due to general changes in society, the curricula and/or teaching at HE providers, or the expectations of employers in an ever-changing world, is difficult to ascertain. There are also those who say that it is not the role of institutions to make graduates work ready, and that this is (and always has been) the role of employers. However, it is not an unusual phenomenon amongst graduate employers[39] and this points towards wider societal shifts rather than the teaching of forestry at HE institutes. What is clear is that graduates who have participated in meaningful work placements or have prior 'life experience' (i.e. are career changers), are found by employers to be more ready to make positive contributions to organisations, and to require less supervision and on-the-job training.

It is becoming increasingly common for forestry employers to engage graduates from non-forestry courses, and that these are not just subjects with similar core skills, such as land management or geography, but that graduates from marketing, business studies and traditional humanities courses are being employed as well. This reflects a growing feeling amongst employers that what they need is people with the 'right attitude' and 'work ethic', and they (the employer) can teach them the technical skills. Many employers - both small and

[39] https://luminate.prospects.ac.uk/a-mixed-bag-employer-perspectives-on-graduate-skills

large - now have their own graduate training programmes covering core forestry subjects or enable employees to attend part time distance learning courses. These 'conversion programmes' are in the main developed in-house, and reflect the employers own particular business needs (and hence are not transferable), but there remains a significant opportunity to develop nationally recognised and delivered programmes using the existing resources which HE providers have developed for distance learning or part time courses.

This approach to recruitment and development reflects a wider move to 'experiential' or vocational routes which many professional institutes are increasingly adopting, with the competency and commitment of applicants being the defining issues rather than qualifications. In addition, whilst this trend pre-dates Covid 19 and the shift to remote working and study patterns that were enforced by the pandemic, it reflects the increasing demand for blended learning models which provide flexibility for learners, for many of whom financial or personal circumstances mean that the traditional route to a qualification is no longer preferred or possible.

Apprenticeships

Apprenticeships are potentially a valuable means of contributing to the provision and expansion of a forestry workforce. However, for them to make a meaningful contribution in terms of scale, means need to be found to achieve a way for the micro-businesses which typify forestry enterprises to participate in, or benefit from, the programme. There are three possible models for this: -

- for an organisation to take on the role of recruiting and employing apprentices who are then placed with businesses which can provide a range of work experience. This has the benefit of removing from small businesses the administrative burden, risk and financial commitment of employing apprentices.
- for an organisation to take on the role of recruiting suitable apprentices but for them to be employed by the business, who are supported in doing so by the larger organisation. This support could take the form of a direct financial supplement, or advice and guidance in the issues concerned.

Both of these models have been adopted by various organisations in other sectors in the UK, such as the Yorkshire Dales Millennium Trust[40].

- For an organisation to recruit, employ and provide work for an apprentice for the duration of their apprenticeship, but at the end of the period for them to complete their contract and be expected to find employment elsewhere in the sector.

[40] https://www.ydmt.org/apprenticeships

Several businesses expressed a preference for this option, and for Forestry England to take on this role. Forestry England have previously indicated that this is not a role for which they receive funding and are focussed on their own business needs and would thus be unable to do so.

Wider geographic provision across the country is certainly required, in order that young people (who by and large do not want, or who are unable to travel far to a training provider) who wish to undertake a forestry apprenticeship can do so close to their home.

Another initiative which might be of benefit would be to instigate a 'pre-apprenticeship' model such as that used in Scotland by machinery rings[41]. Through this, new entrants undertake an induction programme at an FE college and then gain practical experience while achieving a 'Certificate of Work Readiness' during their 26-week, paid work placement. This has the benefit of ensuring that young people are ready for work and the subject matter is one that they wish to commit to undertaking an apprenticeship in.

4.5 Short-course provision

There are a number of challenges facing short-course provision. These courses are largely aimed at mandatory or recommended qualifications, often practical or H&S targeted activity.

In the view of some organisations surveyed and interviewed, many training providers only offer the minimum level of training necessary to meet guidelines/legislation and whilst this keeps the sector working it may not contribute to a more strategic increase in skill levels across the industry. An example of this could be a review of chainsaw courses to ask what skills are not only needed to meet current requirements but what the future of chainsaw work maybe and what can be integrated into current courses over and above the minimum requirements.

Often this training is undertaken ad-hoc when certificates are due to expire or new staff are taken on. This leads to a level of unpredictability for providers and difficulty in programming courses. This is coupled with the high costs of running courses that often need small ratios of trainees to qualified trainers. The outcome is that not only is difficult to know what courses will happen when but, strategically, it is difficult to know what the actual provision is on an annual basis.

Though many of these courses are legal requirements or recommendations there was no mention of The Forest Industry Safety Accord (FISA) by any interviewee or survey respondent. It is unknown whether this is because FISA is seen as a normalised part of the sector without need to comment or if it's work is strategic enough to be under the radar of most businesses.

[41] https://www.thescottishfarmer.co.uk/default_content/19412563.new-batch-pre-apprentices-embark-career-agriculture/ and https://www.scotland.lantra.co.uk/land-based-pre-apprenticeship

Though there are a good number of accredited courses offered (Lantra alone offer 30 forestry and arboriculture courses) spanning most of the skills needed in forestry it is significant there are none offered on woodland creation. This is potentially a big opportunity for training providers to boost short-course provision, given government targets for new planting. It goes alongside other areas identified for development in the survey that lend themselves to short courses including survey skills, species choice, IT in the field and woodland maintenance.

The difficulty of finding courses was mentioned by a number of respondents. With many and varied training providers there is a lack of a centralised one-stop-shop to find basic short courses such as chainsaw training that every contractor will be looking for. Focus on Forestry First has gone some way to addressing this in Wales and maybe a model (or part of a model) that could be rolled out nationally.

4.5 Informal Training

This report has focussed on qualification-based training, however there is a burgeoning area of organisations running informal courses that are skills, training and CPD based. These are very often high-quality and very often attract large numbers of people but are not captured. A small selection of this type of course include:

- Royal Forestry Society on-line and in-person courses;
- Confor/RFS/ICF members field days;
- Specialist membership groups such as the Wessex Silvicultural Group;
- Woodland management courses run by the likes of Cumbria Woodlands and Coed Cymru;
- The Patsy Wood scholarship opportunity for graduates;
- Very focused technical courses such as the CCF “marteloscope” training;
- Groups such as Woodlab/Tree Radicals deliberately taking an approach outside the normal educational conventions to attract new types of people.

There are almost certainly more people engaged in these types of skills development than in formal qualification-based courses. It is very difficult to capture the level of skills development attributable from these courses. Some deliberately fall outside the formal qualification game; some are run through passion for the subject and have no wish to go through the hurdles of being part of a formal system; some have just not thought about the possibility of being part of a wider system.

5 Recommendations

5.1 Meeting Future Demand

Forestry as a potential/worthwhile career is still, by and large, invisible to the average school pupil, parent or teacher, despite many worthy initiatives delivered over many years by various organisations. The reality is that, as a sector, forestry has not had the scale or profile of areas of the economy like engineering, biosciences, financial services, or even farming, and consequently has failed to develop sufficient scale and momentum to be noticed or prioritised by government and receive meaningful investment in growing the resource base, skills, employment levels and contribution that forestry can make to the UK economy and society.

It is likely, however, that the current demand for carbon and climate change related tree planting will increase the profile of the sector, and **this could best be harnessed for the long- and short-term benefit of the industry through the inclusion of forestry as part of the school curriculum.** Not as a subject in its own right - which is unrealistic - but as a component of suitable GCSE and A Level course, such as geography and biology. This, coupled with improved careers material and facilitating links between industry and secondary education, would raise the visibility of the forestry sector with the potential future workforce, and at the very least would help educate the wider population about the role of modern multi-purpose forestry – for example how sustainable woodland management in the UK can help decrease the deforestation of the Amazon basin.

The research highlighted the need for enhanced silvicultural knowledge alongside business and practical skills, and that this was both a problem now and one which was likely to get worse into the future. Providing future foresters with the broad suite of silvicultural skills required for management was highlighted as a particularly acute future problem given the continued reduction of FE and HE provision and quality. **We recommend that a concerted and coordinated effort be made to increase the core silvicultural knowledge taught across all levels of forestry education, as it is critical to providing forest managers with the skills and knowledge needed for the industry to grow.**

The increased importance of non-forestry skills came up repeatedly in interviews, and the general lack **of business and commercial acumen, digital skills, marketing/promotional skills, and those of communication and engagement were a particular focus. These should be core attributes of a modern workforce in any industry, and there needs to be a mechanism for both upskilling the existing workforce as well as making these skills and mind-sets core to basic forestry training.**

5.2 Recruitment & Retention

There was great concern that the supply of skilled workers into the sector could not be met to enable planting targets are to be reached, although this was coupled with a general pessimism/realism that the targets would not actually be met anyway, in which case the workforce would be adequate and so a 'business as usual' workforce might suffice. It is obvious that there is a lack of clarity in how much planting will take place, and where, and that future harvesting needs are also unclear, and that is leading to some reluctance amongst employers to find or train new staff. **A clear message from government is required to the forest industry about its commitment to these planting targets to give confidence to the industry.**

There is an obvious need for a structured national conversion programme for people who have a qualification and/or experience in another subject/sector but have made a mid-career change to the forestry sector. Many companies reported employing such people and have their own graduate and other training schemes which have been developed in house to meet the needs of these late entrants. Likewise informal courses provided by many organisations could be captured in some way and come into a national training programme.

There is a clear opportunity to develop a coordinated national accredited scheme so it can be offered more broadly. Much of the material required to deliver this training already exists, and a pool of accredited trainers could be drawn from within industry to provide the necessary courses. It would be worth investigating the possibility of a simple points-based system that allows employees to accrue points towards a qualification and that providers can easily get accredited to offer those points through courses. A similar approach is taken in other parts of the economy, such as the building services industry, where the professional body - CIBSE (Chartered Institute of Building Services Engineers) - recruits trainers and delivers courses[42] throughout the year in the form of quality controlled, CPD-point eligible peer-to-peer sessions.

5.3 The Role of Further & Higher Education

Forestry at FE level is not available to most of the population of England and Wales, and what is available is generally regarded by those interviewed as not 'fit for purpose'. This is not a new problem, and in part reflects the wide range of 'purposes' which it needs to meet. While it was highlighted in the 2017 RFS Forestry Skills Study for England and Wales, the recommendations of this report regarding FE provision have yet to be effectively actioned. These include (numbers refer to 2017 report):

[42] https://www.cibse.org/Training-Events/Call-For-Trainers

3. Improve provision at FE level

4. Improve liaison at HE level

6. Investigate ways that small and micro businesses can take on apprentices

9. Improve the technical skills of mid-grade (graduate) new entrants

10. Increase the number of skilled planting contractors

11. Consider ways to include experienced operatives in training provision

The industry recognises that there is an ongoing problem with FE provision and needs to come together with FE providers to address it in a structured and well-resourced manner. **The timescales and resources available to this project have precluded a fuller review of this issue, but we recommend that a full in-depth review of FE provision and how the needs of industry can be met.**

In a mature and growing sector there should be very clear routes through FE/HE training that are easily accessible, widely available and focussed. The lack of providers in both FE & HE is perhaps of most concern.

We recommend much closer working with industry, perhaps through combining organisations' internal training structures with FE/HE in the way Tilhill have done. This would allow recruits and employers a degree of flexibility in how training is undertaken and allow for transferability between employers.

The quantity and quality of applicants to HE needs to be increased. The very clear increased demand for graduates is not being reflected in increased applications for places on forestry courses. This is a matter of increasing interest in forestry as a career including appropriate marketing from the sector. Conversely, we need to engage HE institutions offering environmental & land management courses to see the benefit in offering forestry & tree focussed courses. Developments at Cumbria, Bangor & Harper Adams need to be tracked and engaged with to make sure they get the employer engagement they clearly value and produces 'better' graduates.

Given the scale of the challenge which the UK is facing, we believe that nothing short of radical and innovative action is now required if England and Wales are to meet their woodland creation and sustainable woodland management commitments. For example, it could be argued that a National Forestry Training College or equivalent body could be established to support the delivery of the establishment workforce to help meet the very ambitious targets which have been set for tree planting, and then provide the forest managers and workers that these new woodlands and forests will require as they grow and

mature. Such organisations are relatively common in other countries, with notable examples including the Centre Forestier in Provence[43] and the FAST Forest Training Centres in Traunkirchen[44] and Ossiach in Austria[45]

5.4 The Role of Other Providers

The one potential bright spot is in apprenticeships, but due to the structural make-up of the industry (micro businesses who don't want/can't deal with the administration & cost) and a lack of colleges providing the training, it is effectively unavailable to most. **We recommend that consideration be given to an employing body (or bodies) taking on the role of employing the apprentice, the training etc..., and placing them with a contractor for the work experience.** This is not dissimilar to the way Innovate UK Knowledge Transfer Partnerships work to be able to give small businesses access to graduates for 1-3 years working solely for the business.

We recommend that there is a greater degree of joint working between training providers and in-house training offered through organisations' internal programmes. This could be in assessed or formalised modules that could build up to appropriate qualifications.

Confor have been looking at the possibility of a major initiative in training provision from a single centralised site. This type of initiative should be supported as its single forestry focus means appropriate training is likely to be given. It is likely that this centre will be focussed on upland type planting and a second site could be considered that focussed on lowland forestry.

5.5 Other Recommendations

Future funding schemes for training need to recognise the challenges presented by the structural weaknesses inherent in an industry based on high proportions of micro-businesses and subcontracting arrangements that often cannot afford additional training to develop the business. Without this the status quo is unlikely to change, employers will provide basic needed "ticket" courses for employees and ignore skills development. Without skills development beyond the basic needs, the business and the sector is unlikely to develop to its full potential.

We should examine how training and skills are provided in other sectors to deliver improvements in our own skills and employment provision. The construction industry was highlighted a number of times, as was agriculture. This is not just about how training is

[43] https://www.centre-forestier.org/?lang=fr&titre=page-eng&rub=1&srub=12&body=19
[44] https://translate.google.com/translate?sl=de&tl=en&u=https://www.fasttraunkirchen.at/index.php/unser-haus
[45] https://translate.google.com/translate?hl=&sl=de&tl=en&u=https%3A%2F%2Fwww.fastossiach.at%2F

undertaken but about an ethos of skills development within construction that sits within a framework of safe working and Construction Design & Management practices. This applies to the very practical such as safe lifting practices as well as development of digital technologies that make working both more efficient and safer.

Good progress has been made on many of the recommendations in the 2017 report however some have come again as being impediments to the development of the sector.

In researching this report it has become apparent that our knowledge of the size, employment and turnover of the sector is largely based on very broad estimates. There are, at the time of writing of this report, three pieces of work are being undertaken looking at employment and economies within the sector; two of these are using on-line surveys, all three looking at employment and skill levels. **We recommend that a longer-term programme is implemented that is a 4-5 yearly census of the entire sector**. This would provide a greater likelihood of responses from organisations and a single more accurate source of continued data using a common set of assessment criteria. To date most surveys have concentrated on traditional areas of forestry: establishment, maintenance, harvesting and primary processing. This census should be expanded to include "new" areas, especially social forestry, ecologically driven forestry, agroforestry and urban forestry which, together, form a substantial component of the sector.

Appendices

1. Glossary and abbreviations

ABR	Annual Business Review (carried out by ONS)
FE	Further Education (education typically delivered at age 16-18)
HE	Higher Education (education typically delivered at 18+ and at a university)
ICF	Institute of Chartered Foresters
MEWP	Mobile Elevated Work Platform
ONS	Office for National Statistics
SIC	Standard Industrial Classification of Economic Activities
UHI	University of the Highlands and Islands

2. Survey and Interview full results.

See separate document

3. Workforce modelling spreadsheets

See separate document