UKCES

**UK COMMISSION FOR
EMPLOYMENT AND SKILLS**

Agriculture, Forestry and Fishing: Sector Skills Assessment 2012

Briefing Paper
October 2012

Intelligence › Investment › Impact

Agriculture, Forestry & Fishing: Sector Skills Assessment 2012

Lantra

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UK Commission for Employment and Skills

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Foreword

The UK Commission for Employment and Skills is a social partnership, led by Commissioners from large and small employers, trade unions and the voluntary sector. Our ambition is to transform the UK's approach to investing in the skills of people as an intrinsic part of securing jobs and growth. Our strategic objectives are to:

- Maximise the **impact** of employment and skills policies and employer behaviour to support jobs and growth and secure an internationally competitive skills base;

- Work with businesses to develop the best market solutions which leverage greater **investment** in skills;

- Provide outstanding labour market **intelligence** which helps businesses and people make the best choices for them.

The third objective, relating to intelligence, reflects an increasing outward focus to the UK Commission's research activities, as it seeks to facilitate a better informed labour market, in which decisions about careers and skills are based on sound and accessible evidence. Related, impartial research evidence is used to underpin compelling messages that promote a call to action to increase employers' investment in the skills of their people.

Intelligence is also integral to the two other strategic objectives. In seeking to lever greater investment in skills, the intelligence function serves to identify opportunities where our investments can bring the greatest leverage and economic return. The UK Commission's third strategic objective, to maximise the impact of policy and employer behaviour to achieve an internationally competitive skills base, is supported by the development of an evidence base on best practice: "what works?" in a policy context.

Our research programme provides a robust evidence base for our insights and actions, drawing on good practice and the most innovative thinking. The research programme is underpinned by a number of core principles including the importance of: ensuring '**relevance**' to our most pressing strategic priorities; '**salience**' and effectively translating and sharing the key insights we find; **international benchmarking** and drawing insights from good practice abroad; **high quality** analysis which is leading edge, robust and action orientated; being **responsive** to immediate needs as well as taking a longer term perspective. We also work closely with key partners to ensure a **co-ordinated** approach to research.

Sector Skills Assessments (SSAs) are key sources of authoritative and focused sectoral labour market intelligence (LMI), designed to inform the development of skills policy across the UK. They combine "top-down" analysis of official data with bottom-up intelligence to provide a consistent, comparable and rich understanding of the skills priorities within different sectors of the economy, across the four UK nations. This sector skills assessment report for the agriculture, forestry and fishing sector, was produced by Lantra, the Sector Skills Council (SSC) for the land-based and environmental industries. Lantra is committed to helping land-based and environmental businesses access the training, qualifications, skills and workforce development that are essential to business success.

Sharing the findings of our research and engaging with our audience is important to further develop the evidence on which we base our work. Evidence Reports are our chief means of reporting our detailed analytical work. All of our outputs can be accessed on the UK Commission's website at www.ukces.org.uk

But these outputs are only the beginning of the process and we are engaged in other mechanisms to share our findings, debate the issues they raise and extend their reach and impact. These mechanisms include our *Changing Behaviour in Skills Investment* seminar series and the use of a range of online media to communicate key research results.

We hope you find this report useful and informative. If you would like to provide any feedback or comments, or have any queries please e-mail info@ukces.org.uk, quoting the report title or series number.

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Deputy Director

UK Commission for Employment and Skills

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Executive summary

This is the Sector Skills Assessment (SSA) for the agriculture, forestry, fishing and veterinary activities sector. The aim of the report is to provide authoritative labour market intelligence (LMI) for the sector in order to inform the strategic decision making of UK Government and devolved governments in the development of employment and skills policy.

The agriculture, forestry, fishing and veterinary activities sector is important to the UK economy as it is responsible for the supply of food and contributes to the care of our physical environment, while contributing significantly to the low carbon, sustainability and climate change agenda.

Chapters two to five are historic in nature. We present evidence on the economic performance of the sector; the characteristics of the workforce; the demand for, and value of, skills to individuals, employers and the economy; as well as evidence on skill mis-matches affecting the sector. Chapters six to eight are forward-looking. We present evidence regarding future drivers of change and their skills implications. We conclude the assessment with a set of priority areas for action.

Current performance of the sector

In 2008, agriculture, forestry and fishing generated £9.7 billion of Gross Value Added (GVA), contributing around one per cent of national GVA. The economic performance of the sector has improved since the recession and the sector is an important contributor to the food chain. In 2009, the food chain[1] generated an estimated £85 billion of GVA, with agriculture and fishing contributing eight per cent, or an additional £6.8 billion to this total[2]. Imports of food, feed and drink in 2009 amounted to almost £33 billion in real terms at 2009 prices, and exports around £14 billion[3].

Official statistics on productivity tend to be poor measures for the sector. Data for the agriculture industry shows that the sector has become more productive in recent years, but this is more due to increasing output prices rather than underlying gains in total factor productivity.

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[1] Including agriculture, food and drink manufacturing, food and drink wholesaling, food and drink retailing and food non-residential catering
[2] Source: Annual Business Survey (ONS) and Agriculture in the UK (Defra, 2010a)
[3] Source: Overseas Trade Statistics (OTS), based on data collected by HM Revenue and Customs. Data shown has been adjusted to 2009 prices using the all items RPI index (1987 = 100) (Defra, 2010a).

There are 145,000 business establishments and 406,000 individuals employed in the sector. However, this is likely to be an underestimate, and considering temporary working and second jobs, it is estimated that the sector generates at least a further 50,000 jobs.

The sector is principally made up of businesses with between two and four employees, with more workers self-employed than employed. The exception is in veterinary activities where the size profile is more balanced.

The workforce

The sector workforce is characterised by high levels of self-employment (49 per cent of the workforce). Seasonal working, temporary foreign migrant labour and individuals with second jobs are also prevalent in the sector.

Within the agriculture, forestry and fishing sector volunteering is particularly important. Volunteering is often considered to involve working in organisations that recruit volunteers for specific roles, and is prevalent in environmental conservation (organisations including British Trust for Conservation Volunteers and the National Trust), fisheries management and forestry industries (organisations for coppicing, heritage skills and the Forestry Commission). The sector also has around 10,000 unpaid family workers representing three per cent of the workforce, higher than the national average of 0.3 per cent.

In terms of the gender make-up of the sector, males significantly outnumber females in the sector; however this is not consistent across all industries as veterinary activities has more females than males employed.

The workforce is ageing, with 55 per cent of individuals in the sector aged over 45, compared with 38 per cent across all sectors. The number of individuals in the sector aged over 60 increased from 57,000 in 2002 to 84,000 in 2010. The under-25 age group declined over the period by 1.9 per cent per annum on average compared with one per cent growth across the whole economy.

The white ethnic group accounts for 99 per cent of the workforce. Skilled trades, elementary and managerial occupations are most prevalent in the sector reflecting the practical/vocational and entrepreneurial nature of the sector.

Demand for, and value of, skills

The agriculture, forestry and fishing sector is highly skilled, but the skills of the workforce are not fully reflected in terms of formal qualifications as recognised in national qualification frameworks. There is an inherent mis-match between the skills required to perform roles in the sector and the qualification requirements for entry into the sector.

A higher percentage of people working in agriculture, forestry and fishing have no formal qualifications compared with those in other sectors of the economy. Furthermore, there is a prevalence of lower level (Level 1 and 2) over technical and higher level (Level 3 and Level 4 or higher) qualifications in the agriculture, forestry and fishing sector. However, the proportion of Level 4+ qualifications has increased by eight percentage points and intermediate qualifications are increasing faster than national averages.

Around 53 per cent of sector employers provided some form of on- or off-the-job training in 2011, compared with 59 per cent across the whole economy. This represents the third lowest sector, out of 15, in the economy.

Employers in the sector invest more in informal High Performance Working (HPW) practices rather than more formal arrangements. The sector has below average proportions of employers producing training plans and possessing training budgets.

The relatively low levels of training can be explained by the high capital intensity and simple product market strategy, as well as high levels of risk and uncertainty, high variability of income, regulatory and legislative requirements, high travel costs due to geographic remoteness and lack of ICT infrastructure.

Extent of skills mis-match

There are relatively more hard-to-fill vacancies (HtFVs) and skill shortage vacancies (SSVs) in agriculture, forestry and fishing compared with the economy as a whole. The main cause of HtFVs is attracting interested applicants and the most common impact of HtFVs is increased workload for other staff.

The proportion of employers with staff retention problems was similar to the UK average. The majority of employers stated that job specific skills were lacking in their workforce, but the largest deviations from the overall economy averages were in team working skills, technical or practical skills and problem-solving skills.

Skill gaps are less prevalent in the agriculture, forestry and fishing workforce than in the economy as a whole. Gaps are greater in Scotland and England than Wales and Northern Ireland. There are below average levels of underemployment in the sector.

Drivers of change and their skills implications

The sector has an ageing workforce, which risks tacit skills being lost and raises the importance of career progression and CPD for the existing workforce. A growing global population and concerns over food security are increasingly important policy issues which place additional importance on the sector.

The sector will increasingly face both threats and opportunities from climate change. The agriculture, forestry and fishing sector is increasingly seen as providing benefits and services over and above the production of commodities. Environmental regulation such as the control of water and emissions are key areas where science and technology skills will increasingly be required. Animal Health and Welfare (AHW) regulations and CAP reforms are strong drivers of change, increasing pressures on farm balance sheets and training budgets.

The sector is likely to be more focused on science and technology due to the pressures of climate change, food security and demographics as precision agriculture and sustainable intensification are implemented.

Ethical consumerism is generating market opportunities for farmers placing greater importance on effective leadership and management. Drivers do not tend to differ by nation, although there are some differences related to the structure and relative political importance of the sector.

Future skills needs

Our analysis of skills needs emphasises the requirement for business and management skills such as business planning, project management and risk management.

Knowledge and appreciation of the sciences and application of ICT are key future skills needed to deliver sustainable intensification and precision farming, particularly in the face of issues around food security and growing global populations.

The sector is expected to have greater shares of employment in managerial, professional and technical occupations, mirroring the broad trends across the UK economy. Skilled trades are expected to decline in volume as the sector becomes increasingly professional.

The sector deviates from national trends in the proportion of elementary occupations expected, which is set to decline in the sector in the context of increasing shares nationally. However, replacement demand remains high with an ageing population, which will have a significant influence on skill requirements.

Priority areas for action

High priority (crucial) skills for immediate action include setting up structures to demonstrate, record and promote the professionalisation of the sector, succession planning for small businesses, environmental management skills, risk management, scientific knowledge and technology transfer and better ICT skills.

Other high priority (but not crucial) skill needs are marketing, market analysis, planning and project management, woodland management, crop agronomy and pest and disease identification and control, as well as practical conservation skills.

Medium priority skills include public engagement, formal recognition of technical and paraprofessional roles, negotiation and influencing skills, as well as customer care, communication and presentation skills.

To conclude, the sector skills assessment has brought together many issues and challenges facing the agriculture, forestry and fishing sector. We have discussed the changing skills mix as job roles are redefined and broadened given the need for diversification and compliance to legislative, technological and climate change needs.

1 Introduction

1.1 Purpose of report

The aim of this report is to provide authoritative labour market intelligence (LMI) for the agriculture, forestry and fishing sector in order to inform the strategic decision making of the UK Government and Devolved Administrations in the development of employment and skills policy. It is one of 15 UK Sector Skills Assessment (SSA) reports produced by Sector Skills Councils[4] and the UK Commission for Employment and Skills.

SSAs combine top-down data from official sources with bottom-up sectoral intelligence to provide a consistent, comparable and rich understanding of the skills priorities within sectors across the four UK nations. The reports have been produced to a common specification (developed by the UK Commission in consultation with the four UK and devolved governments) and follow a consistent structure.

 Reports have been produced for the following sectors of the economy:

- Agriculture, forestry and fishing (including veterinary activities)

- Energy production and utilities

- Manufacturing

- Construction building services, engineering and planning

- Wholesale and retail trade

- Transportation and storage

- Hospitality, tourism and sport

- Information and communication technologies

- Creative media and entertainment

- Financial, insurance & other professional services

- Real estate and facilities management

- Government

- Education

- Health

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[4] Please note, the Education report was produced by LSIS who are not a licensed Sector Skills Council

- Care

The reports contain intelligence on sectors and sub-sectors of particular interest to the four UK governments. As each nation has different 'key sectors' ('priority sectors' in Scotland), that are defined in different ways, it has not been possible to define the SSA sectors in a way that matches precisely the key sectors identified by each national Government. Therefore, as far as possible, data has been reported in such a way that it can be aggregated to produce an overall picture for key sectors of interest. In some cases this will involve gathering information from more than one SSA report.

The reports are designed to provide sectoral intelligence at a relatively broad level for strategic decision making purposes. Whilst they do contain some sub-sectoral and occupational intelligence, further intelligence at a more granular level may be available from individual Sector Skills Councils.

In addition to the main UK reports, executive summaries have been produced for Scotland, Wales and Northern Ireland. The UK reports contain information on key regional variations between the four UK nations and within England where appropriate (for example if sectoral employment is focused in a particular geographic area). However, the reports are not designed to provide a comprehensive assessment of sectoral skills issues beyond the national level.

1.2   Defining the sector

The agriculture, forestry, fishing and veterinary activities sector touches all our lives, wherever we live in the UK. The sector feeds our nation and is indispensable for our current and future economic prosperity. Businesses in the sector safeguard the UK's natural environment and natural heritage and are on the front line in the drive for food security, sustainable development, growing the rural economy and adapting to climate change by reducing greenhouse gases and creating more renewable energy. This report covers the following codes of the Standard Industrial Classification (SIC) (2007):

- Crop and animal production (SIC Code 01)

- Forestry and logging (SIC Code 02)

- Fishing and aquaculture (SIC Code 03)

- Veterinary activities (SIC Code 75).

The agriculture, forestry and fishing sector is more diverse than the broad categories above suggest. Crop and animal production includes farming, horticulture, viticulture, and hunting and trapping, as well as aspects of animal health and welfare. Forestry and logging consists of silviculture (forest management), logging and coppicing. Fishing includes both fresh water and marine fishing, while aquaculture covers the farming of freshwater and marine plants and animals. Support services to these industries (such as agricultural consultants) and plant propagation are also included in the definition. Veterinary activities covers farm animals and domestic pets, and in terms of occupations, the sector includes veterinary surgeons and veterinary nurses as well as any other auxiliary personnel. Outside the scope of this skills assessment are research and development activities relating to the sector, such as plant trials and biotechnology.

Headline data will be presented as aggregates of these sub-sectors and where relevant and robust, sub-sectoral data will be presented. We draw upon Lantra's own primary research and industry intelligence to provide additional depth of analysis. Throughout the report, we indicate the degree to which evidence presented from alternative sources is robust or anecdotal. Please note we use the term "agriculture, forestry and fishing" to denote the entire industry (i.e. all four SIC codes listed above).

1.3 Sector Skills Councils

Lantra is the sole author for the agriculture, forestry, fishing and veterinary activities' SSA. Lantra is the Sector Skills Council for land-based and environmental industries. Lantra's official licensed "footprint" covers 17 industries, many of which are beyond the scope of this report[5]. Lantra's last skills assessment covered all 17 industries in the footprint, representing approximately 230,000 businesses (Lantra, 2010a). Five Lantra industries are covered in the current skills assessment; agricultural crops, agricultural livestock, trees and timber, aquaculture and veterinary activities.

The SSA also covers horticulture and production horticulture, as although for most of Lantra's work these would be considered separate industries, in terms of SIC definitions these industries are covered within the code for agriculture (SIC 1120 Growing of vegetables, horticultural specialities and nursery products).

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[5] Lantra's licensed industries are agricultural crops, agricultural livestock, animal care, animal technology, aquaculture, environmental conservation, equine, farriery, fencing, fisheries management, floristry, game and wildlife management, horticulture, landscaping and sports turf, land-based engineering, production horticulture, trees and timber, and veterinary activities.

In addition, the SSA includes another sector not traditionally contained in the Lantra footprint, the marine fishing industry. For more information on the wider land-based sector, please visit Lantra's website: http://www.lantra.co.uk/

1.4 Summary of methodology

The general approach to this sector skills assessment is a comprehensive analysis of secondary data. Mainly sourced from official surveys and datasets, the assessment presents statistically robust data on the current demand, supply and balance of skills within the sector. We supplement this information with Lantra's own primary research conducted over the past few years and Lantra's extensive programme of industry engagement.

Lantra is an employer-led organisation. Our trustees are drawn from the industries we represent and we operate a system of industry engagement coordinated by our team of industry partnership managers (industry engagement managers). Our work in producing National Occupational Standards, Qualifications and Apprenticeships are all founded in industry consultation. Other work we do involving industry engagement includes our management of the skills element of the Rural Development Programme for England (RDPE) in six English regions. This often involves strategic decision making regarding industry training needs.

Alongside running consultations on a project or issue basis, we also have several industry groups which provide a formal engagement mechanism. Relevant to this assessment we have groups for forestry (24 businesses); aquaculture (21 businesses); fisheries management (17 businesses); and veterinary activities (13 members). Lantra is also part of the AgriSkills forum, which gathers skills-related intelligence through the NFU and other employer representative groups. Finally, Lantra is an awarding body, designing and awarding vocational qualifications and training in the land-based sector. This means that Lantra has unrivalled knowledge of employers' skills needs in the agriculture, forestry and fishing sector.

The SSA considers key drivers of change affecting skills demand and future skills implications. This is based around Lantra's industry engagement as well as secondary analysis of evidence from a range of sources.

The SSA also includes primary research commissioned by Lantra which covers specific topics or sectors within the wider land-based and environmental sector. Primary research is a particularly important element of Lantra's work. It generates intelligence and evidence at a more granular level than that covered by this report (at 2 digit SIC code), which is supplemented by the work of our industry engagement teams across the nations of the UK. To find out more about the primary research referenced in this SSA, please see: http://www.lantra.co.uk/research.aspx.

1.5   Structure of the report

This report details firstly, **in Chapter 2,** with the economic performance of the sector, and its constituent industries. This explores the economic contribution the sector makes to the national economy and how this has changed over time. This is discussed in terms of measures of value added, employment and business numbers. The chapter also provides some commentary on the economic performance of each industry making up the sector, namely agriculture, forestry, fishing and veterinary activities.

Chapter 3 discusses the characteristics of the agriculture, forestry and fishing sector's workforce. This examines trends in working practices and demographics, as well as outlining differences in the jobs people do. This provides a discussion of the key elements influencing the supply of skills in the sector.

Employer demand for skills is explored in **Chapter 4**. This includes mapping the nature of skills that are in use in the sector and the extent to which skills are valued by individuals and employers. Specific barriers to training are discussed that affect the decision to invest in further skills both from the employer's and employee's perspective. Finally, the chapter examines how demand for skills in the sector help explain the economic performance of the sector.

Chapter 5 builds on the individual analyses of demand and supply in the labour market, by looking at the potential mis-matches between the two in the context of the sector. Further and specific information is built into this chapter which examines levels of skills mis-matches (hard to fill vacancies and skill shortage vacancies) reported by employers.

Chapter 6 takes stock of the current situation of skills in the sector, and looks to the future by examining the macro level medium and longer term drivers of skills demand and supply. We also discuss the likely scale of each driver alongside how drivers may vary by nation.

Chapter 7 then examines the probable future skills needs that may result from the key drivers identified. Within this, we present baseline occupational forecasts and discuss how these may change with the intelligence gathered on key drivers.

And finally, **Chapter 8** formulates priorities for action based in the evidence presented as part of the skills assessment.

2 Current performance of sector

Chapter summary

- In 2008, agriculture, forestry and fishing generated £9.7 billion of GVA, contributing around one per cent of the national GVA. The economic performance of the sector has improved since the recession and the sector is an important contributor to the food and drink chain [6], which was worth £85 billion of GVA in 2009.

- Official statistics on productivity tend to be poor measures for the sector. Data for the agriculture industry shows that the sector has become more productive in recent years, but this is due to increasing output prices rather than underlying gains in total factor productivity.

- There are 145,000 business establishments and 406,000 individuals employed in the sector. However, this is likely to be an underestimate, and considering temporary working and second jobs, the sector generates at least a further 50,000 jobs.

- The sector is principally made up of businesses with between two and four employees with more workers self-employed than employed. The exception is veterinary activities where the size profile is more balanced.

- The economic performance of the sub-industries within the sector are very different depending on the size, structure and regulation of the particular industry.

2.1 Introduction

This chapter describes the economic performance of the agriculture, forestry and fishing sector. The chapter then outlines the structure of businesses and levels of employment, and finally the specific issues involved in the economic performance of each sub-sector.

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[6] Including agriculture, food and drink manufacturing, food and drink wholesaling, food and drink retailing and food non-residential catering.

2.2 Economic performance

2.2.1 Output and productivity

Gross Value Added (GVA) is the difference between output and intermediate consumption for any given sector, industry or economy (ONS, 2007). Table 2.1 shows that the overall agriculture, forestry and fishing sector GVA in 2008 was £9.7 billion, accounting for 0.8 per cent of all sector GVA[7].

This represents a small but important part of the economy, providing food and contributing to the food and drink supply chain. In 2009, the food chain[8] generated an estimated £85 billion of GVA, with agriculture and fishing contributing eight per cent, or an additional £6.8 billion to this total[9]. Imports of food, feed and drink in 2009 amounted to almost £33 billion in real terms at 2009 prices, and exports around £14 billion[10].

Table 2.1 also shows a comparison of GVA between the UK nations. In 2008, the sector was worth £8 billion to England, £1.2 billion to Scotland, £407 m to Northern Ireland and £145 m to Wales. In terms of value added, agriculture is more important to the economy of Northern Ireland compared with other nations, representing 1.4 per cent of GVA across the national economy. GVA in Wales appears low, generating £145m of GVA in 2009. Data published by Defra for the Welsh agricultural sector alone (excluding forestry and fishing), tells us the industry generates £217 m of GVA in basic prices in 2009 (Defra, 2010a). This difference in performance is a commonly reported phenomenon in Wales across all sectors of the economy, not just agriculture, forestry and fishing. One explanation is the important factor that remoteness and peripherality play in sectoral performance at the regional level. In 2010, the Welsh Assembly Government (WAG) commissioned research into the spatial determinants of productivity. Boddy et al (2010) present a quantitative analysis demonstrating that accessibility and peripherality have a significant impact on productivity once other factors have been taken into account (such as industrial structure, capital stock and skills)[11]. They present this evidence for Wales and England as a whole, but the relationship holds at a more detailed level within Wales itself.

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[7] As stated in the introduction, this includes veterinary activities.
[8] Including agriculture, food and drink manufacturing, food and drink wholesaling, food and drink retailing and food non-residential catering
[9] Source: Annual Business Survey (ONS) and Agriculture in the UK (Defra, 2010a)
[10] Source: Overseas Trade Statistics (OTS), based on data collected by HM Revenue and Customs. Data shown has been adjusted to 2009 prices using the all items RPI index (1987 = 100) (Defra, 2010a).
[11] Indices of accessibility based on travel time by road to local towns and cities, and of peripherality based on distance, via the road network from any one local authority area to all others in England and Wales.

More specifically to agriculture, productivity is likely to vary because top line measures of productivity and labour productivity do not account for heterogeneity in farming. Farm businesses vary quite significantly in terms of their economic, workforce and productive specialisms all of which have an impact on productivity and mean that direct comparisons can be misleading. Cuerva (2011) quantify the effects of different characteristics on productivity in agriculture across regions of Europe and find that agricultural productivity is lower when holdings are smaller both physically and economically, when there is a low degree of mechanisation, qualifications are less common and the workforce is ageing. Evidence presented later in this report shows that the Welsh agricultural industry has more of these characteristics compared to other regions of England – thus explaining the lower level of productivity.

Table 2.1: GVA by nation in 2008 (£m in current basic prices)

	UK £m	England £m	Scotland £m	Wales £m	Northern Ireland £m
Agriculture, hunting, forestry & fishing	**9,715**	**7,982**	**1,180**	**145**	**407**
Mining and quarrying of energy producing materials	2,661	1,298	1,277	60	27
Other mining and quarrying	2,365	1,777	282	134	173
Manufacturing	150,298	124,860	13,555	7,734	4,149
Electricity, gas and water supply	21,342	17,414	2,653	729	545
Construction	80,756	68,247	7,328	2,924	2,256
Wholesale and retail trade (including motor trade)	147,158	127,900	10,441	5,166	3,651
Hotels and restaurants	36,428	30,938	3,297	1,424	770
Transport, storage and communication	91,347	80,262	7,065	2,529	1,491
Financial intermediation	116,801	104,574	8,501	2,305	1,422
Real estate, renting and business activities	303,179	268,770	20,829	8,380	5,200
Public administration and defence	63,281	51,275	6,148	3,275	2,583
Education	76,493	64,478	6,322	3,502	2,191
Health and social work	93,775	76,336	9,851	4,788	2,800
Other services	65,563	57,177	4,804	2,420	1,162
All sectors	**1,261,162**	**1,083,288**	**103,533**	**45,515**	**28,827**

Source: ONS Regional Accounts.

We examine how GVA has changed over time in Table 2.2. GVA generated by the sector increased on average by 3.6 per cent per annum between 1999 and 2004, peaking at £10.7 billion before falling by almost a third to £7.5 billion in 2005. This fall in GVA is likely to be due to the introduction of the Single Farm Payment in January 2005, which removed the link between production and subsidy meaning that many farmers had to significantly alter their business practices. Performance has, however, significantly improved since the 2005 fall, with the sector growing by nine per cent per annum on average between 2006 and 2008.

The agriculture, forestry and fishing sector in the East of England generates the greatest headline GVA of all of England's regions (see Table 2.3). In 2008, the region generated £1,387 billion of GVA, followed closely by the South West region (£1,383 billion) and the South East (£1,168 billion). However, relative to the size of the regional economy, the sector is more significant in the South West (1.4 per cent) followed by the East Midlands (1.3 per cent) and East of England (1.2 per cent).

At the initial time of writing, the latest available GVA data for the agriculture, forestry and fishing sector was from 2008, and is used for consistency with other SSAs. However, data released by the ONS in December 2011 indicated GVA in the sector in 2009 was £8.03 billion in basic prices. The Agricultural Statistics Act also (1979) provides the basis of a wealth of statistical information collected through the June agricultural survey/census. The survey has gathered basic physical statistics on the industry since the 19th century, while more recently financial information has allowed policy makers to assess the economics of the agriculture and horticulture industry. According to this survey, in 2010 the GVA of the agriculture sector was £7.4 billion in basic prices (Defra, 2011a). The Act also provides a common basis with which to make international comparisons. The UK has the fifth largest agricultural industry in the European Union (EU). The UK generated €9.2 billion in 2011, behind France (which generated €26.8 billion), Italy (€25.4 billion), Spain (€21.4 billion) and Germany (€15.4 billion) (Eurostat, 2011). Other data from the June agricultural survey/ census data are presented in section 2.4.1 regarding the overall decrease in employment levels in the sector between 2008-09.

Table 2.2: UK GVA between 1999 and 2008 (£m in current basic prices)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	£m	£m	£m	£m	£m	£m	£m	£m	£m	£m
Agriculture, hunting, forestry & fishing	**9,022**	**8,532**	**8,333**	**9,007**	**9,807**	**10,670**	**7,530**	**7,792**	**8,632**	**9,715**
Mining and quarrying of energy producing materials	2,059	1,998	1,874	1,661	1,456	1,643	2,055	2,297	1,861	2,661
Other mining and quarrying	1,700	1,784	1,750	1,469	1,519	1,848	2,115	2,145	2,291	2,365
Manufacturing	151,157	150,009	149,223	146,308	144,845	145,689	148,110	151,455	154,726	150,298
Electricity, gas and water supply	15,703	15,798	15,660	16,052	16,405	16,106	16,685	20,279	21,884	21,342
Construction	42,236	45,626	50,526	54,684	59,522	66,029	69,868	74,619	80,675	80,756
Wholesale and retail trade (including motor trade)	99,509	103,410	110,249	113,777	120,520	127,367	129,810	135,366	141,735	147,158
Hotels and restaurants	24,146	25,605	26,928	28,639	30,120	31,870	32,902	34,594	35,962	36,428
Transport, storage and communication	64,961	69,201	70,502	73,064	76,587	79,020	80,889	83,655	88,280	91,347
Financial intermediation	48,545	44,989	48,202	63,367	71,530	75,117	79,553	90,807	103,731	116,801
Real estate, renting and business activities	173,329	188,361	204,041	214,849	232,204	248,677	260,116	276,108	296,955	303,179
Public administration and defence	39,891	41,645	43,855	46,212	49,768	53,779	58,229	60,385	61,503	63,281
Education	44,914	48,111	51,675	55,099	58,328	61,934	65,739	68,926	72,766	76,493
Health and social work	51,577	55,282	59,549	64,492	70,593	75,154	79,965	85,965	89,381	93,775
Other services	39,821	42,085	44,560	48,311	51,804	54,947	57,961	60,166	62,824	65,563
All sectors	**808,570**	**842,436**	**886,927**	**936,991**	**995,008**	**1,049,850**	**1,091,527**	**1,154,559**	**1,223,206**	**1,261,162**

Source: ONS Regional Accounts.

Table 2.3: GVA by English region in 2008 (£m in current basic prices)

	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East	London	South East	South West
	£m	£m	£m	£m	£m	£m	£m	£m	£m
Agriculture, hunting, forestry & fishing	**303**	**777**	**966**	**996**	**915**	**1,387**	**86**	**1,168**	**1,383**
Mining and quarrying of energy producing materials	81	90	140	130	82	164	280	270	61
Other mining and quarrying	178	142	156	379	84	132	60	202	442
Manufacturing	6,706	19,336	14,332	13,299	13,974	13,518	13,651	18,084	11,961
Electricity, gas and water supply	979	1,622	1,511	1,952	1,920	1,948	1,823	3,061	2,598
Construction	2,990	8,236	6,266	5,835	6,588	8,946	10,262	12,482	6,643
Wholesale and retail trade (including motor trade)	4,424	14,906	11,348	10,850	12,313	15,933	22,016	24,588	11,522
Hotels and restaurants	1,123	3,527	2,383	2,012	2,905	3,041	7,717	5,063	3,166
Transport, storage and communication	2,668	8,846	6,518	5,866	6,596	9,871	17,509	16,218	6,170
Financial intermediation	2,195	8,356	6,641	3,702	5,260	9,352	48,190	13,828	7,050
Real estate, renting and business activities	7,842	26,072	17,146	16,325	20,405	29,769	74,039	55,440	21,733
Public administration and defence	2,623	5,843	4,753	3,919	4,376	5,634	7,642	10,218	6,267
Education	3,156	8,008	6,302	4,877	6,541	6,725	11,972	10,861	6,036
Health and social work	4,004	10,080	7,552	5,894	7,215	8,201	13,719	11,975	7,696
Other services	1,715	5,174	3,459	3,314	4,583	5,577	18,190	10,551	4,615
All sectors	**40,987**	**121,015**	**89,473**	**79,350**	**93,757**	**120,198**	**247,156**	**194,009**	**97,343**

Source: ONS Regional Accounts.

Table 2.4: Estimated workplace gross value added (GVA) per employee job at current basic prices, 2009

SSA Sector	UK £000s	England £000s	Wales £000s	Scotland £000s	Northern Ireland £000s
Agriculture, forestry and fishing	35	41	11	21	25
Energy production and utilities	131	134	118	127	107
Manufacturing	52	51	49	61	53
Construction, building services, engineering and planning	65	66	54	60	56
Wholesale and retail trade	33	33	27	29	27
Transportation and storage	50	51	44	50	41
Hospitality, tourism and sport	23	23	21	22	20
Information and communication technologies	83	84	72	77	63
Creative media and entertainment	45	49	30	12	38
Financial, insurance & other professional services	86	89	57	69	63
Real estate and facilities management	85	86	103	67	98
Government services	39	40	33	35	40
Education	33	33	32	36	33
Health	27	27	26	25	23
Care	30	30	28	31	26
Not within scope	32	33	27	35	30
All sectors	46	47	38	43	38

Source: UK Commission estimates based on Regional Accounts; Annual Business Survey; Business Register and Employment Survey (BRES). See technical appendix for basis for estimates.

Notes: Figures for Real estate and facilities management sector include contribution from owner-occupier imputed rental. All figures exclude Extra-Regio element. Estimates will tend to overstate the level of GVA per job in those sectors with high levels of self-employment.

Using the ratio between the GVA generated by the sector and the number of employee jobs in the sector it seems that agriculture has a lower than average level of productivity against this measure, although it is higher than some other sectors of the economy. Levels of productivity appear to be relatively low in the devolved nations, particularly in Wales. According to Welsh government this is due to the differential impact of recently introduced dairy farming subsidies on the Welsh GVA figures, since dairy farming accounts for a disproportionate share of agriculture in Wales. This explains the apparent discrepancy with the data published by Defra (see above), which indicate a much higher level of output for the sector in Wales but which are calculated on a production basis rather than an income basis as is the case for Regional Accounts data.

Turning again to industry-specific statistics for agriculture as a useful proxy for the wider sector, Total Income From Farming (TIFF) per Annual Work Unit (AWU) of entrepreneurial labour can be broadly compared against GVA per worker for the agriculture industry.[12] In 2009, TIFF per AWU was £26,231 (see Table 2.5). More broadly, the TIFF per AWU measure increased from the average of £15,000 between 2005 and 2007, to £25,326 on average for 2008-2010. While there has been an apparent step change in profitability in agriculture between the three-year period cited above, total income fell from its peak of £4,824 m in 2009 to £4,651 m in 2010, a decline of four per cent.

This change in productivity is more likely to be because of rising output prices, rather than actual increases in productivity. This is apparent in the Total Factor Productivity (TFP) index in Table 2.5, which shows stagnation of TFP since 2005 coupled with the rise in total intermediate consumption which has increased to a higher level than gross output.

Table 2.5: Alternative measures of agricultural economic performance

	2005	2006	2007	2008	2009	2010
Gross output at basic prices (2005=100)	100	97.4	96.3	101.4	100.1	101.9
Total intermediate consumption	100	97.6	99.2	101.5	102.9	106.0
Gross Value Added (basic prices)	100	97.0	91.0	101.4	95.2	94.8
Total factor productivity (2005=100)	100	99.3	97.4	101.6	99.7	99.9
Total income from farming (£m)	2,800	2,822	3,146	4,544	4,824	4,651
Total income from farming per AWU (£)	14,045	14,456	16,500	24,312	26,231	25,435

Source: Defra, 2011b Note: 2010 figures are provisional and all series are presented in real terms

This improved profitability is apparent when comparing across selected nations. The UK has seen the highest increase in net value added per annual work unit of selected nations with an increase of 44 per cent between 2005 and 2011. This is higher than the EU average (18 per cent), alongside Spain and Italy where levels of net value added have decreased in 2011 compared with 2005 (see Table 2.6).

Table 2.6: Net value added at factor cost of agriculture, per total annual work unit

	2005(=100)	2006	2007	2008	2009	2010	2011
EU (27 countries)	100	103.9	114.3	110.4	98.5	111.1	118.3
Germany	100	108.9	126.5	134.7	94.8	113.2	129.8
Spain	100	95.5	107.4	91.1	91.6	99	98.6
France	100	111.3	121.1	104.6	84.5	113	110
Italy	100	96.3	93.7	95.2	90.4	79.9	89.1
United Kingdom	**100**	**101.9**	**109.3**	**143.3**	**134.5**	**138.6**	**144.1**

Source: Eurostat 2011b

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[12] Total income from farming is income generated by production within the agriculture industry, including subsidies, and represents business profits and remuneration for work done by owners.

2.3   Business establishment trends

In 2010 there were almost 145,000 establishments in the sector across the UK, representing around six per cent of the total number of business establishments. These business establishment figures may, however, underestimate the true level for the agriculture, forestry and fishing sector, particularly as some very small businesses are excluded as they fall under the Value Added Tax (VAT) threshold (i.e. turnover is less than £73k) or do not run a Pay As You Earn (PAYE) scheme. An important aim of Lantra's primary research is to provide accurate estimates of the size of industries covered within the Lantra footprint. Using Lantra's research in the forestry industry as an example, in 2011 at least twice as many businesses were found to exist than had previously been estimated (Lantra, 2011a).

Examining the characteristics of VAT- and PAYE-registered businesses shows us that the agriculture, forestry and fishing sector is larger (in relative terms) in Northern Ireland and Wales (19 per cent and 13 per cent of the business base respectively) compared with Scotland and England (nine and four per cent respectively). The relative importance of the sector in terms of business establishments in Northern Ireland can be explained by the predominance of small farms. Northern Ireland has smaller holdings (i.e. less than 50ha) relative to other nations (89 per cent of holdings require less than two standard labour requirements[13]) and this is likely to be due to the predominance of livestock farming in less favoured areas (Defra, 2010a). The relevant data is shown in Table 2.7.

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[13] Standard Labour Requirement (SLR) is defined as the theoretical number of workers required to run a holding, based on its cropping and livestock activities.

However, the importance of agriculture, forestry and fishing in Scotland and Wales is likely to be greater than these statistics suggest. Both of these nations have large urbanised populations contained in relatively small geographic areas (i.e. the central belt of Scotland and South Wales and the Valleys). This increases the importance of the sector as the benefits of urbanisation are not a source of opportunity in the same way as in a larger country like England, where such urbanised areas and the opportunities they present are far more evenly distributed. An alternative explanation would be that the geographical concentration of population is determined by the geography of the country. In Scotland and Wales, given their topography, there is less land suitable for arable farming purposes compared to England and Northern Ireland. Wales can experience more harsh conditions in upland areas, compared to coastal areas, and East Wales is more similar to regions in England (Met Office, 2012). Similarly, rainfall patterns vary considerably, with more rain in the central high ground area from Snowdonia to Brecon Beacon. In Scotland, there are similar issues surrounding the regional differences in climate and therefore the viability of arable farming in particular regions.

The greatest number of agriculture, forestry and fishing establishments in England can be found in the South West (22,850), the East (12,170) and the West Midlands (11,880). However, looking at the number of businesses as a proportion of the overall business base, agriculture, forestry and fishing establishments form a relatively larger share of the total in the South West (9.5 per cent), East Midlands (6.2 per cent) and Yorkshire and Humber (6 per cent). While in absolute terms the South East contains the fourth largest number of sector businesses, agriculture, forestry and fishing establishments represent just three per cent of all businesses in the region. The East of England region generates the greatest GVA with the fewest number of enterprises, demonstrating that the scale of farming in the region is larger than other regions. The relevant data are shown in Table 2.8.

Table 2.7: Number of establishments by sector and nation (2010)

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry and fishing	**144,895**	**6%**	**96,770**	**4%**	**17,625**	**9%**	**14,210**	**13%**	**16,290**	**19%**
Energy production and utilities	13,290	1%	10,365	0%	1,495	1%	865	1%	565	1%
Manufacturing	144,115	6%	124,235	6%	9,395	5%	6,040	5%	4,445	5%
Construction, building services, engineering and planning	358,455	14%	303,300	14%	27,845	14%	14,280	13%	13,030	15%
Wholesale and retail trade	509,215	20%	431,330	20%	38,165	20%	23,000	20%	16,720	20%
Transportation and storage	83,825	3%	70,685	3%	6,370	3%	3,925	3%	2,845	3%
Hospitality, tourism and sport	223,370	9%	185,390	8%	20,515	11%	11,580	10%	5,885	7%
Information and communication technologies	131,065	5%	120,095	5%	6,610	3%	3,130	3%	1,230	1%
Creative media and entertainment	134,115	5%	121,900	6%	6,830	4%	3,640	3%	1,745	2%
Financial, insurance & other professional services	255,000	10%	228,725	10%	14,770	8%	7,160	6%	4,345	5%
Real estate and facilities management	149,325	6%	129,340	6%	10,610	5%	5,730	5%	3,645	4%
Government services	52,210	2%	40,870	2%	5,625	3%	2,985	3%	2,730	3%
Education	67,125	3%	55,020	3%	5,535	3%	3,250	3%	3,320	4%
Health	55,135	2%	46,925	2%	3,895	2%	2,515	2%	1,800	2%
Care	85,935	3%	70,460	3%	7,810	4%	4,710	4%	2,955	4%
All economy	**2,574,230**	**100%**	**2,183,845**	**100%**	**193,305**	**100%**	**112,810**	**100%**	**84,270**	**100%**

Source: Inter-Departmental Business Register (IDBR), ONS.

Table 2.8: Number of establishments by sector and English region (2010)

	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East	London	South East	South West
Agriculture, forestry and fishing	**3,870**	**11,305**	**11,205**	**10,770**	**11,880**	**12,170**	**935**	**11,785**	**22,850**
Energy production and utilities	475	1,460	1,155	1,025	1,065	1,320	950	1,605	1,310
Manufacturing	4,650	15,950	13,100	12,915	15,930	15,235	13,350	20,025	13,080
Construction, building services, engineering and planning	10,845	35,520	26,035	24,975	28,750	41,485	42,520	58,785	34,385
Wholesale and retail trade	16,630	55,955	41,975	36,895	45,695	48,635	67,620	71,850	46,075
Transportation and storage	2,610	8,775	7,270	6,830	7,930	9,305	9,190	11,570	7,205
Hospitality, tourism and sport	8,395	23,095	17,600	14,030	16,700	19,290	32,470	31,885	21,925
Information and communication technologies	2,325	10,885	6,685	6,900	9,260	14,735	29,655	28,805	10,845
Creative media and entertainment	2,660	10,035	6,735	6,215	7,425	12,210	43,255	22,760	10,605
Financial, insurance & other professional services	5,440	23,475	14,900	14,950	18,300	23,850	61,915	45,495	20,400
Real estate and facilities management	4,185	14,800	10,225	9,390	11,925	15,045	27,475	22,980	13,315
Government services	1,815	4,810	4,260	4,270	4,040	4,215	6,495	6,340	4,625
Education	2,495	6,890	4,965	4,810	5,465	6,330	8,215	9,925	5,925
Health	2,010	6,255	4,265	3,830	4,570	4,850	8,045	8,280	4,820
Care	3,575	9,340	6,950	6,110	6,940	7,210	10,725	11,700	7,910
All economy	**75,975**	**255,705**	**187,810**	**174,700**	**210,065**	**253,120**	**392,540**	**394,505**	**239,425**

Source: Inter-Departmental Business Register (IDBR), ONS.

Supplementing the above, Table 2.9 disaggregates agricultural activity by showing the areas and their different land uses. The arable industry is concentrated in eastern regions with the East of England and East Midlands accounting for 26 per cent and 18 per cent of farmed land in England respectively. Similarly, production horticulture is centred on eastern regions, however with more even shares for East Midlands and the East of England (27 per cent each respectively). In terms of livestock farming, the South West and the North West regions have the highest share of cattle (33 and 17 per cent respectively) while pig farming is prevalent in Yorkshire and Humber (34 per cent). Sheep farming is more common in the North West and South West, while poultry farming is most common in the East of England. The North East region has low shares of all major types of farming, with the exception of sheep farming where the region accounts for 13 per cent of the national stock.

Table 2.9: Regional shares of utilised land and number of livestock within England in 2010 (%)

Region	Arable	Production horticulture	Cattle	Pigs	Sheep	Poultry
North East	4	1	5	2	13	2
South East	13	12	8	6	8	7
North West	3	5	17	4	20	7
Yorkshire and Humber	14	11	10	34	14	12
West Midlands	9	10	14	5	15	15
South West	12	8	33	11	20	16
East Midlands	18	27	9	10	8	18
East of England	26	27	4	29	2	23
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Lantra calculations based on data from Defra (2010a).

Overall, the number of establishments in agriculture, forestry and fishing declined by one per cent between 2006 and 2010. During this period, the number of establishments peaked in 2008 at 163,715 establishments before falling by ten per cent in 2009. However, the data for the three years between 2006 and 2008 are estimates (due to reclassification issues) so part of the decline may result from estimation errors alongside any actual reductions in business numbers as a result of economic conditions and other external factors[14]. See Table 2.10 for a breakdown of the data by sector.

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[14] The Standard Industrial Classification was revised in 2007, and there was a delay between implementation of the new scheme. Therefore the latest three years of data have been reclassified based on estimates of the changes between the two classification systems.

Table 2.10: Number of establishments by sector, 2006-2010 (UK)

	2006	2007	2008	2009	2010	% Change 2006 - 2010
Agriculture, forestry and fishing	**146,485**	**158,080**	**163,715**	**146,620**	**144,895**	**-1%**
Energy production and utilities	18,170	18,260	11,435	12,980	13,290	-27%
Manufacturing	165,675	163,525	167,335	151,165	144,115	-13%
Construction, building services, engineering and planning	230,610	240,535	258,055	374,320	358,455	55%
Wholesale and retail trade	533,105	532,905	532,060	520,070	509,215	-4%
Transportation and storage	70,425	70,750	71,665	86,680	83,825	19%
Hospitality, tourism and sport	219,770	222,920	227,430	229,690	223,370	2%
Information and communication technologies	136,395	140,505	144,080	134,805	131,065	-4%
Creative media and entertainment	125,100	130,185	131,180	132,225	134,115	7%
Financial, insurance & other professional services	271,310	283,920	287,015	256,915	255,000	-6%
Real estate and facilities management	180,305	191,195	201,915	155,855	149,325	-17%
Government services	159,395	164,690	54,875	52,060	52,210	-67%
Education	28,935	28,880	66,055	66,725	67,125	132%
Health	25,860	25,810	53,300	53,900	55,135	113%
Care	40,150	40,075	82,755	83,675	85,935	114%
All economy	**2,533,855**	**2,600,065**	**2,643,215**	**2,634,790**	**2,574,230**	**2%**

Source: Inter-Departmental Business Register (IDBR), ONS.

The agriculture, forestry and fishing sector is predominantly made up of small business establishments. Some 94 per cent of establishments have fewer than ten employees compared with 74 per cent on average for all sectors (see Table 2.11). Furthermore, the sector has the highest proportion of establishments with between two and four employees. These smaller establishments represent 80 per cent of all businesses compared with 52 per cent for all sectors on average.

As a comparator, the most similar sector is construction where two-thirds of establishments have between two and four employees. However, the agriculture, forestry and fishing sector does not have the counterbalancing effect of large employers in the same way that the construction sector does (in the latter, two per cent of establishments have between 50 and 250 employees compared with less than 1 per cent in the agriculture, forestry and fishing sector for the same sized establishments).

Table 2.11: Size of establishments by sector (UK) (2010)

	Number of employees						
	2-4	5-9	10-24	25-49	50-250	251+	All
	%	%	%	%	%	%	Number
Agriculture, forestry and fishing	**80**	**14**	**5**	**1**	**0**	**0**	**97,910**
Energy production and utilities	36	22	20	10	10	2	10,265
Manufacturing	43	22	18	8	8	1	108,050
Construction	67	18	10	3	2	0	211,710
Wholesale and retail trade	49	27	16	4	3	1	385,760
Transportation and storage	48	20	16	7	8	1	52,620
Hospitality, tourism and sport	42	30	19	6	3	0	198,630
Information and communication technologies	68	15	10	4	3	1	56,710
Creative media and entertainment	66	17	10	4	3	0	62,305
Financial, insurance & other professional services	57	21	14	4	3	1	134,900
Real estate and facilities management	62	21	11	3	3	1	95,270
Government services	34	21	20	10	12	4	41,505
Education	20	14	20	23	21	2	56,740
Health	31	24	25	10	7	2	47,570
Care	26	24	28	13	8	0	75,725
All economy	**52**	**22**	**15**	**6**	**4**	**1**	**1,742,370**

Source: Inter-Departmental Business Register (IDBR), ONS.

This pattern of smaller businesses in the agriculture, forestry and fishing sector is more pronounced in Wales, where 97 per cent of businesses employ fewer than ten employees, and Northern Ireland, where 96 per cent of establishments have fewer than ten employees. The corresponding figures in England and Scotland are 93 per cent each. Table 2.12 shows the establishment size profile for each nation.

Table 2.12: Size of establishments within agriculture, forestry & fishing by nation (2010)

Size Band	England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%
2-4	53,875	78	9,460	76	8,720	88	5,790	84
5-9	10,215	15	2,145	17	915	9	835	12
10-24	3,660	5	675	5	260	3	250	4
25-49	630	1	85	1	25	0	20	0
50-250	280	0	30	0	5	0	10	0
251+	25	0	0	0	0	0	0	0
Total	**68,685**	**100**	**12,395**	**100**	**9,925**	**100**	**6,905**	**100**

Source: Inter-Departmental Business Register (IDBR), ONS.

The scale of the agriculture industry in relation to the other industries appears to heavily influence statistics on business size across the sector. As shown in Table 2.13, disaggregating establishment size further shows that not all of the sector's industries are dominated by micro-businesses. In veterinary activities, for example, the proportion of establishments with two to four employees is just 31 per cent, compared with 72 per cent in forestry, 72 per cent in fishing and 82 per cent in agriculture. The veterinary activities sector therefore has a more balanced size profile, with higher proportions of businesses employing 5-9 and 10-24 people compared with the other industries included in this report.

Table 2.13: Size of establishments by industry (2010)

Size Band	Agriculture		Forestry		Fishing		Veterinary Activities	
	Number	%	Number	%	Number	%	Number	%
2-4	73,860	82	1,345	72	1,375	76	1,265	31
5-9	12,110	13	315	17	330	18	1,355	33
10-24	3,465	4	150	8	90	5	1,140	28
25-49	435	0.5	45	2	10	1	270	7
50-250	255	0.3	20	1	5	0.3	45	1
251+	25	0.0	0	0	0	0	0	0
Total	**90,150**	**100**	**1,875**	**100**	**1,810**	**100**	**4,075**	**100**

Source: Inter-Departmental Business Register (IDBR), ONS.

While the number of employees per establishment is a useful statistic, in the agricultural industry in particular, it is also helpful to consider business size in terms of physical aspects. Data provided by Defra suggests that average farm size increased by around ten per cent from 2005 to 2010, from 70 hectares to 77 hectares (Defra, 2010a); meanwhile, the number of agricultural holdings decreased by ten per cent, and the area of agricultural land decreased by three per cent (Defra, 2010a).[15] This suggests that many farms are consolidating or merging, with fewer farms utilising the same agricultural areas. This may be a result of technological change making it easier for fewer people to farm larger areas of land.

Official data for business start-ups and closures for the agriculture, forestry and fishing sector are not comprehensive. Data are only available for the veterinary activities industry, where there were 285 starts and 190 closures in 2009, indicating a net gain in the stock of enterprises (see Table 2.14). However, other research in this area suggests that business formation is an on-going problem in the sector and so numbers of start-ups may be low.

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[15] Agricultural holdings decreased from 248,000 in 2005 to 222,000 while utilised agricultural area decreased from 17,897 in 2006 to 17,234 thousand hectares in 2010 (Defra, 2010).

Considering agriculture in particular, the typical route into farming is inter-generational transfer, with less than one in ten business decision makers being the first generation of their family to be involved in farming (ADAS et al, 2004). This is supported by Lantra's engagement with employers, which suggests there are wider reputational problems with the sector such as low wages and poor working conditions, which alongside the high cost of purchasing a farm are likely to discourage entrepreneurs.

Table 2.14: Business (enterprise) start-ups and closures 2009 (UK)

Sector	Start-ups	Closures
	Number	Number
Agriculture, forestry and fishing (SIC 75 only)	**285**	**190**
Energy production and utilities	1,270	408
Manufacturing	10,570	15,445
Construction, building services, engineering and planning	35,835	51,040
Wholesale and retail trade	38,760	47,090
Transportation and storage	6,980	10,805
Hospitality, tourism and sport	23,345	28,030
Information and communication technologies	16,120	19,935
Creative media and entertainment	24,290	20,805
Financial, insurance & other professional services	25,640	25,765
Real estate and facilities management	12,805	16,275
Government services (SIC 94 only)	1,010	1,260
Education	3,485	3,160
Health	4,135	3,110
Care	2,745	2,165
Other sectors	28,750	32,135
All economy	**236,025**	**277,618**

Source: Business Demography - Enterprise Births, Deaths and Survivals 2009 (ONS).

2.4   Employment

2.4.1   Employment levels

Official statistics show that the agriculture, forestry and fishing sector in the UK employs 406,000 people and accounts for 1.6 per cent of the UK workforce. It is important to note, however, that these employment estimates from the Labour Force Survey (LFS) represent the number of individuals who are employed in their main job in the sector. The actual level of jobs in the sector is likely to be higher because of the prevalence of temporary working and foreign migrants, as well as the high incidence of second jobs (please see Section 3.1 for more information).

Workforce Jobs (WFJ), an alternative labour market publication, accounts for such factors and suggests that the number of jobs in the sector, excluding veterinary services, is 456,000 (ONS, 2011a)[16]. This represents an additional 50,000 jobs compared with figures from the LFS (456,000 minus 406,000) without accounting for additional individuals employed in veterinary services (see Table 2.18). Indicatively, the number of jobs may be as high as 510,000[17].

Nevertheless, LFS data provides useful information regarding the relative importance of the agriculture, forestry and fishing sector across nations and different regions of England, as shown in Table 2.16. The sector in the South West accounts for the greatest share of employment (three per cent), followed by the West Midlands (two per cent) and the East Midlands (two per cent). The sector accounts for the smallest proportion of total regional employment in London and the North East of England. The sector is larger relatively in Northern Ireland and Wales where it accounts for 3.5 per cent and 2.4 per cent of the national workforce respectively. The full data are shown in Table 2.15.

LFS data also provides useful information about employment trends in the sector. According to Table 2.17, employment in the agriculture, forestry and fishing sector peaked at 448,000 in 2008, an increase of 14 per cent since 2002. In 2009, employment in the sector decreased by 19 per cent or some 84,000 workers. The main reason for this drop, however, is due to the statistical reclassification from SIC 2003 to SIC 2007 rather than large drops in employment. Adjusting for this reclassification, employment dropped by six percentage points (given that employment in the sector was reduced by 13 per cent due to reclassification).[18] This is in keeping with research on employment in the agricultural sector, as Defra's June agricultural survey shows a decline in employment between 2008 and 2009 of four per cent from 483,000 to 464,000 (Defra, 2010a).

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[16] Workforce Jobs (WFJ) data is released quarterly and the annual figure presented in this report is a simple average of four quarters of data for 2010.
[17] Workforce jobs estimates of agriculture, forestry and fishing industries (456,000) plus LFS estimates of employment in veterinary activities (54,000).
[18] Lantra calculation based on ONS (2009).

Table 2.15: Total employment by nation (2010)

	UK		England		Scotland		Wales		Northern Ireland	
	000s	%	000s	%	000s	%	000s	%	000s	%
Agriculture, forestry and fishing	**406**	**100**	**296**	**73**	**51**	**13**	**31**	**8**	**27**	**7**
Energy production and utilities	473	100	346	73	88	19	25	5	14	3
Manufacturing	2,970	100	2,542	86	199	7	138	5	91	3
Construction, building services, engineering and planning	2,697	100	2,270	84	244	9	113	4	71	3
Wholesale and retail trade	4,140	100	3,471	84	353	9	205	5	112	3
Transportation and storage	1,448	100	1,252	86	117	8	46	3	33	2
Hospitality, tourism and sport	2,046	100	1,704	83	198	10	100	5	44	2
Information and communication technologies	761	100	675	89	56	7	18	2	13	2
Creative media and entertainment	987	100	876	89	65	7	32	3	14	1
Financial, insurance & other professional services	2,001	100	1,768	88	138	7	53	3	41	2
Real estate and facilities management	978	100	848	87	75	8	38	4	18	2
Government services	2,209	100	1,835	83	173	8	111	5	89	4
Education	3,088	100	2,625	85	235	8	154	5	75	2
Health	2,087	100	1,713	82	199	10	111	5	64	3
Care	1,729	100	1,409	81	183	11	97	6	40	2
Whole Economy	**28,855**	**100**	**24,331**	**84**	**2,446**	**8**	**1,312**	**5**	**766**	**3**
Unweighted bases	*194*	100	*162*	83	*17*	9	*9*	4	*7*	4

Source: Labour Force Survey 2010, ONS.

Table 2.16: Total employment, percentage share within region (2010)

	London	South East	East of England	South West	West Midlands	East Midlands	Yorkshire and the Humber	North West	North East
Agriculture, forestry and fishing	-	1	1	3	2	2	1	1	1
Energy production and utilities	1	2	1	2	2	2	1	2	2
Manufacturing	4	9	11	11	14	15	12	12	11
Construction, building services, engineering and planning	9	10	10	9	9	9	9	9	9
Wholesale and retail trade	12	14	14	14	14	16	16	16	15
Transportation and storage	5	5	5	4	5	6	5	5	4
Hospitality, tourism and sport	8	7	6	7	7	7	7	7	7
Information and communication technologies	3	4	3	3	2	2	2	2	2
Creative media and entertainment	8	4	3	3	2	2	2	2	2
Financial, insurance & other professional services	13	8	8	6	6	5	6	6	4
Real estate and facilities management	5	4	3	4	3	3	3	4	3
Government services	8	8	7	7	7	7	8	8	9
Education	10	11	11	11	11	11	11	10	11
Health	6	7	6	7	7	7	8	8	8
Care	5	5	5	6	6	5	6	6	8
Whole Economy	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Weighted base	100	100	100	100	100	100	100	100	100
Unweighted base	*18.925*	*26.614*	*18.998*	*17.015*	*16.534*	*15.044*	*17.467*	*22.418*	*8.486*

Source: Labour Force Survey 2010, ONS.

Table 2.17: Total employment 2002-2010 (UK)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	000s	000s	000s	000s	000s	000s	000s	000s	000s
Agriculture, forestry and fishing	**394**	**389**	**396**	**421**	**417**	**422**	**448**	**364**	**406**
Energy production and utilities	434	389	407	422	436	479	486	483	473
Manufacturing	4,153	3,870	3,687	3,615	3,562	3,575	3,368	2,915	2,970
Construction, building services, engineering and planning	2,223	2,333	2,434	2,500	2,560	2,615	2,639	2,875	2,697
Wholesale and retail trade	4,368	4,545	4,536	4,489	4,404	4,349	4,446	4,143	4,140
Transportation and storage	1,486	1,485	1,461	1,511	1,501	1,490	1,517	1,489	1,448
Hospitality, tourism and sport	1,718	1,720	1,730	1,714	1,773	1,807	1,799	1,991	2,046
Information and communication technologies	813	813	839	832	835	851	871	784	761
Creative media and entertainment	1,102	1,139	1,108	1,111	1,138	1,142	1,156	975	987
Financial, insurance & other professional services	1,671	1,662	1,623	1,677	1,696	1,744	1,736	2,038	2,001
Real estate and facilities management	898	869	924	946	984	1,036	1,028	948	978
Government services	2,115	2,166	2,194	2,251	2,282	2,285	2,323	2,265	2,209
Education	2,295	2,414	2,543	2,580	2,642	2,636	2,664	2,939	3,088
Health	1,811	1,881	1,980	2,048	2,079	2,033	2,118	2,038	2,087
Care	1,288	1,338	1,408	1,456	1,479	1,446	1,506	1,721	1,729
Whole Economy	**27,908**	**28,172**	**28,456**	**28,740**	**28,987**	**29,164**	**29,382**	**28,811**	**28,855**
Unweighted base	*247.273*	*238.005*	*230.951*	*227.794*	*222.196*	*221.046*	*217.000*	*203.221*	*194.448*

Source: Labour Force Survey 2010, ONS

The agriculture industry employs the greatest number of individuals in the sector. As shown in Table 2.18, nearly four-fifths of the workforce is made up of agricultural workers, or some 321,000 individuals. Veterinary activities accounts for 54,000 employees, while forestry and fishing account for 19,000 and 13,000 respectively.

Table 2.18: Total employment by sub-sector in 2010

	Employment
	'000s
Agriculture	321
Forestry	19
Fishing	13
Veterinary activities	54
Total	**407**

Source: Labour Force Survey 2010, ONS.

Between 2002 and 2010, self-employment in the agriculture, forestry and fishing sector grew faster than employment. Annualised percentage changes over the period were 0.2 per cent for employment and 1.6 per cent for self-employment, which confirms this trend after accounting for statistical volatility[19]. This finding is true of the economy on average where self-employment is at its highest level since records began in 1992 (ONS, 2011b). Temporary employment declined by 2.7 per cent per annum on average between 2002 and 2010, a sharper fall than the trend in permanent employment which increased by 0.5 per cent per annum (see Table 2.19 for the full data).

Table 2.19: Components of employment (2002-2010)

	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	% change 2002-2010
	000s	000s	000s	000s	000s	000s	000s	000s	000s	
Employment (000s)	197	186	195	204	211	213	226	167	189	-3.9
Employment (annual % change)		-5.7	5.1	4.4	3.6	0.9	5.8	-26.1	13.6	0.2
Self-employment (000s)	180	188	187	199	191	193	206	184	202	12.1
Self-employment (% change)		4.7	-0.6	6.1	-3.7	0.8	6.9	-10.6	9.4	1.6
Permanent	183	172	180	192	197	202	208	156	181	-1
(% change)		-6.0	4.9	6.3	2.8	2.1	3.1	-24.8	15.8	0.5
Temporary	14	14	15	12	14	12	18	10	8	n/a
(% change)		-1.3	7.6	-19.2	14.9	-16.2	53.6	-40.8	-20.2	-2.7

Source: Lantra calculations based on Labour Force Survey 2010, ONS.

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[19] Using average annualised growth accounts for more information when summarising a time series, and therefore presents a less biased estimate change between two dates.

The way in which businesses are categorised and sector groupings are constructed means that there are also relevant occupations outside of the agriculture, forestry and fishing sector. Forestry is a pertinent example. Many arboriculturalists, forestry workers and supporting occupations fall outside the forestry sector as defined by broad SIC codes, however, the roles performed are closely related or in some cases identical to those working within SIC codes. Such workers can be found in a range of organisations, from private estates to local authorities and hotels. In 2011, Lantra found that the number of forestry employees is underestimated by between 62,000 and 92,000, which is significant given the official approximate size of the workforce is 20,000 (Lantra 2011a)[20]. While there are large margins of error here, the scale of this difference shows that the size of the workforce is likely to be systematically underestimated, a finding echoed across the agriculture, forestry and fishing sector.

2.5   Economic performance by sub-industry

The aggregate level information provided in this chapter provides a good overview to the economic performance of the sector. Further to this, we provide some commentary on each of the industries to explore some of the characteristics and trends that have affected the competitiveness of the UK agriculture, forestry and fishing sector.

2.5.1   Agriculture

Agricultural economic performance is dependent on a range of economic and non-economic factors. These include interest and exchange rates, global commodity prices, climate change, worldwide weather conditions, disease, consumer tastes, as well as UK and EU policy. This makes understanding performance complex, but there is a distinct correlation between performance of the agricultural sector and the global recession and financial crisis of 2007-2009. It is relatively clear that the sector is countercyclical and typically, when the economy is underperforming, the agriculture, forestry and fishing sector tends to be more profitable.

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[20] Please note there is a relatively high margin of error in these estimates so results should be treated as indicative. Confidence interval (=15%) is three times the recognised standard (5%) at an 85% level of confidence.

One key macroeconomic effect of the crisis was the depreciation of sterling against both the euro and the US dollar, making farming outputs more competitive in European and global markets. This is apparent in the value of UK exports of food, feed and drink, which increased by 26 per cent overall between 2005 and 2009, an annual average increase of six per cent[21]. Output prices received by farmers and growers domestically have also increased as expensive imports inflate prices. This is evident in increased spending by UK consumers on food shopping, up 26 per cent since 2006 (Defra, 2011c). This currency effect sits alongside the growing demand for meat in China, India and other developing countries. In 2010, an agreement worth £45 m to the industry was signed to allow the export of British breeding pigs to China (Defra, 2010b).

A further effect of the devalued pound was to increase the level of support payments received through the Common Agricultural Policy (CAP). The euro/pound exchange rate for payments via the Single Payment Scheme, which is set on a yearly basis, increased from 0.68 in 2006 to 0.86 in 2010 (RPA, 2011). For many farmers and growers who opt to receive such payments in euros, this has meant an average gain of 18 pence per euro received through the scheme.

Another positive macroeconomic effect is the reduction in interest rates, which fell to their lowest levels ever in 2009. The Bank of England base rate fell from 5.75% in July 2007 to 0.5% in March 2009, remaining at this level ever since. Farming businesses have benefited from lower borrowing costs and, unlike other businesses, the high net worth of farmers (through the ownership of land) has meant the sector has largely escaped problems prevalent in the rest of the economy related to availability of credit, particularly to small- and medium-sized enterprises (Andersons, 2010).

This does not mean that all macroeconomic effects have and will benefit farmers and growers. In particular, the industry is experiencing higher input prices as global commodity prices have increased significantly (mainly due to the fact that feed and fertiliser are strongly linked to the price of oil). Furthermore, the threat of higher input prices is likely to affect different types of agriculture in different ways. For example, livestock farmers are not only subject to inflation in fuel prices and other input costs, but they are also exposed to agricultural prices through the use of grains as feed for livestock.

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[21] Lantra calculations based on data contained in Defra, 2010. Measured in 2009 prices. Food, feed and drink includes SITC Codes 01 to 09, 11 & 22+S4.

2.5.2 Economic performance of the forestry industry

Over the past 100 years, Britain has been highly dependent on imports of timber and wood products from Canada, Scandinavia, Russia and the Baltic states. This dependence led to problems during the First World War where naval blockades resulted in a severe shortage of timber (Scottish Forest Industries Cluster, 2003). As a consequence, the Forestry Commission was set up in 1919 to establish a strategic reserve of timber, and much of the commercial forestry sector being harvested today is a direct result of this policy.

This historic dependence on imports is apparent in the proportion of land area dedicated to forestry, which is 12 per cent in the UK compared with 37 per cent on average across Europe, most of which was planted between the 1960s and 1990s (Forestry Commission, 2011). This illustrates the long-term nature of the production cycle within forestry where the production cycle, from planting to harvesting a tree for timber, often takes a minimum of 40 to 50 years (Forestry Commission, 2012a).

In 2009, the sector generated £382 m GVA in 2009, increasing by 53 per cent between 2006 and 2008. The increase in GVA is associated with a rise in prices in the industry.[22] The UK forestry sector mainly produces softwoods as an intermediate input for domestic markets.[23] Around 95 per cent of UK grown softwood was used as intermediate input in UK sawmills (60 per cent), wood panel manufacturing (15 per cent) and an ever-increasing proportion for wood fuel (11 per cent). Only five per cent of UK softwood was exported in 2011 (Forestry Commission, 2011).

This apparent reliance on domestic markets does not mean that the industry is sheltered from the forces of international trade. Timber is a key intermediate output in UK wood product manufacturing which exports 56 per cent of its products (Forestry Commission, 2011). Consequently, prices in the forestry industry are linked to international trade via domestic wood products producers.

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[22] The real price of standing sales increased by 74 per cent between 2006 and 2008. The price of sawlogs also saw an increase of 27 per cent over the same period (Forestry Commission, 2011).
[23] Softwoods accounted for 95 per cent of production in 2010 (Forestry Commission, 2011).

Global factors affecting the wood products market include construction (via the levels of house building), newspaper circulation, fuel costs, disease and exchange rates. The effects of exchange rates on forestry are apparent when considering softwood exports. Softwoods, as a proportion of total softwood production, more than halved in a single year (between 2008 and 2009) from 733,000 green tonnes to 347,000 green tonnes (Forestry Commission, 2011). This indicates that a greater volume of softwoods are being consumed by domestic manufacturers as the price of imported softwoods increases.

Looking ahead, the global construction industry is not buoyant so upward pressure on prices may not be as high, while disease is an ever-present threat to the industry. There are currently several instances of disease placing restrictions on foresters, including red band needle blight and phytophthora (Forestry Commission, 2012b).

2.5.3 Economic performance of the fishing industry

The policy environment for fisheries (both marine and aquaculture) at the UK level is changing with the founding of the Marine Management Organisation (MMO), established as part of the Marine and Coastal Access Act 2009. The MMO is a non-departmental public body charged with the implementation of the Act, including the introduction of a marine planning system, new powers over licensing and enforcement and improving access to the coast to benefit the tourism industry (MMO, 2011).

The fishing industry has increasingly attracted attention from the general public in recent years. This is mainly due to the often controversial practice of discards whereby quotas enforced through the EU Common Fisheries Policy contribute to part of the catch in certain fisheries being discarded (Seafish, 2011). The Common Fisheries Policy (CFP) is the EU's instrument for managing fisheries and aquaculture. It is highly centralised with EU ministers making decisions each year on catch limits on 'quota' stocks and related measures such as the time fishermen can spend at sea (Defra, 2011d). CFP is currently undergoing a process of reform to secure both fish stocks and fishermen's livelihoods for the future while putting an end to overfishing and the depletion of fish stocks. This will be achieved by a decentralised system of science-based fisheries management (European Commission, 2011a).

Statistics released by the Marine Management Organisation suggest that the UK marine fishing industry comprises 6,477 vessels and employs 12,700 fishermen (MMO, 2011). The number of vessels has declined by 16 per cent since 2001 and the industry employs 2,300 fewer people. The majority of the fleet is made up of English (48 per cent) and Scottish vessels (33 per cent), with Welsh and Northern Irish vessels accounting for eight and six per cent respectively. However, the Scottish fleet accounts for a greater proportion of capacity, some 59 per cent compared with 30 per cent in England. MMO (2011) suggests that this difference in fleet composition is likely to be because of the different fishing opportunities available[24]. It is also important to note the relative importance of the British Islands (Guernsey, Jersey and the Isle of Man), which account for five per cent of the national fleet.

The economic performance of the industry should be considered in light of constraints placed upon the industry by catch limits and quotas, which in general have limited fishing opportunities for most commercially fished species. In addition, the sector in the UK is highly export-oriented. Total GVA in the marine fishing industry increased by 48 per cent between 2001 and 2010. The fishing industry's GVA at basic prices was £546 m in 2010. The landed price index produced by MMO shows an increase of 43 percentage points between 2004 and 2010. This has improved the competitive position of UK marine fishing, which is apparent in the higher GVA of the industry. The UK marine fishing sector is also export-oriented with around half of the domestically landed catch exported abroad (MMO, 2011). Changes in the terms of trade are likely to have further increased the competitiveness of exports as well as increasing revenues in the domestic market.

Sea fishing is particularly important in Scotland. Landing and production figures can provide an indication of the economic performance of the industry in this nation. In 2010, 367,000 tonnes of fish were landed, valued at £435 million (Scottish Government, 2011). This value represents a five per cent drop from the previous year, but this was preceded by an increase in value between 2008 and 2009. The value landed in 2010 was still five per cent higher than 2008 in real terms. The fishing industry also includes aquaculture, which is important in England and Wales, and accounts for almost 40 per cent of food exports in Scotland. The total output of the sector in Scotland is worth over £400 million per year at farm gate prices. The bulk of that production is salmon, of which Scotland is the second largest producer in the world and the largest in the EU, although trout and shellfish are also important (Scottish Government, 2009b). Production of salmon in fish farms in 2009 was 66,448 tonnes, and 68,070 tonnes in 2010, representing a two per cent increase in salmon production (Marine Scotland Science, 2011).

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[24] Where Scottish vessels fish for high volume, low price species such as herring and mackerel, while the English fleet focuses on low volume, high value species such as sole and plaice.

2.5.4 Veterinary activities

The Royal College of Veterinary Surgeons (RCVS) registers veterinary surgeons and veterinary nurses to practise in the UK, and regulates their educational, ethical and clinical standards (RCVS, 2011a). As part of the College's annual reporting, statistics are produced regarding their registered members (RCVS, 2011b). As of March 2011, 24,576 individuals were registered with the council. This includes non-practicing (2,995) and overseas practicing members (1,128 in the Republic of Ireland and 2,612 in the rest of the world). The implication is that there are 17,817 practicing veterinary surgeons in the UK. There were 4,562 veterinary practices registered in the UK in 2011. Of these, the majority are principally concerned with small animals (54 per cent). A further 12 per cent are mixed animal practices, and for 28 per cent data was not recorded, leaving four per cent who dealt with large animals and three per cent with equines.

Although there is limited information regarding the economic performance of the veterinary industry, according to an RCVS online and postal survey based on 9,000 responses from veterinary surgeons and 4,000 responses from veterinary nurses, over two-thirds of respondents felt the economic downturn had affected their workplace (Robertson-Smith *et al.*, 2010). This was the first time the College had questioned their members in terms of the impact of the economic climate. Nearly three-quarters (74 per cent) also felt that bad debt had increased and that demand for services had decreased (73 per cent of respondents).

3 The workforce

Chapter summary

- The sector workforce is characterised by high levels of self-employment (50 per cent of the workforce).

- Seasonal working, temporary foreign migrant labour, and individuals with second jobs are also prevalent in the sector.

- The sector has around 10,000 unpaid family workers representing three per cent of the workforce, higher than the national average of 0.3 per cent. Volunteering is particularly important for the forestry industry.

- Males significantly outnumber females in the sector, however, not in all industries as veterinary activities employ more females than males.

- The workforce is ageing, with 55 per cent of individuals in the sector aged over 45, compared with 38 per cent across all sectors. The number of individuals in the sector aged over 60 has increased from 57,000 in 2002 to 84,000 in 2010. The under-25 age group over the period has declined by 1.9 per cent per annum compared with one per cent across the whole economy over this period.

- The white ethnic group is most prevalent in the sector, accounting for 99 per cent of the workforce.

- Skilled trades, elementary and managerial occupations are most prevalent in the sector reflecting the practical/vocational and entrepreneurial nature of the sector.

3.1 Introduction

This chapter explores the characteristics of the agriculture, forestry and fishing workforce. We look at working patterns including levels of employment and self-employment, migrant workers, seasonal working and family workers. The chapter then explores the characteristics of individuals working in the sector and the jobs people do.

3.2   Working patterns

The data in Table 3.1 indicates that around four in five workers in the agriculture, forestry and fishing sector are employed full-time (80 per cent). Part-time working is less common within the sector compared with the whole economy: under a fifth of workers, or 77,000 people, are employed on a part-time basis in the sector (19 per cent), compared with over a quarter of workers across all sectors (27 per cent).

As shown in Table 3.2, data from the LFS estimates that part-time working within the sector is more prevalent in England compared with Scotland, where 21 per cent are employed part-time in the former and 17 per cent in the latter[25].

LFS data for Northern Ireland and Wales is not robust enough (because of small sample size) to include in the assessment. However, Lantra's primary research prepared for the Northern Ireland Department of Agriculture and Rural Development (DARD) tells us that part-time working is more prevalent in Northern Ireland compared with other nations. Based on a survey of 991 businesses, 41 per cent of the land-based and environmental sector workforce was employed on a part-time basis. Furthermore, within agriculture alone the prevalence of part-time working is greater, with 56 per cent of the workforce working on part-time terms or part-time as part of the family business on a voluntary basis (Lantra, 2010b). While this estimate is derived from a business survey rather than a labour force survey, the results do tally with DARD's agricultural census, which shows 45 per cent of employment is part-time[26]. In Wales, 55.5 per cent of the individuals in agriculture work on a part-time basis[27].

While the LFS captures information on second jobs, the tables in this chapter focus on respondents' main jobs, so it may be that those with a second part-time job are underestimated in total levels of part-time working. A review of the available literature suggests somewhat higher levels of part-time working. Research studying the prevalence of second jobs using data from the British Household Panel Survey between 1991 and 2001 found that respondents whose current main job was in agriculture were significantly more likely to hold second jobs compared with those in other sectors (Wu *et al.*, 2008).

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[25] Data for Wales and Northern Ireland lacked statistical robustness so could not be disclosed in this analysis.
[26] Lantra calculation based on DARD (2010). Includes unpaid family workers.
[27] Lantra calculation based on Welsh Assembly Government (2011).

There are a number of reasons why workers take second jobs; for example, where employers are unable to offer sufficient hours or income in a main job. Within the agriculture, forestry and fishing sector, taking on second jobs may also be part of a wider lifestyle choice, where individuals are interested in other activities outside of their main job. Defra research suggests there are a small minority of farmers (from a survey of Defra-registered holdings) who are characterised by farming as a 'lifestyle choice', for whom farming is unlikely to be the main source of income and who either regard farming as a hobby, or have a main income from off-farm employment (Pike, 2008).

In addition, the sector has a high proportion of businesses that are undergoing diversification by conducting secondary business activities within a related industry, which could be considered as some form of market or product development; for example a farm producing different types of crops or animals (Lantra, 2011b).[28] Self-employed respondents who have diversified their business and are subsequently undertaking more than one role may not necessarily class themselves as having a second job, yet presumably are still undertaking a different role from that which provides their main income.

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[28] Report produced by Lantra as lead SSC in partnership with Improve, Skillsmart Retail and People1st Cymru.

Table 3.1: Full- and part-time working by sector, 2010 (UK)

	Full-time 000s	Part-time 000s	Full-time %	Part-time %	Weighted base 000s	Unweighted base 000s
Agriculture, forestry and fishing	**326**	**79**	**80**	**19**	**406**	**2.976**
Energy production and utilities	435	38	92	8	473	3.244
Manufacturing	2,688	281	91	9	2,969	20.400
Construction, building services, engineering and planning	2,435	260	90	11	2,695	17.917
Wholesale and retail trade	2,549	1,590	62	39	4,139	27.571
Transportation and storage	1,218	229	84	16	1,447	9.729
Hospitality, tourism and sport	1,127	920	55	44	2,046	13.183
Information and communication technologies	682	79	90	10	761	4.875
Creative media and entertainment	737	249	75	25	986	6.186
Financial, insurance & other professional services	1,623	377	81	18	2,001	12.804
Real estate and facilities management	643	334	66	35	977	6.561
Government services	1,800	408	82	19	2,208	15.098
Education	1,872	1,215	61	40	3,087	21.537
Health	1,344	742	64	34	2,086	14.742
Care	1,056	672	61	37	1,728	12.001
All economy	**21,083**	**7,760**	**73**	**27**	**28,843**	**194.363**

Source: Labour Force Survey 2010, ONS.

Table 3.2: Full- and part-time working by sector and nation, 2010

	England				Scotland				Wales				Northern Ireland			
	Full-time %	Part-time %	Weighted base 000s	Unweighted base 000s	Full-time %	Part-time %	Weighted base 000s	Unweighted base 000s	Full-time %	Part-time %	Weighted base 000s	Unweighted base 000s	Full-time %	Part-time %	Weighted base 000s	Unweighted base 000s
Agriculture, forestry and fishing	79	21	296	2.112	83	17	51	0.385	85	*	31	0.198	88	*	27	0.281
Energy production and utilities	92	8	346	2.336	91	9	88	0.620	96	*	25	0.157	92	*	14	0.131
Manufacturing	90	10	2,541	17.233	92	8	199	1.431	93	7	138	0.905	93	*	91	0.831
Construction, building services, engineering and planning	90	10	2,268	14.834	93	7	244	1.702	93	7	112	0.717	93	*	71	0.664
Wholesale and retail trade	62	38	3,469	22.822	58	42	352	2.369	57	42	205	1.325	63	37	112	1.055
Transportation and storage	84	16	1,251	8.292	83	17	117	0.822	80	23	46	0.308	87	*	33	0.307
Hospitality, tourism and sport	55	45	1,704	10.849	52	48	198	1.295	51	49	100	0.636	62	38	44	0.403
Information and communication technologies	90	10	675	4.269	89	11	56	0.377	88	*	18	0.114	88	*	13	0.115
Creative media and entertainment	75	25	875	5.406	68	32	64	0.436	70	23	32	0.214	72	*	14	0.130
Financial, insurance & other professional services	82	18	1,768	11.123	78	22	138	0.948	77	22	53	0.358	81	19	41	0.375
Real estate and facilities management	65	35	847	5.623	73	27	75	0.519	63	35	38	0.254	74	*	18	0.165
Government services	81	19	1,835	12.302	84	16	173	1.210	81	23	111	0.744	84	16	89	0.842
Education	60	40	2,624	18.075	64	36	234	1.677	66	32	154	1.059	67	33	75	0.726
Health	64	36	1,712	11.931	65	35	198	1.409	67	31	111	0.771	71	29	64	0.631
Care	61	39	1,409	9.629	60	40	183	1.308	61	40	97	0.665	62	38	40	0.399
All economy	73	27	24,321	161.435	73	27	2,444	17.008	72	27	1,311	8.689	77	23	766	7.231

*Source: Labour Force Survey 2010, ONS. *Sample size too small for reliable estimate.*

Self-employment is particularly prevalent in the agriculture, forestry and fishing sector, with 202,000 people (or 50 per cent of the workforce) working for themselves (see Table 3.3). This is particularly striking considering that the comparative figure for all sectors is 14 per cent; and the highest level of self-employment in any other sector is 36 per cent in the manufacturing and construction sectors. This is in keeping with figures from Defra's June Agricultural Survey (Defra, 2010a), which found that 63 per cent of the agricultural workforce were farmers, business partners, directors or spouses. Looking at the sector within individual nations, self-employment is more prevalent in Northern Ireland (75 per cent of total employment), followed by Wales (62 per cent), Scotland (50 per cent) and finally England (46 per cent)[29] (see Table 3.4). Higher levels of self-employment are likely to reflect the high numbers of small or micro-businesses within the sector as described in Chapter 2.

Around 10,000 people working in the sector are estimated to be unpaid family workers. This represents 2.6 per cent of the workforce, which is higher than the average of 0.3 per cent across all sectors.[30] The high prevalence of unpaid family workers is likely to reflect the fact that many businesses within the sector are small and family-run. Recently commissioned research suggests that between 2006 and 2009, 89 per cent of businesses in the agriculture, forestry and fishing sector (as well as mining and extraction) were family-run (Oxford Economics, 2011).[31] Focus groups conducted for Lantra's primary research in Northern Ireland observed that within family businesses there is often a reliance on family succession. However, where a farm owner continues working, this often restricts the opportunities for other members of the family to take more responsibility and the opportunities to recruit into the industry. Participants felt there was poor succession planning in the industry (Lantra, 2010b).

For small businesses, employing family members could have a range of benefits, in terms of higher levels of motivation or lower costs than those associated with formally hiring employees; employing family members also provides the opportunity to pass on family-run businesses to offspring or other relatives. There is also evidence that family firms are better placed to deal with adverse economic conditions; while insolvency rates rose sharply for both family and non-family firms during 2009, family firms remained less likely to dissolve, possibly reflecting stronger balance sheets prior to the recession (Oxford Economics, 2011).

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[29] Please note the percentages presented in Table 3.4 do not total 100 per cent as there is a significant proportion of the workforce who are unpaid family members.
[30] Source: UKCES SSA Tabulations. Data item 8. Table 6: UK unpaid family member (number, 000s).
[31] Data based on BIS annual SME survey, where indicatively for 2007/08 9,000 SMEs were surveyed drawn at random from all sectors of the economy.

Table 3.3: Employment status by sector in the UK, 2010

	Employee 000s	Self-employed 000s	Employee %	Self-employed %	Weighted base 000s	Unweighted base 000s
Agriculture, forestry and fishing	**189**	**202**	**47**	**50**	**405**	**2.97**
Energy production and utilities	446	25	95	5	472	3.24
Manufacturing	2,776	184	94	6	2,968	20.40
Construction, building services, engineering and planning	1,716	964	64	36	2,692	17.90
Wholesale and retail trade	3,731	390	90	9	4,133	27.53
Transportation and storage	1,194	250	83	17	1,447	9.73
Hospitality, tourism and sport	1,817	219	89	11	2,044	13.17
Information and communication technologies	635	124	84	16	761	4.87
Creative media and entertainment	672	310	68	31	987	6.19
Financial, insurance & other professional services	1,706	291	85	15	2,001	12.80
Real estate and facilities management	744	229	76	23	977	6.56
Government services	2,145	58	97	3	2,207	15.09
Education	2,891	188	94	6	3,082	21.51
Health	1,928	155	92	7	2,085	14.74
Care	1,577	140	92	8	1,723	11.97
All economy	**24,774**	**3,952**	**86**	**14**	**28,817**	**194.20**

Source: Labour Force Survey 2010, ONS.

Table 3.4: Employment status by sector and nation, 2010 (%)

	England				Scotland				Wales				Northern Ireland			
	Employee	SE	WB	UWB	Employee	SE	WB	UWB	Employee	SE	WB	UWB	Employee	SE	WB	UWB
	%	%	000s	000s	%	%	000s	000s	%	%	000s	000s	%	%	000s	000s
Agriculture, forestry and fishing	50	46	295	2.110	49	50	51	0.385	33	62	31	0.197	*	75	27	0.281
Energy production and utilities	94	6	346	2.334	95	*	87	0.619	99	*	25	0.157	95	*	14	0.130
Manufacturing	93	6	2,540	17.229	95	5	199	1.432	94	6	138	0.905	93	7	91	0.831
Construction, building services, engineering and planning	63	37	2,266	14.822	77	23	244	1.701	65	35	112	0.717	55	45	70	0.657
Wholesale and retail trade	91	9	3,466	22.800	91	9	351	2.359	86	14	204	1.323	84	16	112	1.052
Transportation and storage	83	17	1,252	8.294	85	15	117	0.820	76	23	46	0.308	77	23	33	0.307
Hospitality, tourism and sport	89	10	1,702	10.836	89	11	198	1.295	87	12	100	0.634	82	17	44	0.403
Information and communication technologies	84	16	674	4.266	82	18	56	0.377	77	*	18	0.113	87	*	13	0.115
Creative media and entertainment	68	32	875	5.409	76	24	65	0.438	60	39	32	0.214	75	*	14	0.130
Financial, insurance & other professional services	85	15	1,768	11.122	90	10	138	0.948	81	19	53	0.359	92	*	41	0.375
Real estate and facilities management	75	24	847	5.624	85	15	75	0.520	78	21	37	0.252	67	*	18	0.165
Government services	97	3	1,834	12.298	97	3	173	1.209	97	*	111	0.742	99	*	89	0.842
Education	94	6	2,619	18.049	95	5	234	1.676	96	4	153	1.056	95	*	75	0.726
Health	92	8	1,712	11.930	94	6	199	1.410	92	8	111	0.769	95	*	64	0.631
Care	91	9	1,404	9.601	93	6	183	1.306	95	*	97	0.665	90	*	40	0.399
All economy	86	14	24,301	161.314	89	11	2,442	16.995	85	14	1,309	8.674	84	16	765	7.217

Source: Labour Force Survey 2010, ONS Note: SE = self-employment. WB = weighted base. UWB = unweighted base. Weighted & unweighted bases also include unpaid family workers.
*Sample size too small for reliable estimate.

The agriculture, forestry and fishing sector has a higher proportion of workers born in the UK (93 per cent), compared with the average across all sectors (87 per cent). The corresponding data for all sectors is shown in Table 3.5. While the proportion of workers born in the rest of Europe appears similar to the all-sector average (five per cent), workers in the sector appear less likely on average to be born outside of the EEA (just two per cent, compared with nine per cent average across sectors). This is despite the high number of migrants working in the sector. Many migrants working in the sector on a seasonal basis will be outside the scope of LFS data.

Table 3.5: Employment by country of birth and sector, UK (2010)

	UK	Rest of Europe (EU 27)	Rest of world	Total	UK	Rest of Europe (EU 27)	Rest of world
	'000	'000	'000	'000	%	%	%
Agriculture, forestry and fishing	**377**	**21**	**8**	**406**	**93**	**5**	**2**
Energy production and utilities	431	15	26	472	91	3	6
Manufacturing	2,567	210	193	2,969	86	7	6
Construction, building services, engineering and planning	2,446	124	126	2,696	91	5	5
Wholesale and retail trade	3,644	177	318	4,140	88	4	8
Transportation and storage	1,213	77	158	1,448	84	5	11
Hospitality, tourism and sport	1,630	156	260	2,046	80	8	13
Information and communication technologies	640	33	88	761	84	4	12
Creative media and entertainment	850	51	87	987	86	5	9
Financial, insurance & other professional services	1,719	79	202	2,001	86	4	10
Real estate and facilities management	808	55	114	978	83	6	12
Government services	2,011	46	152	2,208	91	2	7
Education	2,769	106	213	3,088	90	3	7
Health	1,737	83	266	2,086	83	4	13
Care	1,490	65	174	1,729	86	4	10
Other sectors	722	43	71	836	86	5	9
All economy	**25,054**	**1,340**	**2,457**	**28,851**	**87**	**5**	**9**

Source: Labour Force Survey 2010, ONS.

Table 3.6: Employment by country of birth and nation, 2010

	UK		England		Scotland		Wales		Northern Ireland	
	000s	%	000s	%	000s	%	000s	%	000s	%
UK	25,054	87	20,856	86	2,264	93	1,228	94	706	92
Rest of Europe (EU 27)	1,340	5	1,176	5	85	3	37	3	42	5
Rest of world	2,457	9	2,295	9	96	4	47	4	18	2
Total	28,851	100	24,327	100	2,446	100	1,312	100	766	100
Unweighted base	194.426		161.480		17.022		8.693		7.231	

Source: Labour Force Survey 2010, ONS.

LFS data shows an increase in the total workforce born in the rest of Europe, increasing from 8,000 (or two per cent of the workforce) in 2005 to 21,000 (or five per cent of the workforce) in 2010. The underlying data is shown in Table 3.7.

Table 3.7: Employment by country of birth in agriculture, forestry and fishing (2002-2010)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	'000	'000	'000	'000	'000	'000	'000	'000	'000
UK	379	375	383	401	395	399	417	346	377
Rest of Europe (EU 27)	*	7	*	8	9	13	18	12	21
Rest of world	10	8	7	12	13	10	13	7	8
Total	**394**	**389**	**396**	**421**	**416**	**422**	**448**	**364**	**406**
Unweighted base (000s)	3.688	3.499	3.445	3.528	3.338	3.395	3.507	2.809	2.978

*Source: Labour Force Survey 2010, ONS. *Sample size too small for reliable estimate.*

The proportion of the actual workforce who originates outside the UK is likely to be higher because of the influence of seasonal working. The sector has traditionally been reliant on a temporary workforce for seasonal work, which has become increasingly migrant-dominated since the expansion of the EU in 2004 and the decision to allow transitional accession measures for seven A8 countries (Scott, 2007). The Seasonal Agricultural Workers Scheme (SAWS), originally intended to allow students from outside the EEA to access temporary agricultural work in the UK, has also enabled large numbers of migrants to enter the labour force (UK Border Agency, 2012).

However, growing concerns regarding the use of illegal labour by employers, employment agencies and businesses (referred to as 'Gangmasters'), led to the implementation of the 2004 Gangmaster's Act under the auspices of the Gangmaster's Licensing Authority[32]. The Act aims to protect workers from exploitation within the fresh produce supply chain (including the gathering and food picking, processing and packaging stages), horticultural industries and all other industries relating to the supply and use of workers in agriculture.

Information on temporary working and country of birth presented in this chapter is derived from LFS data, which is a household representative survey. The LFS may exclude some groups such as short-duration migrants or those living in communal accommodation, and hence may not fully represent true levels of temporary working and nationality of the workforce across the sector. This is illustrated by data shown in Table 3.8, which shows that permanent working is prevalent in the sector with 98 per cent of the workforce permanently employed. This figure is generally high across the whole economy, with 94 per cent employed permanently across all sectors.

Recent ONS research used registration data from the Worker Registration Scheme (WRS) to estimate that up to 40 per cent of the total agricultural workforce in 2010 may have been A8[33] workers, and this is without the contribution of the other EU countries (McCollum & Findlay, 2011). The research also found that, although the recession has led to an overall decline in the number of A8 migrants[34] entering the UK labour market, this has been uneven across the sectors with demand for labour remaining much more persistent in agricultural industries. Taking into account the seasonal nature of work[35] in the industry, this study suggests that LFS measures of permanent employment may not cover the entirety of the sector[36].

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[32] For further information on the Gangmaster's Licensing Authority see: http://gla.defra.gov.uk/

[33] These countries are Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia.

[34] This includes any people working outside of their home country, which in this case means outside the UK.

[35] A seasonal worker is any worker who finds employment only in certain seasons.

[36] Due to the nature of ONS data, the terms 'seasonal worker' and 'migrant worker' are used interchangeably. This is due to the fact the nature of the data does not allow for cross-tabulation of the two types of worker.

This is backed up by Lantra's own primary research into the migrant workforce employed in agriculture across England and Wales. From a survey of 236 employers and 76 migrant workers in England conducted in 2007, Lantra found the most common type of farming business employing migrants was arable (32 per cent), followed by production horticulture (23 per cent) and soft fruit (14 per cent). Migrant workers most commonly made up 41 to 50 per cent of the average business's workforce, although higher proportions were also common, with two-fifths of employers stating that migrants made up between 51 and 100 per cent of their workforce. Face-to-face interviews with migrant workers identified that three-quarters were employed on a permanent contract (72 per cent) while only one-fifth (17 per cent) were working on a fixed-term basis and six per cent were working on a casual basis (Lantra, 2007a).

In Wales, 29 employer interviews were undertaken in 2007; findings suggested that migrant workers were commonly employed on a permanent basis (by 47 per cent of employers). Interviews with 60 migrant workers, also conducted as part of the study, suggested that training was provided to migrants but that most of this was health and safety or language related (Lantra, 2007b). For more information on the sector's workforce in terms of country of origin, see Section 3.3 'Workforce characteristics'.

Seasonal working is also common in the wider sector. Lantra's primary research in 2004 surveyed 100 businesses in the Scottish fisheries management industry and found that around one-fifth use seasonal staff (Lantra, 2004). While lacking statistical robustness, this suggests that the practice is more commonplace than might be expected.

There is also evidence to suggest high levels of contracting within the agricultural, forestry and fishing sector, and in the agricultural industry in particular (Megaw, 2011). Recent research surveying farms in Northern Ireland estimated that some three-quarters (77 per cent) had used contractors in the previous year, with activities undertaken by contractors most commonly being hay or silage making, hedge cutting and spreading of slurry/manure. The use of contractors is also related to the issue of an ageing workforce within the sector, which is discussed in more detail in the next section.

A final consideration is the high levels of volunteering prevalent in certain parts of the sector, particularly in forestry (as well as in environmental conservation and fisheries management within Lantra's wider footprint) compared to all sectors of the UK. In 2008, Lantra surveyed 342 volunteers, 85 host organisations and 43 advisory groups in the forestry industry, finding that volunteering was widespread, and that involving volunteers would become increasingly important over the next three to ten years (Lantra, 2008a). The forestry industry is typically wider in scope than commercial logging operations, including the sustainable coppicing industry, which aims to manage woodland in a traditional and sustainable way. This sub-industry invites many volunteers to participate through delivering learning events to schools and passing on heritage skills to interested individuals. The scope for volunteering is therefore particularly high in forestry and Lantra's most recent research suggests that 12 per cent of the forestry workforce in the UK are volunteers (Lantra, 2011).

Lantra's primary research has also identified environmental conservation as a key industry in terms of the number of organisations who employ volunteers (Lantra, 2008). This volunteer workforce may become increasingly important as environmental stewardship and ecosystem services change the sector's relationship with the general public. Volunteering is also very common in the fisheries management industry. Lantra's primary research in the industry in 2004 (Lantra, 2004) indicated that the majority of fisheries management businesses, as well as almost all angling clubs surveyed, used volunteers with an average of between five and eight volunteers per establishment. In industries where volunteering is prevalent, it is important that sufficient attention is given to the recruitment and training of volunteers, as well as training of the paid workforce in aspects of volunteer management.

Table 3.8: Employment type by sector, UK, 2010 (%)

	Permanent 000s	Temporary 000s	Permanent %	Temporary %	Weighted base 000s
Agriculture, forestry and fishing	**182**	*****	**98**	*****	**186**
Energy production and utilities	399	11	97	3	410
Manufacturing	2,600	99	96	4	2,699
Construction, building services, engineering and planning	1,658	71	96	4	1,729
Wholesale and retail trade	3,395	124	96	4	3,519
Transportation and storage	1,075	59	95	5	1,135
Hospitality, tourism and sport	1,538	166	90	10	1,704
Information and communication technologies	602	23	96	4	625
Creative media and entertainment	582	43	93	7	624
Financial, insurance & other professional services	1,636	56	97	3	1,692
Real estate and facilities management	660	39	94	6	699
Government services	1,985	121	94	6	2,106
Education	2,443	296	89	11	2,739
Health	1,737	94	95	5	1,832
Care	1,446	90	94	6	1,536
All economy	**22,432**	**1,375**	**100**	**100**	**23,807**

*Source: Labour Force Survey 2010, ONS. * Sample size too small for reliable estimate.*

3.3 Workforce characteristics

This section explores the workforce characteristics of the agriculture, forestry and fishing sector including patterns in gender, age and ethnicity.

There are 278,000 male workers in the UK agriculture, forestry and fishing sector, and 128,000 females. Males and females represent 69 per cent and 31 per cent of the sector's UK workforce respectively. The proportion of male workers in the sector is 15 percentage points higher than the same figure across all sectors (54 per cent), highlighting that the sector is largely male-dominated. Table 3.9 provides data on gender in the agriculture, forestry and fishing industry for the UK and for each nation. Table 3.10 shows the corresponding data for all sectors of the economy.

Table 3.9: Employment by gender and nation in agriculture, forestry and fishing (2010)

	Male	Female	Total	Male	Female	Total	*Unweighted base*
	000s	000s	000s	%	%	%	*000s*
UK	278	128	406	69	31	100	*2.978*
England	191	105	296	64	36	100	*2.114*
Scotland	39	12	51	77	23	100	*0.385*
Wales	24	*	31	77	*	100	*0.198*
Northern Ireland	24	*	27	89	*	100	*0.281*

*Source: Labour Force Survey 2010, ONS. * Sample size too small for reliable estimate.*

Northern Ireland has the highest proportion of male workers, where around nine in every ten workers are male (see Table 3.9). Meanwhile, England has the lowest proportion of males employed in the sector at 64 per cent.

Table 3.10: Employment by gender and nation in all sectors (2010)

	Male	Female	Total	Male	Female	Total	Unweighted base
	000s	000s	000s	%	%	%	000s
UK	15,439	13,416	28,855	54	46	100	*194.448*
England	13,081	11,250	24,331	54	46	100	*161.501*
Scotland	1,257	1,189	2,446	51	49	100	*17.022*
Wales	692	620	1,312	53	47	100	*8.693*
Northern Ireland	409	358	766	53	47	100	*7.232*

Source: Labour Force Survey 2010, ONS.

It is interesting to note that the broad imbalance in favour of males is not necessarily mirrored across the individual industries that make up the sector. For instance, in the veterinary activities industry, 83 per cent of the workforce is female and just 17 per cent is male[37]. Nevertheless, overall the sector remains male-dominated.

The gender imbalance also differs between different occupational groups. This is shown in Table 3.11. Occupations with an above average proportion of females employed across the sector (31 per cent) include professional occupations (58 per cent), personal service occupations (89 per cent) and administrative and secretarial (93 per cent) occupations. These are generally considered to be more office-based professions rather than involving physical work. Interestingly, the trend extends to knowledge-based occupations in the form of professionals.

Table 3.11: Gender profile by broad occupational group, 2010 (UK)

	Agriculture, forestry & fishing			All economy		
	Male	Female	Total	Male	Female	Total
	%	%	000s	%	%	000s
1 Managers and Senior Officials	78	22	49	65	35	4,455
2 Professional occupations	42	58	21	56	44	4,028
3 Associate Professional and Technical	*	*	5	50	50	4,265
4 Administrative and Secretarial	*	93	27	22	78	3,181
5 Skilled trades occupations	87	13	168	92	8	3,061
6 Personal service occupations	*	89	28	17	83	2,544
7 Sales and Customer Service Occupations	*	*	3	35	65	2,146
8 Process, Plant and Machine Operatives	86	*	19	88	12	1,907
9 Elementary occupations	68	32	85	55	45	3,257
All occupations	**69**	**31**	**406**	**54**	**46**	**28,842**

*Source: Labour Force Survey 2010, ONS. *Sample size too small for reliable estimate.*

In 2006, the Women and Work Commission estimated that removal of barriers for women working in occupations traditionally done by men and increasing women's participation in the labour market could be worth between £15 billion and £23 billion or 1.3 to 2.0 per cent of GDP (Women and Work Commission, 2006). To enable women to progress in traditionally male-dominated industries, a significant amount of funding was made available to women via the Women and Work Sector Pathways Initiative, with Lantra playing a key part in this programme through the promotion of career progression and new career pathways to 2,260 women in eligible industries between April 2008 and March 2011.

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[37] Source: Labour Force Survey calculated by Cambridge Econometrics, 2011.

Looking at the gender breakdown of the sector over time, between 2002 and 2010 the share of females in the workforce increased by four percentage points (from 27 per cent to 31 per cent), indicating that the historic trend of male dominance of the sector may be changing[38]. Any such changes are occurring very gradually though, with no significant improvements since 2008 (32 per cent in 2009 and 31 per cent in 2008), suggesting that further investment will be necessary to realise the social and economic gains outlined by the Women and Work Commission.

There are some important considerations for the sector in terms of the age of the workforce, which are outlined over the next few pages. Age profile by nation for the agriculture, forestry and fishing sector is shown in Table 3.12, while corresponding data for the UK is contained in Table 3.13. Workers in the agriculture, forestry and fishing sector are most commonly aged between 45 and 59 (34 per cent), which mirrors the overall economy (32 per cent).

Table 3.12: Age profile of sector workforce by nation in 2010

	UK		England		Scotland		Wales		Northern Ireland	
	000s	%	000s	%	000s	%	000s	%	000s	%
16-18	9	2	9	3	0	0	0	1	0	0
19-24	31	8	24	8	4	7	2	8	2	6
25-34	67	16	52	18	9	18	3	9	3	10
35-44	75	19	52	18	9	18	6	21	7	27
45-59	137	34	96	32	21	40	11	34	9	35
60-64	33	8	24	8	5	10	3	8	1	5
65 +	54	13	40	13	4	7	6	19	5	17
Total	**406**	**100**	**296**	**100**	**51**	**100**	**31**	**100**	**27**	**100**

Source: Labour Force Survey 2010, ONS.

However, the agriculture, forestry and fishing sector diverges from all-economy averages in the under 25 (one percentage point lower), 25-34 (six percentage points lower) and 60+ (16 percentage points higher) categories. Overall, 55 per cent of individuals in the sector are aged over 45, indicating that the age profile of the sector is generally older than average, where the corresponding statistic is 38 per cent for the whole economy. For agriculture, this is in line with findings from Defra's June Agricultural Survey, where the most recent data available indicates the average age of farm holders was 59 years in 2007 and 58 years in 2005 (Defra, 2010a). The youngest holders were on dairy farms where the median age was 55 years in 2005 and 54 in 2007.

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[38] Source: Labour Force Survey 2010, ONS.

Table 3.13: Age profile of UK workforce by nation in 2010

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
16-18	673	2	569	2	58	2	35	3	10	1
19-24	3,037	11	2,541	10	274	11	136	10	85	11
25-34	6,324	22	5,365	22	500	20	267	20	192	25
35-44	7,029	24	5,932	24	589	24	311	24	197	26
45-59	9,331	32	7,826	32	834	34	434	33	236	31
60-64	1,631	6	1,394	6	129	5	79	6	30	4
65 +	831	3	702	3	62	3	49	4	17	2
Total	**28,855**	**100**	**24,331**	**100**	**2,446**	**100**	**1,312**	**100**	**766**	**100**
Unweighted base	*194.448*		*161.501*		*17.022*		*8.693*		*7.232*	

Source: Labour Force Survey 2010, ONS

Table 3.14 shows how the age profile of the sector has changed over time. Since the earlier part of the decade, the number of individuals in the sector aged over 60 has increased from 57,000 in 2002 to 84,000 in 2010. The 45-59 age group has also increased its share of the workforce from 30 per cent to 33 per cent, a one per cent average annual increase. The proportion of people working in the sector aged over 60 has increased by eight percentage points since 2002, from 15 per cent to 22 per cent in 2010. Meanwhile, the absolute numbers of 35 to 44-year-olds have decreased, while proportions of under 25s and 25 to 34-year-olds have remained relatively constant.

Table 3.14: Age profile of sector workforce 2002-2010 (UK, 000s)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Under 25	48	45	45	49	53	51	53	43	40
25-34	74	76	74	66	72	65	74	53	67
35-44	102	90	95	101	92	91	100	75	75
45-59	114	121	124	139	133	141	143	121	137
60+	56	58	57	66	66	74	78	73	87
Total	**394**	**389**	**396**	**421**	**417**	**422**	**448**	**364**	**406**
Unweighted base (000s)	*3.688*	*3.499*	*3.445*	*3.528*	*3.340*	*3.395*	*3.508*	*2.809*	*2.978*

Source: Labour Force Survey 2010, ONS

Trends in age profile affecting the agriculture, forestry and fishing sector mirror the national picture. The net number of jobs occupied by under 25s has decreased by seven per cent while the jobs taken by over 65s has grown by 55 per cent (based on calculations from the figures in Table 3.15).

Table 3.15: Age profile of UK workforce, 2002-2010 (000s)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Under 18	1,078	1,076	1,077	1,028	976	938	925	765	673
19-24	2,948	2,973	3,072	3,097	3,179	3,224	3,221	3,048	3,037
25-34	6,505	6,361	6,279	6,289	6,250	6,242	6,279	6,186	6,324
35-44	7,317	7,416	7,490	7,525	7,533	7,528	7,442	7,241	7,029
45-59	8,474	8,638	8,748	8,915	9,017	9,046	9,171	9,182	9,331
60-64	1,107	1,186	1,252	1,306	1,405	1,545	1,652	1,650	1,631
65 +	479	522	538	580	625	641	693	739	831
Total	**27,908**	**28,172**	**28,456**	**28,740**	**28,987**	**29,164**	**29,382**	**28,811**	**28,855**
Un-weighted base	*247.3*	*238.0*	*231.0*	*227.8*	*222.2*	*221.0*	*217.0*	*203.2*	*194.5*

Source: Labour Force Survey 2010, ONS

While the agriculture, forestry and fishing sector mirrors the direction of national trends (with the exception of the 25-34 age group), the scale of the change is larger in each category. This is shown diagrammatically in Figure 3.1 where the decline in the under 25 age group over the period is -1.9 per cent per annum compared with one per cent across the whole economy. The largest deviation from the national trend is in the 35-44 age group where the agriculture, forestry and fishing sector declined by 3.1 per cent per annum compared with the national average of only 0.5 per cent per annum.

Figure 3.1: Employment growth by age (2002-2010, average annualised % change)
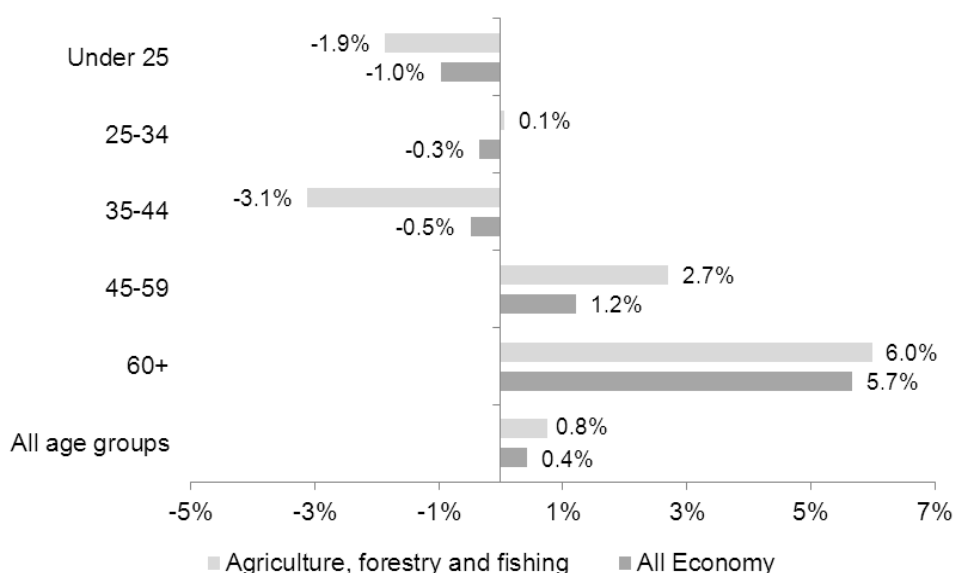
Source: Lantra calculations based on Table 3.14 and Table 3.15 (Labour Force Survey 2010, ONS).

This demonstrates the trend toward an ageing workforce, and official statistics suggest that the proportion of younger workers has not increased to offset the change. There are a number of issues for employers in the sector to consider in recruiting younger workers, for example some health and safety regulations place age restrictions on certain tasks, affecting young workers operating farm machinery[39]. Some of the issues regarding the employment of young people are explored further in Chapter 5.

Recent research suggests a key impact of the ageing workforce relates to the increase in contracting activity, with many older farmers reluctant to give up their farms despite being unable to continue physically with the work (Lobley *et al.,* 2005). This issue is likely to be compounded by poor succession planning across the sector. In these situations, contract farming or other arrangements such as land rental may provide an ideal solution.

Data shown in Table 3.16 indicates that the agriculture, forestry and fishing workforce is predominantly occupied by people from a white ethnic group. The LFS data is unable to provide a robust estimate of the Black, Asian and Minority Ethnic (BAME) population; however, it estimates that 402,000 workers are from a white background. Based on the number of employees in the sector, white workers indicatively represent 99 per cent of the workforce. This therefore indicates that one per cent of the workforce is from a non-white ethnic group. The sector has the lowest proportion of BAME workers compared with all other sectors such as hospitality, tourism and sport (14 per cent), or information and communication technologies (13 per cent). This is not surprising given the inherent rural nature of the sector and that only two per cent of the rural population belong to an ethnic minority, compared with 16 per cent in urban areas (Defra, 2011e).[40]

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[39] Legal minimum ages to drive a 3.5 to 7.5 tonnes vehicle is 18 years and over 7.5 tonnes is 21 years old.
[40] Defra calculation as part of the Rural Economy Growth review using Annual Population Survey 2010.

Table 3.16: Ethnicity of workforce within sectors, UK (2010)

	White '000	BAME '000	Total '000	White %	BAME %	Total %
Agriculture, forestry and fishing	402	*	402	100	*	100
Energy production and utilities	453	20	472	96	4	100
Manufacturing	2,769	199	2,968	93	7	100
Construction, building services, engineering and planning	2,567	130	2,697	95	5	100
Wholesale and retail trade	3,722	416	4,139	90	10	100
Transportation and storage	1,266	180	1,445	88	12	100
Hospitality, tourism and sport	1,766	280	2,045	86	14	100
Information and communication technologies	660	100	760	87	13	100
Creative media and entertainment	913	73	986	93	7	100
Financial, insurance & other professional services	1,776	224	2,000	89	11	100
Real estate and facilities management	852	125	977	87	13	100
Government services	2,037	171	2,208	92	8	100
Education	2,875	210	3,085	93	7	100
Health	1,814	272	2,086	87	13	100
Care	1,526	200	1,726	88	12	100
All economy	**26,151**	**2,686**	**28,837**	**91**	**9**	**100**

*Source: Labour Force Survey 2010, ONS. *Sample size too small for reliable estimate.*

3.4   The jobs people do

Employment in the sector is concentrated in the skilled trades occupations (e.g. sprayer operator, combine driver), which account for 168,000 individuals or 41 per cent of the workforce. This is a much higher proportion (some 30 percentage points higher) than across the economy as a whole (11 per cent). The next largest occupational group is elementary occupations (21 per cent), which is also much higher than the same figure across all sectors (11 per cent). Job roles in this occupational group include those such as farm or forestry workers. Table 3.17 shows the full data.

In contrast, the proportion of managers in the sector is lower than average (three percentage points lower) and professional occupations much lower (nine percentage points lower). These figures are likely to reflect the nature of the work in the agriculture, forestry and fishing sector and demonstrate the importance of practical and technical skills within the sector's workforce. However, it may also reflect the fact that much of the sector is self-employed, and in the agricultural industry in particular, individuals may consider themselves 'farmers' rather than managers, despite undertaking a range of roles within the business.

Compared with data for the economy as a whole, the sector does not feature the full range of occupational groups. For example, associate professional and technical, and sales and customer service occupations do not feature at all in the data, as sample sizes are too small to produce reliable estimates. These occupational groups are less prevalent within the workforce compared with those involving technical and practical skills (such as skilled trades occupations). However, this may reflect the multi-skilled nature of the workforce, as those who are self-employed (predominant in the sector) may define themselves principally as working in a 'skilled trades' occupation, but actually undertake a range of roles in the business in addition to their trade, for example managerial or administrative activities.

The occupational profile also differs by industry. While LFS data are not robust at the industry level (Table 3.17), our primary research conducted in the forestry sector shows that over half (55 per cent) of the employees identified worked at the transport and machine operatives level or in the elementary occupations. These jobs included forest machine operator, arboriculture workers and forestry workers. Table 3.17 shows equivalent data for transport and machine operatives (Process, Plant and Machine Operatives) and elementary occupations, and suggests 26 per cent of the sector as a whole is employed in these occupational groups.

In Lantra's primary research, skilled trades accounted for 21 per cent of forestry workers (e.g. tree surgeons), compared with 41 per cent for skilled trades in the entire sector as presented below. The Lantra research also shows that six per cent of the jobs identified were at the highest level – managers and senior officials. These jobs would have included arboriculture managers and head foresters (Lantra, 2011a)[41]. The equivalent figure from LFS data is 12 per cent for these roles. These figures overall indicate the inability of official statistics to represent sub-industries within a sector, whereas Lantra can include those not represented by standard industrial classification codes due to industry links and research specific to industry. The innovative methodology used at Lantra to explore job roles within an industry, as opposed to job roles within a SIC code, have enabled the organisation to look at industry job roles in a more representative way.

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[41] The research was based on a sample of 149 businesses, including those containing forestry roles but classified outside the sector as defined by SIC codes.

Table 3.17: Employment by occupation and sector, 2010 (UK)

	Agriculture, forestry & fishing		All economy	
	000s	%	000s	%
Managers and Senior Officials	49	12	4,455	15
Professional occupations	21	5	4,028	14
Associate Professional and Technical	*	*	4,265	15
Administrative and Secretarial	27	7	3,181	11
Skilled trades occupations	168	41	3,061	11
Personal service occupations	28	7	2,544	9
Sales and Customer Service Occupations	*	*	2,146	7
Process, Plant and Machine Operatives	19	5	1,907	7
Elementary occupations	85	21	3,257	11
All occupations	406	100	28,842	100
Unweighted base (000s)	*2.978*		*194.372*	

*Source: Labour Force Survey 2010, ONS. *Sample size too small for reliable estimate.*

Table 3.18 shows a full list of the 12 largest occupational groups in the agriculture, forestry and fishing sector. The most common groups are farmers (30 per cent), farm workers (14 per cent) and farm managers (7 per cent).

Table 3.18: Largest occupational groups within sector, UK (2010)

Rank	Occupation	000s	% workforce
1	Farmers	123	30
2	Farm workers	58	14
3	Farm managers	30	7
4	Agricultural and fishing trades n.e.c.	24	6
5	Veterinarians	17	4
6	Veterinary nurses and assistants	14	4
7	Horticultural trades	13	3
8	Animal care occupations n.e.c.	11	3
9	Fishing & agriculture related occupations n.e.c.	11	3
10	Agricultural machinery drivers	9	2
11	Receptionists	7	2
12	General office assistants or clerks	6	1
	Other occupations	83	21
	Total sector workforce	**406**	**100**
	Unweighted base (000s)		*2.978*

Source: Labour Force Survey 2010, ONS.

Lantra produces lists of job profiles within each of the 17 land-based and environmental industries for the purposes of Information, Advice and Guidance (IAG) to those considering a career in the sector. These lists are developed in partnership with industry and are available on Lantra's website (Lantra, 2011c).

A wide range of different jobs are covered, for instance common jobs in agricultural crops/arable farming include:

Figure 3.2: Common jobs in the arable farming industry

• Trainee farm worker/apprentice	• Farm manager
• Tractor driver	• Agronomist
• Farm worker	• Farm/company director
• Material handler operator	***Associated roles***
• Sprayer operator	• Farm secretary
• Combine driver	• Packer
• Head combine driver	• Pack-house supervisor
• Assistant farm manager	• Pack-house manager

Meanwhile, within agricultural livestock although certain similarities exist across sub-sectors of beef, dairy, sheep, pigs and poultry, there are also a number of jobs that are unique to each area. For example in the poultry industry, in addition to generic roles such as 'farm manager' or 'farm director', there are a number of industry-specific jobs such as 'catcher', 'sexer', 'vaccinator', and 'egg collector'.

While in a smaller business these roles may be done by the same individual who may think of themselves as a 'farmer' or even the 'farm owner', they nevertheless require different skill sets and demonstrate the wider range of jobs and skills available in the sector compared with those described above.

There are also issues to consider in terms of the representation of gender within different occupational groups in the sector. As outlined earlier in this chapter (see Table 3.11) the majority of managerial and senior official occupations in the sector are occupied by males (78 per cent), and elementary occupations are also more likely to be occupied by males (68 per cent compared with 54 per cent on average) while administrative and secretarial occupations or personal service occupations in the sector are more likely to be occupied by females (12 and eight percentage points respectively). In Lantra's evaluation of the Women and Work programme, 75 per cent of programme participants said they found it harder to progress to senior roles in their industry and just under two-thirds (61 per cent) agreed that there was a low proportion of women in senior management in their organisation (Lantra, 2010c). Programmes such as the Women and Work Sector Pathways Initiative have focused on addressing these types of gender imbalances within the sector.

4 Demand for, and value of, skills

Chapter summary

- On average, the agriculture, forestry and fishing sector is highly skilled but poorly qualified. There is an inherent mis-match between the skills required to perform roles in the sector and the often low formal qualification requirements for entry into the sector.

- People working in agriculture, forestry and fishing are more likely to have no formal qualifications compared with those in other sectors of the economy. Furthermore, there is a prevalence of lower level (Level 1 and 2) over technical and higher level (Level 3 and Level 4 or higher) qualifications in the sector.

- The proportion of people with Level 4+ qualifications has increased by eight percentage points since 2002. Levels of intermediate qualifications are increasing faster than national averages.

- Around 53 per cent of sector employers provided some form of on- or off-the-job training in 2011, compared with 59 per cent across the whole economy. The sector is the third lowest in the economy in terms of numbers of employers providing training.

- Employers in the sector invest more in informal High Performance Working practices, rather than more formal arrangements. The sector has below average proportions of employers producing training plans and possessing training budgets.

- The relatively low levels of training can be explained by the high capital intensity and simple product market strategy, as well as high levels of risk and uncertainty, high variability of income, lack of regulated entry into jobs in the sector, high travel costs due to geographic remoteness, and lack of ICT infrastructure.

4.1 Introduction

In the simplest of terms, to have a skill is the 'ability to do something well'. This chapter provides evidence regarding the demand for, and value of, skills in the agriculture, forestry and fishing sector. In the first part of this chapter we examine the mix or nature of skills required for jobs in the sector. The second part of the chapter explores the value of skills to individuals and employers and examines the incidence of training and high performance working. Finally, we consider how the demand and value of skills in the sector relates to the sector's competitive position.

4.2   Nature of skills used

In Table 4.1, we map some of the roles in the sector typically found in each of the nine occupational groups from the Standard Occupational Classification (SOC) 2010, detailing specific occupations relevant to each group, the level and type of skill predominately required and minimum entry requirements in terms of levels of qualifications (ONS, 2010). Assigning skills to 'levels' is complex, but for the purposes of this table, skill levels are defined as follows:

- **Basic** including numeracy, literacy and communication skills (including basic ICT skills)

- **Intermediate** including skills required at a slightly higher level, such as technical skills and supervisory skills

- **Higher** including skills at the highest level such as management and leadership skills.

In the table, we also show levels of qualifications typically required for roles in each broad occupational group in terms of the most up-to-date frameworks available, the Qualifications and Credit Framework (QCF) for England, Northern Ireland and Wales and Scottish Credit and Qualifications Framework (SCQF) for Scotland. However, it should be noted that 'skill levels' shown in the table do not necessarily equate to 'levels' of qualifications as per the QCF. For example a farm manager working in the industry for many years, despite having significant experience of management and leadership will not necessarily hold a Level 6 qualification such as a university degree. For this reason, in the final column we present the general nature of qualifications and/or *experience* required to competently perform a role in the occupational group, in addition to the levels of qualifications that may or may not be required for entry into that group within the sector.

There are further issues with mapping the items in this table. Roles across the sector are extremely varied within occupational groups; for the skilled trades occupational group, which makes up a large proportion of the workforce, there is a wide variation between and within sub-sectors terms of the levels of qualifications and the skills and experience required to be competent in a role at this level. For example, a ground worker in the forestry sub-sector may enter at Level 1 and progress to Level 3 through on-going training, yet remain within the skilled trades group overall. In addition, some jobs are represented within two groups. For example, a new entrant to agriculture such as 'farm worker' might be classed within the elementary group, being responsible for tasks that require little or no training. The worker might then undertake work-related training and acquire a number of competency-based certificates; when sufficient certificates have been achieved the role may more accurately fit within the skilled trades group, yet the job title is likely to remain the same.

Table 4.1: Sector skills map

Broad occupational group	Sector occupations	Predominant level of skill required	Predominant type of skill required	Minimum qualification level typically required for new entrants	General nature of qualifications, training and experience for occupations in SOC2010 major groups
Managers and senior officials (12%)	Farm manager/director, unit manager, arboricultural manager, head forester, fish farm manager	Higher skills	Transferable managerial skills; Leadership skills; Risk management skills; Negotiation skills; Project management skills; IT skills	Varies by industry. In farming no qualifications are necessarily required, other sectors typically require Level 4 (Level 7 on SCQF)	Significant amount of knowledge and experience of the production processes and service requirements associated with the efficient functioning of organisations and businesses
Professional occupations (5%)	Veterinary surgeon, forester forestry / arboricultural consultant, biologist, agronomist, nutritionist	Higher skills	Technical, practical and job specific skills; Knowledge Transfer skills; IT skills; Numeracy and communication skills	Level 6 (Level 10 on SCQF)	Degree or equivalent qualification, with some occupations requiring postgraduate qualifications and/or a formal period of experience-related training. Some roles also have CPD requirements
Administrative, clerical and secretarial occupations (7%)	Administrators and secretaries in farms, forestry organisations/estates or veterinary practices	Intermediate skills, basic skills	Supervisory and project management skills; IT skills; Numeracy and communication skills; Customer service skills; Tax and PAYE knowledge	Level 2 (Level 5 on SCQF)	A good standard of general education. Certain occupations will require further additional vocational training to a well-defined standard
Skilled trades occupations (41%)	Sprayer operator, seed drill and fertiliser operators, stockperson, forestry/arboricultural worker, ground worker, tree climber, establishment/harvesting contractors, husbandry person, fish farm worker, ghillie	Higher skills, intermediate skills, basic skills	Technical, practical and job-specific skills; Knowledge transfer skills; Supervisory and project management skills; IT skills; Numeracy and communication skills	Level 1-3 (Level 4-6 on SCQF)	Substantial period of training, often provided by means of a work-based training programme. Some technical roles have CPD requirements
Caring, leisure and other service occupations (7%)	Veterinary nurse, volunteer, sales assistant in farm shop, open farms guide	Intermediate skills, basic skills	Technical, practical and job-specific skills; IT skills; Numeracy and	Level 2 (Level 5 on SCQF)	Good standard of general education. Certain occupations will require additional vocational training, often provided by means of a work-

Broad occupational group	Sector occupations	Predominant level of skill required	Predominant type of skill required	Minimum qualification level typically required for new entrants	General nature of qualifications, training and experience for occupations in SOC2010 major groups
			communication skills		based training programme
Process, plant and machine operatives (5%)	Tractor driver, herdsperson, forest machine operator, chainsaw operator, machinery operator	Intermediate skills, basic skills	Technical, practical and job-specific skills; IT; Numeracy and communication skills	Level 2 (Level 5 on SCQF)	Knowledge and experience necessary to operate vehicles and other mobile and stationary machinery. Most occupations specify a minimum standard of competence for associated tasks and have a related period of formal training
Elementary occupations (21%)	Basic stockman, farm worker, general forestry/ arboricultural worker, deckhand in fishing	Intermediate skills, basic skills	Technical, practical and job-specific skills; Communication skills	Level 2 (Level 5 on SCQF)	Requires a minimum general level of education (*i.e.* that which is acquired by the end of the period of compulsory education). Some occupations at this level also have short periods of work-related training

Source: Lantra, 2012.

As shown in Table 4.1, occupations in the agriculture, forestry and fishing sector require individuals with a wide range of skills, from specialist technical skills to higher level management skills. However, the levels of qualifications required at entry do not necessarily match the types of skills prevalent in the sector. This is particularly relevant for the two largest occupational groups. Skilled trades is the largest occupational group (41 per cent of the workforce), and requires the widest breadth of practical and higher level skills of all the groups considered. However, entry requirements are typically low for this group and in some industries experience is the only entry requirement. The managers and senior officials occupational group is the next largest, accounting for 12 per cent of the workforce. Again, the typical qualification requirements do not always match up to the level of skills needed to perform roles in the category. This mismatch is also evident when examining the qualification profile of the sector.

Although the above table describes qualification levels in terms of the QCF and SCQF, throughout this chapter data on qualifications has been collected via the LFS using NVQ levels. Although the QCF and SCQF have technically been in operation since 2007, it is likely that employers will continue to be more familiar with traditional NVQ levels until the frameworks have sufficient time to embed. We will now consider levels of qualifications across the workforce.

More people working in agriculture, forestry and fishing have no formal qualifications compared with those in other sectors of the economy. Eighteen per cent of the sector workforce is employed without any formal qualifications compared with the all-economy average of just seven per cent. Furthermore, there is a higher prevalence of Level 1 and Level 2 qualifications and a lower prevalence of Level 3 and Level 4 qualifications[42]. Nearly half of all employees are qualified at Level 1 and Level 2 (43 per cent) compared with the all-economy average (37 per cent). The sector has a lower proportion of individuals qualified to Level 3 compared with national averages for Level 3 (15 per cent and 20 per cent). Meanwhile, higher level qualifications are less prevalent, with 24 per cent of the workforce qualified to Level 4 in the sector compared with 37 per cent nationally. This data is contained in Table 4.2.

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[42] Here we refer again to 'Levels' as per the Qualifications and Credit Framework.

Compared with some other sectors, the agriculture, forestry and fishing sector has a larger proportion of people qualified at Level 4; in particular transportation and storage, wholesale and retail trade, hospitality, tourism and sport, and real estate and facilities management have lower proportions. The sector is still below the national average in terms of its qualification profile and lags behind knowledge-based sectors including ICT, financial and insurance services, education and health.

Level of uptake of formal qualifications at the sector level hides some important variations at industry level. Veterinary activities is a regulated industry with formal qualifications required to practise in the UK as a veterinary surgeon or veterinary nurse. This means an inherent demand for higher level qualifications. LFS data tells us that 46 per cent of the veterinary services workforce has Level 4 or higher qualifications compared with 15 per cent in agriculture and 37 per cent on average across all sectors.

One of the reasons for the mismatch between qualifications and skills in the agriculture, forestry and fishing sector is the lack of formal entry requirements, which are customary in other sectors such as health, accountancy and medicine. While the sector is often subject to stringent health and safety and environmental regulation, entry to the profession is among the least regulated in the economy[43]. A recent report published by the UKCES found that only four per cent of agricultural jobs are subject to some form of entry-related occupational regulation such as licensing, certification, registration or accreditation (UKCES, 2011a).

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[43] Occupational regulations in this sense include licensing, certification, registration and accreditation, which all fundamentally act as a way to increase skills or human capital in an occupation.

Table 4.2: Qualification profile (NVQ) of workforces by sector, UK (2010)

	No qualifications %	Level 1 %	Level 2 %	Level 3 %	Level 4 + %	Total '000s	Unweighted base '000s
Agriculture, forestry and fishing	**18**	**21**	**22**	**15**	**24**	**406**	**2,978**
Energy production and utilities	6	16	22	22	33	473	3,244
Manufacturing	9	19	21	22	29	2,969	20,404
Construction, building services, engineering and planning	7	16	23	28	27	2,697	17,927
Wholesale and retail trade	11	22	26	22	19	4,140	27,582
Transportation and storage	11	26	29	19	16	1,447	9,732
Hospitality, tourism and sport	10	20	27	22	20	2,046	13,183
Information and communication technologies	2	10	15	18	55	761	4,874
Creative media and entertainment	3	10	14	14	59	987	6,193
Financial, insurance & other professional services	2	12	18	17	52	2,001	12,805
Real estate and facilities management	14	23	22	17	23	978	6,565
Government services	2	12	19	20	46	2,209	15,100
Education	3	9	12	13	63	3,088	21,544
Health	3	10	14	12	61	2,087	14,749
Care	5	12	23	24	36	1,729	12,006
All economy	**7**	**16**	**21**	**20**	**37**	**28,854**	**194,437**

Source: Labour Force Survey 2010 (ONS).

Examining qualification levels by nation in Table 4.3 shows that Scotland has a higher proportion of employees with Level 3 and Level 4 qualifications compared to the UK average. Scotland also has fewer Level 2 qualifications compared with the UK and England averages[44], being 5 per cent and 7 percentage points lower than the UK and England respectively. The Welsh workforce has a particularly high prevalence of Level 3 qualifications compared with the other nations, but similar numbers of Level 2 qualifications to the UK and England. Whilst much of the data for Northern Ireland has been suppressed due to small sample sizes, the 66 per cent figure for Level 1 or below indicates lower levels of qualifications on average. Most of the figures for the other individual nations for Level 1 or below are less than 40 per cent, the highest being in Scotland at 39 per cent, which is substantially less than the figure for Northern Ireland. Data for all sectors of the economy is shown in Table 4.4.

Table 4.3: Qualification levels within agriculture, forestry and fishing by nation (2010)

	UK	England	Scotland	Wales	Northern Ireland
	%	%	%	%	%
Level 4 +	24	25	26	24	*
Level 3	15	14	17	24	*
Level 2	22	24	17	21	*
Level 1 and below	39	38	39	32	66
Total	100	100	100	100	100
Weighted base (000s)	406	296	51	31	27
Unweighted base (000s)	2.978	2.114	0.385	0.198	0.281

*Source: Labour Force Survey 2010 (ONS) * Sample size too small for reliable estimate.*

Table 4.4: Qualification levels of whole economy by nation (2010)

	UK	England	Scotland	Wales	Northern Ireland
	%	%	%	%	%
Level 4 +	37	37	40	37	35
Level 3	20	20	22	19	19
Level 2	21	21	18	22	20
Level 1 and below	23	23	20	22	25
Total	100	100	100	100	100
Weighted base	1,729	1,409	183	97	40
Unweighted base	194.437	161.490	17.022	8.693	7.232

Source: Labour Force Survey 2010 (ONS).

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[44] Please note that qualification data collected through the labour force survey does so using the National Vocational Qualification (NVQ) classification and is not reflective of the changes apparent since the introduction of QCF and SCQF.

Lantra's primary research indicates that the sector in Northern Ireland has a higher prevalence of Level 1 or below qualifications and lower proportions of the workforce with Level 2, Level 3 and Level 4 and above qualifications. This is true both in farming as well as the wider land-based sector (Lantra, 2010b). A striking feature of this primary research data, however, is that employees appear more highly qualified than managers, with the latter having proportionally fewer Level 2 and Level 3 qualifications than the former. This is likely to be symptomatic of the ageing workforce, whereby managers may have more experience than qualifications compared to new entrants who come in with higher-level qualifications but less practical experience of the sector.

The proportion of managers with Level 1 or below qualifications in farming is 69 per cent compared with 50 per cent among employees. This is shown in Figure 4.1. While the overall robustness of the data is relatively high as the data is supported by a large sample size, the survey is an employer survey which asked for information on the levels of qualifications among employees. There may therefore be some inaccuracies where managers are either unsure or inaccurate regarding employees' levels of qualifications.

Figure 4.1: Qualifications of employees and managers in Northern Ireland in 2009
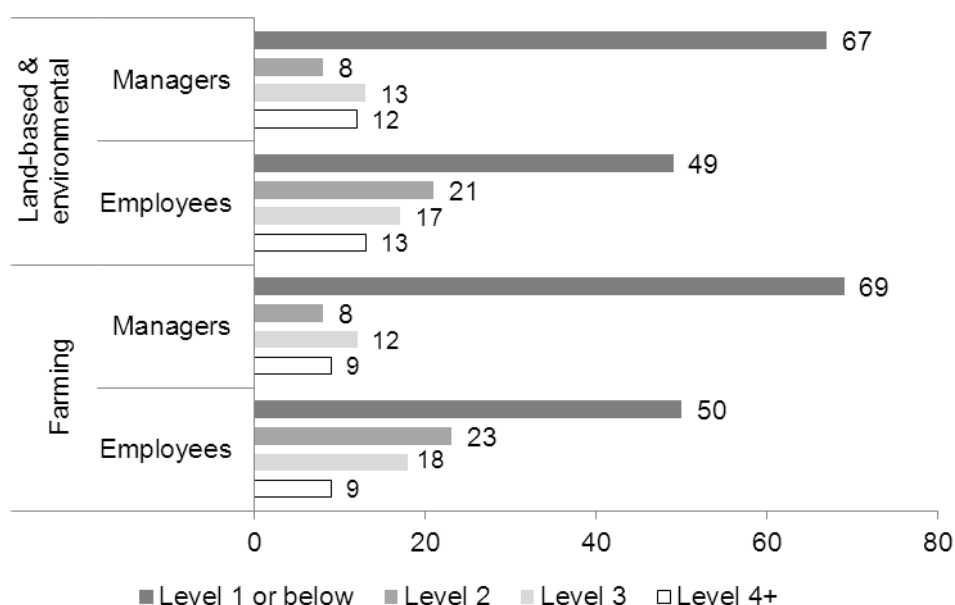
Source: Lantra (2010b). Unweighted base = 898.

Data in Table 4.5 shows how qualification levels have changed over time. Since 2002, there has been an increase in Level 4 and above qualifications within the sector (an increase of eight percentage points). This is substantiated by data on the number of enrolments in higher education in agriculture, forestry and fishing related subjects, which increased by six per cent between 2006/07 and 2009/10 and mirrored the national trend (Lantra, 2011d).[45]

Table 4.5: Qualification levels within the sector, UK (2002-2010)

	2002 %	2003 %	2004 %	2005 %	2006 %	2007 %	2008 %	2009 %	2010 %
Level 4 +	16	17	15	16	20	22	20	22	24
Level 3	15	18	17	18	17	16	17	16	15
Level 2	23	22	22	21	23	21	22	22	22
Level 1 and below	45	44	46	46	41	40	40	41	39
Total	100	100	100	100	100	100	100	100	100
Weighted base (000s)	394	389	396	421	417	422	448	364	406
Unweighted base (000s)	3.683	3.497	2.577	3.253	3.340	3.395	3.508	2.809	2.978

Source: Labour Force Survey 2010 (ONS).

This is evidence that formal higher level qualifications are becoming more prevalent. This may be the product of a replacement effect whereby older workers with more negative attitudes to training are being replaced over time by younger workers with more positive attitudes. A Lantra survey of 128 young farmers in 2009 suggested that young people value management skills over practical skills, with 71 per cent stating they were more beneficial for their future, compared with 66 per cent stating practical skills were most important (Lantra and NFYFC, 2009).[46]

In terms of Level 3 qualifications, there was no growth nationally within the sector, remaining at the 2002 level of 15 per cent until 2010 (see Table 4.5). Qualifying this against supply side data is inconclusive, with no discernible trends regarding the Level 3 qualifications in the sector. Further Education / Work-based learning enrolments between 2006/07 and 2007/08 increased by 2.7 per cent but fell by a further 5.5 per cent between 2007/08 and 2008/09 (Lantra, 2011d). Advanced Apprenticeships (or Modern Apprenticeships in Scotland) are also offered at NVQ Level 3, and in this case starts have increased both in veterinary activities (nearly six times as many Apprenticeships were started in 2009/10 compared with 2005/06) and agriculture (40 per cent increase over the same period). In Scotland, Level 2 Apprenticeships are also being offered in priority sectors including agriculture.

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[45] Lantra calculations based on Higher Education Statistics Agency (HESA) data from 2006/07- 2009/10.
[46] These findings are indicative as sample sizes are too low for statistical robustness. Data should be treated as illustrative. Multiple responses so totals exceed 100 per cent.

There has also been a decrease in Level 1 / below Level 1 qualifications over the period 2002-2010 (from 45 per cent to 39 per cent) and Level 2 (23 per cent to 22 per cent), which mirrors the trend in all sectors (see Table 4.5).

The proposition that the sector is highly skilled but poorly qualified is evident also from further analysis of the LFS data. Fewer managers and professionals in the sector have Level 4 or higher qualifications compared with the all-economy average for managerial and professional roles. However, there are other sectors with fewer Level 4 qualified managers and many of the industries in the public sector are more heavily regulated than the agriculture, forestry and fishing sector, thus requiring a greater supply of qualifications and training at management level. The data in Table 4.6 shows that 45 per cent of managers in the agriculture, forestry and fishing sector do not have Level 4 qualifications compared with 39 per cent across all sectors.

Table 4.6: Managers and professionals without Level 4 or higher qualifications (percentage of all managers and professionals)

	UK %	England %	Scotland %	Wales %	Northern Ireland %
Agriculture, forestry and fishing	**45**	**43**	*	*	*
Energy production and utilities	49	51	41	*	*
Manufacturing	51	51	51	59	35
Construction	50	51	41	40	*
Wholesale and retail trade	64	64	67	60	50
Transportation and storage	61	59	67	*	*
Hospitality, tourism and sport	66	66	61	70	*
Information and communication technologies	40	40	37	*	*
Creative media and entertainment	38	38	*	*	*
Financial, insurance & other professional services	36	36	38	35	*
Real estate and facilities management	58	59	63	*	*
Government services	31	32	36	29	*
Education	10	11	8	*	*
Health	15	15	*	*	*
Care	30	30	33	*	*
All economy	39	39	37	36	27

*Source: Labour Force Survey 2010 (ONS). *Sample size too small for reliable estimate.*

Table 4.7 shows how the proportion of managers and professionals without Level 4 or higher qualifications has changed over time. While the number of managers or professionals is increasing overall, 45 per cent within the sector did not have higher level skill qualifications in 2010 compared with 57 per cent in 2002. This suggests that managers are now more likely to have a Level 4 or higher qualification compared with 2002.

Table 4.7: Managers and professionals without Level 4+ qualifications in the agriculture, forestry and fishing sector (2002-2010)

		2002	2003	2004	2005	2006	2007	2008	2009	2010
Managers or professionals without L4 or higher qualifications	000s	32	31	23	32	36	40	36	31	32
	%	57	60	51	58	57	62	61	50	45
Weighted base	*000s*	*56*	*51*	*45*	*55*	*62*	*64*	*59*	*61*	*71*

Source: Labour Force Survey 2010 (ONS). Base: number of managers and professionals

4.3 Value of skills

The previous section demonstrated the prevalence of lower level (Level 1 and 2) over technical and higher level (Level 3 and Level 4 or higher) qualifications in the agriculture, forestry and fishing sector. This has been recognised as a common trait of the industry for many years by industry representatives brought together in England by the AgriSkills Forum (AgriSkills Forum, 2010), as well as in Lantra's previous Skills Assessments covering the UK and each devolved nation (Lantra 2010a).

This section examines the value of skills for both individuals and employers by looking at returns on investment in qualifications, the extent to which employers invest in staff development and value skills through investment in training. It also looks at the occurrence of high performance working in the sector as an indicator of alternative ways in which employers inherently value the skills of their workers.

4.3.1 Value of skills for individuals

For individuals, skills offer better employment prospects, higher earnings, job satisfaction and better health. Several studies estimate the wage or income return to education and skill development. Dickerson and Vignoles (2007) show that wage returns from Level 2 qualifications are 16 per cent. Level 3 qualifications return 13 to 15 per cent dependent on gender, while higher level qualifications (Level 4+) return an additional 28 to 31 per cent[47]. The authors also show that vocational qualifications offer lower returns than academic

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[47] This applies to all sectors and applies to data collected over the period 2000-2004.

qualifications for both males and females. Individual wage returns also vary by sector, and Dickerson and Vignoles (2007) estimate that wage premiums exist for businesses falling within Lantra's licensed footprint. The data is shown in Table 4.8.

Table 4.8: Wage returns by gender, skill level and type in Lantra's SSC Footprint (%)

Skill type	Gender	Level 1	Level 2	Level 3	Level 4	Level 5
Academic	Male	3.7	4.5	15.5	21.7	15.0
	Female	9.0	10.1	22.9	17.2	30.9
Vocational	Male	6.7	-5.5	12.3	-1.8	30.5
	Female	-1.1	-4.6	-4.0	0.3	-8.3

Source: Dickerson and Vignoles (2007). Data sourced from Labour Force Survey 2000-2004.

While the data covers some individuals and businesses outside of agriculture, forestry and fishing, it still provides a number of insights which are valid for this assessment. Academic qualifications for males and females generally have higher returns over vocational qualifications. Females receive greater returns to academic qualifications than males with the exception of Level 4 qualifications. Meanwhile, returns to vocational qualifications are typically higher for males than females.

4.3.2   Value of skills to employers

We now examine the degree to which employers value skills in the sector, firstly by examining the extent to which employers provide training. Garrett, Campbell and Mason (2010) present evidence that training is associated with high business survival rates and improved performance. The extent to which an employer invests directly in the skills of its workforce is another way to assess how skills are valued in the sector.

The UK Commission's Employer Skills Survey (2011) (Davies et al, 2012) and the LFS data provide information and details on the extent to which employers provide training for their employees. Training is defined as either off-the-job, meaning training away from the immediate work position, either on the premises or elsewhere; or on-the-job/informal training, not necessarily being away from the immediate work position but recognised as training by staff. It is important to note this definition throughout this section, as employer engagement via Lantra's Industry Advisory group suggests that informal learning activities such as discussion groups are common within the sector, and employers may not always consider these types of activities as 'training'.

Data on off-the-job training is sourced from the LFS, so the survey may underestimate levels of training overall as it does not include more informal training activities. In addition, the survey asks respondents about their recent training activities over the past four and thirteen weeks. The prevalence of training may therefore appear lower because of the seasonal nature of the sector, which is reflected in training activity mainly taking place between October and February, during traditionally 'quieter' periods for businesses. The LFS is a quarterly sample survey and places equal measure on each quarter, therefore the fact that training is at very low levels during the summer months acts to reduce the incidence of training overall. This is reflected in both the four- and 13-week figures where fewer employees in the agriculture, forestry and fishing received off-the-job training compared with the average for all sectors of the economy.

The percentage of employees in the sector receiving off-the-job training in the past four weeks (relative to when they were recorded in the survey) was six per cent compared with 13 per cent for all sectors (see Table 4.9). This figure has remained stable over time only decreasing by one percentage point in eight years, from seven per cent in 2002. Furthermore, data for the agriculture, forestry and fishing sector follows national trends of a small decrease over eight years.

The percentage of employees training in the last quarter (13 weeks) is generally higher due to examining a longer time period (see Table 4.10). The percentage in the sector receiving training in the past quarter is 13 per cent, compared with six per cent over the past month. Compared with the all-economy average, the trends are similar for the 13-week data and the four-week data in so far as the agriculture, forestry and fishing sector has the lowest percentage of employees training using either measure.

Table 4.9: Percentage of employees receiving training in last four weeks, 2002-2010 (UK)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	%	%	%	%	%	%	%	%	%
Agriculture, forestry and fishing	**7**	**7**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
Energy production and utilities	15	14	13	13	13	13	12	11	12
Manufacturing	10	9	9	10	9	9	9	9	9
Construction, building services, engineering and planning	10	9	10	9	9	9	9	9	8
Wholesale and retail trade	11	10	10	10	10	10	9	8	8
Transportation and storage	10	10	9	9	8	8	8	7	7
Hospitality, tourism and sport	13	12	12	11	11	10	10	10	11
Information and communication technologies	13	12	12	11	11	10	10	10	10
Creative media and entertainment	13	12	12	12	11	11	10	9	8
Financial, insurance & other professional services	18	17	17	16	15	15	15	14	15
Real estate and facilities management	14	13	14	12	13	12	12	7	8
Government services	20	20	20	20	19	18	19	19	17
Education	22	21	21	21	20	20	20	20	18
Health	24	25	25	25	24	23	22	24	24
Care	24	25	25	25	24	23	22	21	20
All economy	15	14	14	14	14	13	13	13	13
Weighted base (000s)	4,095	3,987	4,074	4,061	3,949	3,863	3,834	3,685	3,642
Unweighted base (000s)	*35.781*	*33.324*	*32.626*	*31.674*	*29.781*	*28.888*	*27.829*	*25.468*	*24.012*

*Source: Labour Force Survey 2010 (ONS). *Sample size too small for reliable estimate.*

Table 4.10: Percentage of employees receiving training in last 13 weeks, 2002-2010 (UK)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
	%	%	%	%	%	%	%	%	%
Agriculture, forestry and fishing	**15**	**13**	**14**	**13**	**13**	**12**	**13**	**13**	**13**
Energy production and utilities	33	31	30	28	28	28	26	25	27
Manufacturing	21	20	19	20	19	20	19	18	18
Construction, building services, engineering and planning	19	19	20	19	19	19	19	19	18
Wholesale and retail trade	20	20	20	20	18	18	18	16	16
Transportation and storage	21	21	20	19	19	18	18	17	18
Hospitality, tourism and sport	24	22	22	21	21	20	19	19	19
Information and communication technologies	27	25	24	23	23	22	21	21	20
Creative media and entertainment	24	24	23	23	23	21	21	18	17
Financial, insurance & other professional services	35	33	32	33	30	30	29	29	29
Real estate and facilities management	27	26	27	26	26	25	24	15	16
Government services	40	41	40	39	38	37	36	37	35
Education	44	42	42	42	40	39	40	39	38
Health	45	46	46	47	46	44	44	47	46
Care	45	46	46	47	46	44	44	41	40
All economy	28	28	28	28	27	26	26	26	26
Weighted base (000s)	7,952	7,873	7,917	8,037	7,883	7,681	7,669	7,382	7,359
Unweighted base (000s)	*69.767*	*65.973*	*63.658*	*63.118*	*59.87*	*57.81*	*56.008*	*51.497*	*48.93*

*Source: Labour Force Survey 2010 (ONS). *Sample size too small for reliable estimates.*

Table 4.11 shows data for training received in the last four weeks by nation. This data is limited for individual nations where sample sizes are often too small for reliable estimates, and therefore cannot show any possible differences between the nations. In England, seven per cent of employees in the agriculture, forestry and fishing sector received formal training compared with six per cent across the UK and 13 per cent across all UK sectors.

Table 4.11: Employees receiving training in last four weeks by nation in 2010

	UK %	England %	Scotland %	Wales %	Northern Ireland %
Agriculture, forestry and fishing	**6**	**7**	*	*	*
Energy production and utilities	12	12	13	*	*
Manufacturing	9	9	9	11	8
Construction, building services, engineering and planning	8	8	9	10	*
Wholesale and retail trade	8	8	9	9	6
Transportation and storage	7	7	8	*	*
Hospitality, tourism and sport	11	11	12	15	*
Information and communication technologies	10	10	*	*	*
Creative media and entertainment	8	8	*	*	*
Financial, insurance & other professional services	15	15	17	19	*
Real estate and facilities management	8	8	11	*	*
Government services	17	17	18	16	8
Education	18	19	17	19	*
Health	24	25	21	22	11
Care	20	20	19	26	*
All economy	**13**	**13**	**13**	**14**	**7**
Weighted base (000s)	3,642	3,085	317	188	52
Unweighted base (000s)	*24.012*	*20.155*	*2.164*	*1.215*	*0.478*

*Source: Labour Force Survey 2010 (ONS). *Sample size too small for reliable estimate.*

Looking at employees receiving training in the past 13 weeks by nation (Table 4.12), training is more prevalent in England (15 per cent) than in Scotland (12 per cent). The trend in 13 week training for all sectors of the economy shows a lower than average uptake of training over a 13-week period. Based on the UK figures, the sector has the lowest rate of training compared with other individual sectors for training received in the last 13 weeks, where 13 per cent of employees had received training compared to the all economy average (25 per cent).

Table 4.12: Employees receiving training in last 13 weeks by nation in 2010

	UK	England	Scotland	Wales	Northern Ireland
	%	%	%	%	%
Agriculture, forestry and fishing	13	15	12	*	*
Energy production and utilities	27	27	30	*	*
Manufacturing	18	18	18	20	18
Construction, building services, engineering and planning	18	18	21	18	12
Wholesale and retail trade	16	17	17	15	13
Transportation and storage	18	18	19	16	*
Hospitality, tourism and sport	19	19	20	21	*
Information and communication technologies	20	20	22	*	*
Creative media and entertainment	17	17	18	20	*
Financial, insurance & other professional services	29	29	28	32	17
Real estate and facilities management	16	16	23	18	*
Government services	35	35	35	34	24
Education	38	39	34	38	26
Health	46	47	42	44	32
Care	40	40	40	46	27
All economy	25	25	27	24	18
Weighted base (000s)	7,181	6,065	668	312	137
Unweighted base (000s)	*48.93*	*40.947*	*4.41*	*2.282*	*1.291*

*Source: Labour Force Survey 2010 (ONS). *Sample size too small for reliable estimate.*

Data from the UK Commission's ESS (2011) provides a more balanced picture of training, including both informal/on-the-job training as well as off-the-job training across a 12-month period. This is reflected in a much higher prevalence of training compared with LFS measures, this can be found in Table 4.13a which depicts employees receiving training by sector and nation.

Table 4.13a: Employees receiving training by sector and nation

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry and fishing	**198,736**	**43**	**152,352**	**43**	**†25,724**	**†47**	**8,993**	**29**	**11,667**	**51**
Energy production and utilities	167,507	50	120,687	49	32,976	55	11,072	66	2,772	38
Manufacturing	1,146,654	45	934,516	44	93,562	48	74,719	54	43,857	52
Construction	1,072,552	48	884,923	48	116,140	47	39,666	44	31,826	46
Wholesale and retail trade	2,340,353	50	1,960,109	49	201,879	55	109,603	55	68,761	48
Transportation and storage	538,494	41	448,580	39	49,954	44	22,489	58	17,468	63
Accommodation, food and tourism activities	1,221,736	53	1,017,791	53	124,328	55	48,807	49	30,809	50
Information and communication	233,240	38	205,944	37	†15,377	†51	5,255	28	6,663	65
Creative media and entertainment	524,081	48	451,335	47	†30,017	†43	24,215	69	18,513	69
Financial, insurance & other professional services	1,109,888	54	949,712	52	101,444	73	32,505	60	26,224	69
Real estate and facilities management	560,354	47	492,799	47	†36,284	†49	19,985	60	11,286	50
Government	1,004,866	56	835,514	58	82,550	47	49,901	53	36,901	59
Education	1,598,280	63	1,354,826	63	116,696	62	84,527	72	42,231	58
Health	1,300,684	65	1,032,851	64	187,638	81	58,505	49	21,690	52
Care	969,487	64	780,108	64	89,130	63	52,831	84	47,414	64
All economy	14,476,138	53	12,050,111	52	1,337,833	56	661,045	56	427,137	54
Weighted base	27,547,123		23,198,475		2,381,601		1,182,314		784,732	
Unweighted base	2,816,693		2,345,213		201,868		178,922		90,690	

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All employment.

† Treat figures with caution due to small base size of 50-99 establishments in Scotland

Table 4.13b shows the numbers and percentages of employers providing training by sector[48]. Over half of employers in the agriculture, forestry and fishing sector in the UK provide training for their workforce. This equates to 58,869 employers or 53 per cent of all business establishments and is below the all-economy average of 59 per cent of employers. This represents (jointly) the third lowest proportion of employers providing training compared with all other sectors. The only sectors that have a lower proportion of employers providing training are the transportation and storage (45 per cent) and the creative, media and entertainment sectors (52 per cent).

Looking at national differences in training provision, 71 per cent of employers in Northern Ireland provide training. This is likely to be because of the influence of the College of Agriculture, Food and Rural Enterprise (CAFRE), which is an executive agency of DARD. As the only land-based college in Northern Ireland and with support received from Government, it means that employers and individuals are able to access training more easily compared with other nations where training infrastructure is more disparate. As stated, the proportion of employers providing training is generally higher in Northern Ireland, and the incidence in the agriculture, forestry and fishing sector is seven percentage points higher than the all-economy average of 64 per cent within NI. Conversely, Wales sees less employer investment in training with only a third of employers providing training (34 per cent) compared with 59 per cent on average across all sectors. Employers in Scotland and England both provide lower levels of training compared with the all-sector average.

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[48] Training is defined as any externally delivered off-the-job training, any training delivered on site or any informal training (considered so by employees).

Table 4.13b: Employers providing training by sector and nation

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry and fishing	**58,869**	**53**	**42,577**	**54**	**†7,737**	**†58**	**3,536**	**34**	**5,019**	**71**
Energy production and utilities	8,743	69	6,858	69	1,040	81	554	67	291	54
Manufacturing	73,972	57	61,935	55	6,629	71	3,464	64	1,944	51
Construction	163,641	53	137,473	53	13,506	63	7,193	55	5,469	51
Wholesale and retail trade	261,948	56	218,681	55	23,692	67	11,347	54	8,228	58
Transportation and storage	55,004	45	46,106	43	5,633	70	2,103	50	1,161	52
Accommodation, food and tourism activities	134,314	61	108,618	60	15,665	71	6,570	58	3,461	59
Information and communication	39,090	54	34,418	52	†2,974	†83	1,215	62	483	44
Creative media and entertainment	74,069	52	63,945	51	†5,976	†54	2,690	57	1,457	71
Financial, insurance & other professional services	114,074	67	101,640	66	5,354	64	4,605	80	2,474	73
Real estate and facilities management	95,068	57	85,826	57	†6,652	†55	1,340	44	1,249	67
Government	41,608	76	32,980	74	4,715	85	2,343	87	1,571	77
Education	55,629	86	45,309	85	4,348	97	2,941	92	3,031	92
Health	44,797	86	38,133	85	3,208	99	2,216	79	1,239	84
Care	73,669	84	60,516	84	6,798	81	3,562	81	2,793	86
All economy	**1,361,250**	**59**	**1,141,560**	**58**	**119,847**	**68**	**58,171**	**59**	**41,668**	**64**
Weighted base	2,299,921		1,960,298		175,115		98,952		65,558	
Unweighted base	87,572		75,053		2,503		6,012		4,004	

UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All employers.

† Treat figures with caution due to small establishment base size of 50-99 in Scotland

The data indicates that employers in the sector provide below average levels of training for most occupational groups. The sector average for arranging training for managers, directors and senior officials for example is 7 percentage points lower compared to the all economy average. In contrast, sector training for skilled trades is above the all-economy average (20 per cent compared with 14 per cent). When all occupational groups both within the sector and across the economy are viewed (see Table 4.14), employers are seen to provide the highest proportion of training to managers, directors and senior officials.

Table 4.14: Employers providing training to employees by occupational group, 2011 (UK)

	Agriculture, forestry and fishing		All economy	
	Number	%	Number	%
Managers, Directors and senior officials occupations	31,714	54	825,928	61
Professional occupations	5,380	9	152,106	11
Associate professional and technical occupations	3,351	6	124,610	9
Administrative and secretarial occupations	10,380	18	372,218	27
Skilled trades occupations	11,909	20	192,480	14
Personal service occupations	3,288	6	129,265	9
Sales and customer service occupations	2,125	4	261,082	19
Process, plant and machine operatives	12,373	21	96,592	7
Elementary occupations	9,259	16	217,981	16
Other	**	**	35,410	3
Don't know	**	**	20,638	2
Arrange training for all categories of staff employed	31,322	53	714,095	52
Arrange training for some categories of staff employed	27,547	47	647,154	48
Weighted base	58,869		1,361,249	
Unweighted base	1,116		66,916	

Source: UK Commission's ESS 2011 (Davies et al, 2012) Base: All establishments providing training. **Denotes a figure greater than 0% but less than 0.5%.

In contrast to employers offering training, 72 per cent of employees in professional occupations had received training, followed by staff in associate professional and technical occupations (70 per cent) and skilled trades occupational groups (50 per cent). See Table 4.15 for the full data.

Table 4.15: Employees receiving training by occupational group, 2011 (UK)

	Agriculture, forestry and fishing		All economy	
	Number	%	Number	%
Managers, Directors and senior officials occupations	48,439	30	2,413,145	45
Professional occupations	20,668	72	1,904,780	61
Associate professional and technical occupations	9,997	70	1,022,510	56
Administrative and secretarial occupations	20,262	37	1,607,984	45
Skilled trades occupations	24,436	50	1,041,373	55
Personal service occupations	11,837	62	1,606,254	70
Sales and customer service occupations	5,825	48	1,937,670	55
Process, plant and machine operatives	29,893	51	902,782	47
Elementary occupations	25,657	38	1,938,793	48
Other	**	**	100,845	n/a
All occupations	198,735		14,476,137	
Weighted base	*198,735*		*14,476,137*	
Unweighted base	*9,578*		*1,517,802*	

Source: UK Commission's ESS 2011 (Davies et al, 2012). Base: All employees receiving training. **Denotes a figure greater than 0% but less than 0.5%.

A further point highlighted as a result of our industry engagement is that much of the formal training undertaken in the sector is likely to be driven by legislation. The agriculture, forestry and fishing sector is subject to a great deal of regulation, which imposes costs not only in terms of administering bureaucratic processes, but also in terms of reduced access to other training that might have greater business and personal development impacts. This is reflected in Table 4.16, where the proportion of health and safety/first aid training is relatively close to national averages. The data also shows the relatively low levels of management and supervisory training in comparison with all sectors.

Table 4.16: Employers providing training by type of training funded or arranged for employees, 2011 (UK)

	Agriculture, forestry & fishing		All economy	
	Number	%	Number	%
Job specific training	48,338	82	1,149,860	84
Health and safety/first aid training	38,635	66	970,183	71
Induction training	20,061	34	702,846	52
Training in new technology	25,134	43	641,023	47
Management training	11,609	20	457,763	34
Supervisory training	13,147	22	437,577	32
Personal Development Training*	2,260	4	45,451	3
Other	177	**	4,101	**
None of these	555	1	8,809	1
Don't know	15	**	2,412	**
Weighted base	*58,869*		*1,361,249*	
Unweighted base	*1,116*		*66,916*	

*Source: UK Commission's Employer Skills Survey (Davies et al, 2012) Base: All establishments providing training. **Denotes a figure greater than 0% but less than 0.5%.*

In each nation, the proportion of employers in the sector with training plans is below the national average for all sectors, for example 26 per cent of employers in England in the sector have training plans compared to 37 per cent across the all economy average for England. The extent to which employers in the sector have training plans also varies between the nations, where employers in Scotland are more likely to have training plans than employers in Wales. Over a third of employers have training plans in Scotland (34 per cent), although these are generally more prevalent across Scotland as a whole (45 per cent) compared with other nations. In Wales, however, just over a tenth of businesses in this sector have training plans compared with 38 per cent of businesses across the rest of the economy. The full data by sector is shown in Table 4.17.

The patterns in training planning mirror trends in training budgets. Compared to the other individual nations and the UK average (26 per cent), the proportion of employers in Wales with training budgets is particularly low (6 per cent) (see Table 4.18). This low figure is in contrast to the fact that Scotland and Northern Ireland figures are higher than the UK average.

Table 4.17: Employers with a training plan, 2011

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry and fishing	**28,388**	**26**	**20,580**	**26**	**†4,477**	**†34**	**1,243**	**12**	**2,087**	**29**
Energy production and utilities	6,140	49	4,860	49	655	51	424	51	201	38
Manufacturing	38,568	30	31,191	28	4,415	47	1,940	36	1,022	27
Construction	84,115	27	67,305	26	9,885	46	3,996	30	2,930	27
Wholesale and retail trade	178,673	38	150,280	38	15,096	43	8,396	40	4,900	35
Transportation and storage	34,005	28	28,993	27	2,929	37	1,362	32	721	32
Accommodation, food and tourism activities	91,460	42	74,110	41	11,037	50	3,997	35	2,316	40
Information and communication	16,895	23	15,419	23	†550	†15	632	32	294	27
Creative media and entertainment	32,800	23	28,824	23	†1,975	†18	1,064	23	937	46
Financial, insurance & other professional services	77,091	45	68,380	45	4,263	51	2,779	49	1,668	49
Real estate and facilities management	66,124	40	59,648	40	†4,566	†38	1,158	38	752	41
Government	30,270	55	24,097	54	3,715	67	1,455	54	1,003	49
Education	42,196	65	34,120	64	3,472	78	2,414	76	2,189	67
Health	33,941	65	28,543	64	2,653	82	1,791	64	954	64
Care	60,643	69	50,342	70	4,822	57	3,311	76	2,168	67
All economy	863,494	38	721,499	37	79,173	45	37,719	38	25,099	37
Weighted base	2,299,921		1,960,298		175,115		98,952		65,558	
Unweighted base	87,572		75,053		2,503		6,012		4,004	

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All employers.

† Treat figures with caution due to small establishment base size of 50-99 in Scotland

Table 4.18: Employers with a training budget, 2011

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry and fishing	**23,169**	**21**	**16,302**	**21**	**†3,969**	**†30**	**647**	**6**	**2,250**	**32**
Energy production and utilities	4,538	36	3,604	36	434	34	353	43	147	27
Manufacturing	27,468	21	23,265	21	2,161	23	1,323	25	720	19
Construction	59,489	19	49,098	19	6,428	30	2,230	17	1,733	16
Wholesale and retail trade	113,516	24	97,068	24	9,142	26	4,534	22	2,773	20
Transportation and storage	23,228	19	19,317	18	2,846	36	549	13	516	23
Accommodation, food and tourism activities	61,752	28	50,474	28	7,274	33	2,519	22	1,484	26
Information and communication	17,700	24	14,936	23	†1,918	†54	560	29	285	26
Creative media and entertainment	32,018	22	28,351	22	†1,756	†16	961	21	950	46
Financial, insurance & other professional services	60,256	35	55,617	36	1,607	19	1,924	34	1,108	33
Real estate and facilities management	53,538	32	46,838	31	†4,955	†41	1,077	36	668	36
Government	30,711	56	25,025	56	2,957	53	1,554	58	1,175	58
Education	43,136	67	35,825	67	2,950	66	2,382	75	1,979	60
Health	22,570	43	19,100	43	1,952	60	943	34	574	39
Care	51,869	59	43,591	61	3,377	40	2,884	66	2,017	62
All economy	**657,040**	**29**	**554,765**	**28**	**57,270**	**33**	**25,624**	**26**	**19,380**	**30**
Weighted base	*2,299,921*		*1,960,298*		*175,115*		*98,952*		*65,558*	
Unweighted base	*87,572*		*75,053*		*2,503*		*6,012*		*4,004*	

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All employers.

† Treat figures with caution due to small establishment base size of 50-99 in Scotland

The UK Commission's Employer Skills Survey (2011) (Davies et al, 2012) also provides information about barriers to training, although employers most commonly say that staff are fully proficient and do not require training. Almost three-quarters of respondents (73 per cent) stated that this was the case, the highest proportion of all sectors and nine percentage points higher than the national average. After this, the most common barrier is financial, as eight per cent mention that money was not available for training. Table 4.19 provides the relevant data.

As data for Northern Ireland is supressed, findings are supplemented with data from primary research (see Figure 4.2). In this research, the most commonly identified barriers were financial cost and time lost through training. As with other nations, a notable minority felt that staff are already fully proficient (11 per cent stated this was the case). However, lack of information was also cited as an issue (seven per cent), as well as lack of cover (seven per cent) and lack of subsidies (eight per cent).

Financial barriers are important in the sector. Lantra's previous Skills Assessment (Lantra, 2011a) found employers to have a higher than average expenditure on training. Early data from the UKCES Investment in Training survey (see

Table 4.19) estimates expenditure per trainee at £5,725, the highest of any sector. Average expenditure on the workforce is also largest of any sector at £2,275 (Vivian et al. 2011). This may relate to the nature of training in the sector; for example, where training involves using high risk or expensive machinery there may be higher costs. However, as cost per trainee is much higher, yet cost per worker is more in line with other sectors (and in fact is second to the education sector), the data suggests that smaller employers, prevalent across the sector, may be restricted from 'economies of scale' available to larger businesses.

Table 4.19: Total training expenditure by sector, UK 2011

Sector	Total (£m)	Per capita training expenditure (£ per trainee)	Per capita training expenditure (£ whole workforce)	*Unweighted base*
Agriculture, Forestry & Fishing	**851**	**5,725**	**2,275**	*88*
Mining and Quarrying	82	3,025	1,425	*29*
Manufacturing	3,472	3,050	1,425	*819*
Electricity, Gas, Water Supply	320	2,125	1,150	*137*
Construction	2,774	3,975	1,925	*660*
Wholesale and Retail Trade	5,447	2,350	1,225	*1,827*
Hotels and Restaurants	3,421	3,625	1,975	*1,060*
Transport and Communications	3,524	3,650	1,575	*869*
Financial Services	1,520	2,450	1,450	*220*
Real Estate / Business Activities	9,482	4,050	2,075	*2,053*
Public Administration	3,469	3,650	2,200	*236*
Education	6,709	4,075	2,650	*560*
Health and Social Work	5,431	2,325	1,550	*1,525*
Community, social and personal service activities	2,485	3,600	2,000	*1,034*
All economy	48987	47675	24900	11117

Base: All trainers completing the Investment in Training survey. Source: Investment in Training Survey (UKCES 2011).

Lantra's industry engagement also suggests that there is often an issue with providing adequate cover while a worker undertakes training. In addition, another issue repeatedly found is a general lack of awareness of what training is on offer and which option or course is most appropriate to best meet businesses' needs. Small businesses often find it difficult to access the learning they want in terms of content, level, delivery mode or location (Federation of Small Businesses, 2012).

This is apparent in Lantra's involvement in the Rural Development Programme for England's Skills Programme. Evidence from our LandSkills project suggests that there is often a lack of awareness of the subsidised training on offer, and that the training infrastructure is not uniformly developed in every region. There are also issues with recognising the barriers to training within the sector including uncertain training budgets, lack of cover and negative perceptions of formal training and qualification systems (Lantra, 2012). This is not necessarily the case in every nation; for example in Northern Ireland it is likely that training is more accessible due to the influence of CAFRE.

Table 4.20 Barriers to training within the sector, 2011

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
All our staff are fully proficient / no need for training	37,253	73	27,007	74	*	*	4,801	71	*	*
No money available for training	4,020	8	2,466	7	*	*	341	5	*	*
Training is not considered to be a priority for the establishment	3,470	7	2,908	8	*	*	432	6	*	*
No training available in relevant subject area	2,842	6	2,474	7	*	*	0	0	*	*
Managers have lacked the time to organise training	1,114	2	918	3	*	*	196	3	*	*
Learn by experience/Learn as you go	1,561	3	1,526	4	*	*	36	1	*	*
External courses are too expensive	701	1	160	**	*	*	49	1	*	*
Small firm/training not needed due to size of establishment	490	1	490	1	*	*	0	0	*	*
Employees are too busy to undertake training and development	870	2	365	1	*	*	417	6	*	*
Employees are too busy to give training	851	2	370	1	*	*	392	6	*	*
Business not operating long enough/New business (inc. takeover transition)	291	1	291	1	*	*	0	0	*	*
Trained staff will be poached by other employers	337	1	337	1	*	*	0	0	*	*
I Don't know what provision is available locally	95	**	95	**	*	*	0	0	*	*
The start dates or times of the courses are inconvenient	121	**	121	**	*	*	0	0	*	*
The courses interested in are not available locally	279	1	161	**	*	*	0	0	*	*
No new staff (only train new staff)	130	**	130	**	*	*	0	0	*	*
The quality of the courses or providers locally is not satisfactory	303	1	181	**	*	*	123	2	*	*
Difficult to get information about the courses available locally	162	**	162	**	*	*	0	0	*	*
Other	660	1	477	1	*	*	183	3	*	*
No particular reason	1,581	3	775	2	*	*	630	9	*	*
Don't know	163	**	63	**	*	*	0	0	*	*
Weighted base	*51,063*		*36,687*		*	*	*6,806*		*	*
Unweighted base	*426*		*317*		*	*	*64*		*	*

*Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All establishments that do not provide training. *Data suppressed due to small base. **Denotes a figures of greater than 0% but less than 0.5%.*

Figure 4.2: Barriers to training within sector in Northern Ireland in 2010 (percentage of respondents)

Barrier	Percentage
The financial cost of training	12%
Time is lost through training	12%
All staff are fully proficient	11%
Lack of any subsidy for training	8%
No cover is available whilst staff \ I am being trained	7%
Lack of information about training opportunities	7%
None of these	6%
Training providers are located too far away	5%
Can't find suitable training	5%
Courses run at the wrong times\ formats (full\ part…	5%
Lack of time to organise or conduct training	5%
Length of time since left school	4%
Test at the end of the training	2%
Poor quality of training	2%
Lack of time due to caring for dependants	2%
High staff turnover	1%
Other reason, please specify	3%
Don t know	3%
Refused	0%

Source: (Lantra, 2010b).

4.3.3   High performance working as an indicator of the value of skills

Investment in training is not the only way in which an employer values skills. Recent reports from the UKCES outline both the concept of 'High Performance Working' (HPW) and the ways in which HPW may be incorporated into UK business procedures (UKCES, 2010a). HPW involves actively engaging employees in shaping their own working environment, allowing them to influence decision making processes and helping to raise productivity alongside improving the well-being of employees. The multi-faceted nature of high performance working makes the concept difficult to measure. Employer skills surveys provide the best evidence of the prevalence of some of the work practices associated with HPW. Table 4.21 to Table 4.25 provide data on the following working practices by sector as indicators of high performance working:

- Whether businesses have formal processes in place to identify 'high potential' or talented individuals

- Extent to which employees have variety in their work

- Extent to which employees have discretion over how they do their work

- Extent to which employees have access to flexible working

- Extent to which employers formally assess performance of employees who have received training.

The data suggests that the agriculture, forestry and fishing sector has lower proportions of businesses that formally and informally identify high performing individuals. Only five per cent have formal procedures compared with 14 per cent nationally, and 27 per cent compared with 31 per cent nationally for informal identification. Furthermore, 64 per cent have no formal processes compared with the overall average of 52 per cent (see Table 4.21).

Table 4.22 tells us that employers in the agriculture, forestry and fishing sector feel that their employees have a lot of variety in their work. Over two-thirds of establishments surveyed feel, to a large extent, that their staff have variety in their work (68 per cent compared with 55 per cent across all sectors). Similarly, high proportions believe that staff have discretion over the work they do to a large extent, and this was higher than the all-economy average (55 per cent compared with 52 per cent across sectors). Table 4.23 shows the full data.

Flexible working is as commonplace in the agriculture, forestry and fishing sector as it is in other sectors of the economy. The sector requires flexible working in terms of early starts and late finishes as well as weekend work, for example during dairy herd calving season. The proportion of establishments agreeing 'to a large extent' that their employees have access to flexible working was only one percentage point lower than the national average (Table 4.24). The proportion stating they agreed 'to some extent' was 37 per cent in the sector, compared with 34 per cent in all sectors. A slightly lower proportion stated that staff had no access to flexible working at all compared to the average for all sectors (seven per cent in the sector, compared with nine per cent in all sectors on average).

Table 4.21: Whether establishment has formal processes in place to identify 'high potential' or talented individuals 2011 (UK)

	Yes, formally documented		Yes, informally		No		Don't know		Unweighted base	Weighted base
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry and fishing	**5,652**	**5**	**30,105**	**27**	**72,671**	**64**	**4,348**	**4**	**820**	**112,776**
Energy production and utilities	2,191	17	4,077	31	6,385	49	486	4	866	13,138
Manufacturing	15,955	12	41,908	31	72,179	54	3,456	3	4,001	133,498
Construction	21,136	7	89,742	29	185,426	61	8,056	3	4,570	304,360
Wholesale and retail trade	79,322	17	144,464	31	229,455	49	18,075	4	8,093	471,317
Transportation and storage	12,217	10	30,841	26	73,328	61	4,419	4	2,400	120,805
Accommodation, food and tourism activities	32,190	15	69,719	32	109,728	50	7,234	3	5,819	218,871
Information and communication	5,976	8	23,608	32	42,403	58	1,136	2	1,261	73,123
Creative media and entertainment	11,873	8	48,322	33	83,861	57	3,495	2	1,959	147,551
Financial, insurance & other professional services	31,220	18	56,823	33	80,911	47	3,669	2	2,680	172,623
Real estate and facilities management	20,259	13	48,382	30	83,504	52	9,000	6	1,745	161,145
Government	11,426	21	16,967	31	25,307	46	1,600	3	1,379	55,300
Education	18,653	32	20,236	34	18,789	32	1,231	2	2,780	58,909
Health	10,508	20	15,684	30	24,879	47	1,427	3	1,739	52,498
Care	25,788	28	26,675	29	32,817	36	6,485	7	2,455	91,765
All economy	**320,952**	**14**	**702,866**	**31**	**1,198,876**	**52**	**77,227**	**3**	**44,691**	**2,299,921**

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All establishments in Module 1 and Scotland.

Table 4.22: Extent to which employees have variety in their work 2011 (UK)

	To a large extent		To some extent		Not much		Not at all		Don't know		Unweighted base	Weighted base
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	Number
Agriculture, forestry and fishing	**76,675**	**68**	**24,469**	**22**	**7,742**	**7**	**2,816**	**2**	**1,074**	**1**	**820**	**112,776**
Energy production and utilities	5,929	45	4,909	37	1,795	14	406	3	100	1	866	13,138
Manufacturing	67,095	50	48,484	36	12,899	10	3,756	3	1,262	1	4,001	133,498
Construction	179,144	59	88,851	29	24,047	8	9,313	3	3,003	1	4,570	304,360
Wholesale and retail trade	238,562	51	168,884	36	48,318	10	11,692	2	3,861	1	8,093	471,317
Transportation and storage	53,146	44	35,613	29	17,947	15	13,259	11	840	1	2,400	120,805
Accommodation, food and tourism activities	86,140	39	83,543	38	37,117	17	9,289	4	2,782	1	5,819	218,871
Information and communication	46,346	63	21,687	30	3,293	5	417	1	1,381	2	1,261	73,123
Creative media and entertainment	99,587	67	37,290	25	7,267	5	2,237	2	1,170	1	1,959	147,551
Financial, insurance & other professional services	94,803	55	60,363	35	12,493	7	3,148	2	1,816	1	2,680	172,623
Real estate and facilities management	92,156	57	51,012	32	15,579	10	1,561	1	837	1	1,745	161,145
Government	33,925	61	17,273	31	2,855	5	391	1	856	2	1,379	55,300
Education	38,306	65	17,346	29	2,187	4	619	1	452	1	2,780	58,909
Health	26,622	51	19,718	38	5,203	10	694	1	260	**	1,739	52,498
Care	54,001	59	31,224	34	4,410	5	972	1	1,159	1	2,455	91,765
All economy	**1,256,316**	**55**	**745,134**	**32**	**212,192**	**9**	**64,300**	**3**	**21,979**	**1**	**44,691**	**2,299,921**

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All establishments in Module 1 and Scotland.

Table 4.23: Extent to which employees have discretion over how they do their work 2011 (UK)

	To a large extent		To some extent		Not much		Not at all		Don't know		Unweighted base	Weighted base
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	Number
Agriculture, forestry and fishing	**61,757**	**55**	**39,087**	**35**	**6,625**	**6**	**2,485**	**2**	**2,821**	**3**	**820**	**112,776**
Energy production and utilities	5,809	44	4,957	38	1,467	11	557	4	348	3	866	13,138
Manufacturing	63,859	48	49,442	37	11,926	9	5,326	4	2,945	2	4,001	133,498
Construction	167,066	55	103,337	34	18,624	6	10,627	3	4,706	2	4,570	304,360
Wholesale and retail trade	222,298	47	182,574	39	44,174	9	13,608	3	8,663	2	8,093	471,317
Transportation and storage	60,073	50	38,390	32	12,736	11	8,160	7	1,446	1	2,400	120,805
Accommodation, food and tourism activities	88,190	40	87,712	40	28,331	13	9,926	5	4,712	2	5,819	218,871
Information and communication	48,851	67	20,130	28	3,082	4	614	1	446	1	1,261	73,123
Creative media and entertainment	94,306	64	39,623	27	5,912	4	3,212	2	4,498	3	1,959	147,551
Financial, insurance & other professional services	88,150	51	62,426	36	15,688	9	5,292	3	1,068	1	2,680	172,623
Real estate and facilities management	95,298	59	48,171	30	11,255	7	4,656	3	1,765	1	1,745	161,145
Government	32,235	58	17,718	32	3,674	7	810	1	863	2	1,379	55,300
Education	27,530	47	26,592	45	3,231	5	660	1	897	2	2,780	58,909
Health	22,195	42	21,678	41	6,472	12	1,544	3	608	1	1,739	52,498
Care	48,843	53	36,123	39	3,779	4	1,532	2	1,488	2	2,455	91,765
All economy	**1,188,767**	**52**	**814,655**	**35**	**185,638**	**8**	**71,823**	**3**	**39,037**	**2**	**44,691**	**2,299,921**

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All establishments in Module 1 and Scotland.

**Denotes a figure greater than 0% but less than 0.5%.

Table 4.24: Extent to which employees at establishment have access to flexible working 2011 (UK)

	To a large extent		To some extent		Not much		Not at all		Don't know		Unweighted base	Weighted base
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	Number
Agriculture, forestry and fishing	**48,869**	**43**	**41,468**	**37**	**12,485**	**11**	**8,004**	**7**	**1,950**	**2**	**820**	**112,776**
Energy production and utilities	4,781	36	4,419	34	2,431	19	1,450	11	58	**	866	13,138
Manufacturing	52,687	39	44,362	33	17,955	13	16,667	12	1,827	1	4,001	133,498
Construction	139,674	46	101,224	33	33,585	11	26,266	9	3,610	1	4,570	304,360
Wholesale and retail trade	176,251	37	168,909	36	64,843	14	56,324	12	4,991	1	8,093	471,317
Transportation and storage	44,233	37	38,327	32	16,329	14	20,683	17	1,233	1	2,400	120,805
Accommodation, food and tourism activities	99,272	45	77,239	35	22,537	10	17,703	8	2,120	1	5,819	218,871
Information and communication	42,992	59	20,273	28	5,342	7	4,226	6	289	**	1,261	73,123
Creative media and entertainment	83,200	56	44,734	30	10,011	7	7,602	5	2,004	1	1,959	147,551
Financial, insurance & other professional services	89,019	52	55,484	32	15,828	9	11,747	7	546	**	2,680	172,623
Real estate and facilities management	77,691	48	52,389	33	16,393	10	13,861	9	811	1	1,745	161,145
Government	34,229	62	15,040	27	3,343	6	1,865	3	823	1	1,379	55,300
Education	14,445	25	21,754	37	12,772	22	9,545	16	393	1	2,780	58,909
Health	14,407	27	23,130	44	9,761	19	5,025	10	174	**	1,739	52,498
Care	38,920	42	35,210	38	9,701	11	6,858	7	1,075	1	2,455	91,765
All economy	**1,012,366**	**44**	**783,411**	**34**	**264,071**	**11**	**216,701**	**9**	**23,372**	**1**	**44,691**	**2,299,921**

*Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All establishments in Module 1 and Scotland. **Denotes a figure greater than 0% but less than 0.5%.*

Table 4.25: Employers who formally assess performance of employees who have received training

| | Formally assesses performance of employees receiving training | | | | | | Unweighted base | Weighted base |
| | Yes | | No | | Don't know | | | |
	Number	%	Number	%	Number	%	Number	Number
Agriculture, forestry and fishing	**28,724**	**49**	**29,389**	**50**	**756**	**1**	**1,116**	**58,869**
Energy production and utilities	5,689	65	2,920	33	133	2	1,220	8,743
Manufacturing	44,101	60	28,412	38	1,459	2	5,394	73,972
Construction	87,580	54	73,252	45	2,808	2	6,250	163,641
Wholesale and retail trade	187,796	72	70,368	27	3,783	1	11,690	261,948
Transportation and storage	35,176	64	18,967	34	861	2	3,098	55,004
Accommodation, food and tourism activities	93,084	69	39,315	29	1,916	1	8,532	134,314
Information and communication	19,950	51	18,718	48	422	1	1,848	39,090
Creative media and entertainment	40,438	55	32,357	44	1,274	2	2,738	74,069
Financial, insurance & other professional services	75,092	66	37,647	33	1,335	1	4,364	114,074
Real estate and facilities management	66,488	70	26,541	28	2,039	2	2,620	95,068
Government	27,365	66	13,717	33	527	1	2,263	41,608
Education	43,282	78	11,788	21	559	1	5,129	55,629
Health	32,689	73	11,264	25	844	2	3,125	44,797
Care	56,495	77	16,232	22	942	1	4,411	73,669
All economy	**890,621**	**65**	**449,685**	**33**	**20,943**	**2**	**66,916**	**1,361,249**

Base: All establishments providing training.

Finally, Table 4.25 identifies that the agriculture, forestry and fishing sector has the lowest proportion of employers who formally assess those who have received training. Based on these measures, it can be said that high performance working is reasonably commonplace among employers in agriculture, forestry and fishing, but this is largely due to less formal arrangements and working practices rather than to those formal practices linked with maximising training return.

4.4 Skills and sectoral performance

Garrett, Campbell, & Mason (2010), in their review of the value of skills, highlight several studies that evidence the link between skills and productivity in firms. This includes Galinado-Rueda and Haskel (2005) who conclude that increasing the level of skills leads to increases in productivity. Haskel and Hawkes (2003) and Haskel *et al.* (2003) demonstrate that top performing firms have higher levels of skills on average. Furthermore, Garrett, Campbell, & Mason (2010) present evidence that there are spillovers of skills development to other workers, and that there are productivity gains through the pooling of skills in a local area.

While the level of skills is strongly linked with national economic performance, wealth and prosperity, skills do not always correlate with increases in productivity at the sector or firm level (Garrett, Campbell, & Mason, 2010). This is because the relationship between productivity and skills is a complex one.

Ashton & Sung (2011) state that the relationship between skills and productivity is defined on a sectoral basis, whereby educational qualifications are important in some sectors but not others and training is also important in some sectors and not others. In the agriculture, forestry and fishing sector, the evidence presented in this chapter tells us that there is a low prevalence of higher level qualifications, fewer managers have high level qualifications and there is a distinct lack of formal entry requirements. At the same time, training does not appear to be more important than educational qualifications. Both measures of training examined show that the sector invests less in training than the national, all-sector average.

On the one hand this evidence might suggest that skills are not valued in the sector. However, there are mitigating characteristics and circumstances which mean there are further complexities to the relationship between skills and productivity. Two key characteristics are the high levels of capital intensity and relatively simple product market strategies.

The agriculture, forestry and fishing sector is capital intensive. The sector has the second highest ratio of fixed capital formation to value added of all UK sectors. In 2007, the ratio was 33.7 per cent with only the utilities sector having higher capital intensity (OECD, 2007)[49]. This high level of capital intensity means that investments in capital may take precedence over investments in labour (i.e. training and development).

The nature of product market strategies in the sector may also mean that workforce development is a lower priority. In this context, the term 'product market strategy' refers to the choices made by firms about product or service differentiation within particular markets (Mason & Constable, 2011).

Output of the agriculture, forestry and fishing sector is highly commoditised. This means that it is difficult to differentiate between the output of one business over another in the sector. This commoditised nature of the sector inherently means that the product market strategies are not as complex as is often the case in other sectors of the economy. Given the evidence presented in Mason & Constable (2011), this suggests that skills development is likely to be of less concern in the agriculture, forestry and fishing sector compared with other areas of the economy. That said, Mason & Constable (2011) suggest that the most important factors driving skills updating and improvement needs are new legislative or regulatory requirements, the introduction of new goods and services, new work practices and new technologies. So while simple product market strategies historically explain lower than average qualification levels and workforce development, the sector is likely to have greater skills updating requirements as new technologies and working practices are adopted (please see Chapter 6 for further details)[50].

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[49] The electricity, gas and water supply sector had a capital intensity score of 35.8.
[50] Please note however, that there are variations in the above argument at the industry level. Namely, the veterinary activities industry is labour intensive and as a regulated profession has greater demands for higher level qualifications and continuous professional development. The drivers of productivity for this sector are therefore more related to investment in skills than the agriculture, forestry or fishing industries.

Further characteristics of the sector add additional complexity to the relationship between skills and productivity, and explain the lack of engagement in the formal skills and qualifications system, including:

- Inability to commit time to training given uncertain workloads

- Difficulty planning training and workforce development due to high levels of risk and uncertainty. This includes factors such as the weather, commodity prices and fuel prices

- High variability of income which makes planning training difficult

- Legislative requirements such as health and safety and environmental compliance are often prioritised over other forms of training

- Poor access to training due to significant travel and time costs associated with attending courses, particularly in more remote rural areas

- Lack of ICT infrastructure in rural areas such as broadband

- The geographical remoteness of many farming, forestry and fishing businesses making workforce development more costly

- Fewer knowledge spillovers in the labour market due to higher than average prevalence of small businesses and lack of proximity (therefore labour market pooling effects)

- High levels of informal learning.

Overall, we can say that the sector values skills more than official statistics suggest. The underlying characteristics of the sector mean that incentives for training are not always equal to other sectors.

This does have implications regarding how skills should be better recognised within the sector. It is clear that the sector benefits from a more informal and flexible way of developing skills. The current industry strategies such as 'AgriSkills – Towards a new professionalism' urge the sector to improve the take up of skills development and continuing professional development, as well as recognising the breadth of skills in the sector and the formal/informal training undertaken by sector employees. Working with Lantra, there is now significant effort to capture and record this learning against industry standards and requirements through professional standards frameworks.

5 Extent of skills mis-match

Chapter summary

- There are relatively more hard-to-fill vacancies (HtFVs) and skill shortage vacancies (SSVs) in agriculture, forestry and fishing compared with the economy as a whole.

- The main cause of HtFVs is attracting interested applicants and the most common impact is increased workload for other staff.

- The majority of employers stated that job specific skills are lacking in the skills shortage vacancies for the sector. (74 per cent compared to 66 per cent for UK overall).

- The largest deviations from the overall economy averages for skills shortage vacancies (with the sector being above that of the UK average) are in team working skills, technical or practical skills and problem solving skills.

- The proportion of employers with staff retention problems is similar to the UK average.

- Skill gaps are less prevalent in the agriculture, forestry and fishing workforce than in the economy as a whole, being higher in Scotland and England than in Wales and Northern Ireland.

- There are below average levels of underemployment in the sector.

5.1 Introduction

Skills mis-match is the lack of balance between employer demand for skills and the supply of skilled workers. The former is influenced by a number of factors including technological change, globalisation and specialisation as well as employer's internal business strategies. The supply of skills is driven by a combination of factors including demographic change, participation in the labour market, participation in education and training and investment in human capital (UKCES, 2010b). This chapter explores the supply and demand for skills in this context.

The key components of skills mis-matches are shown diagrammatically in Figure 5.1. Within this chapter, we first study skills mis-matches caused by skills deficiencies in filling new positions (SSVs), and then within employment, where employees have gaps in their skills (skill gaps). In order to address the picture of skill gaps overall, existing skill gaps within the workforce need to be filled, the underemployed need to become gainfully employed, British-

born workers may need to be up-skilled to fill some of the jobs currently occupied by migrants, and the unemployed need to be up- and/or re-skilled to take advantage of job opportunities. This all needs to sit within the wider consideration of work-life balance as lifestyle choices equally affect job matching overall.

Figure 5.1: Key components of skills mis-match
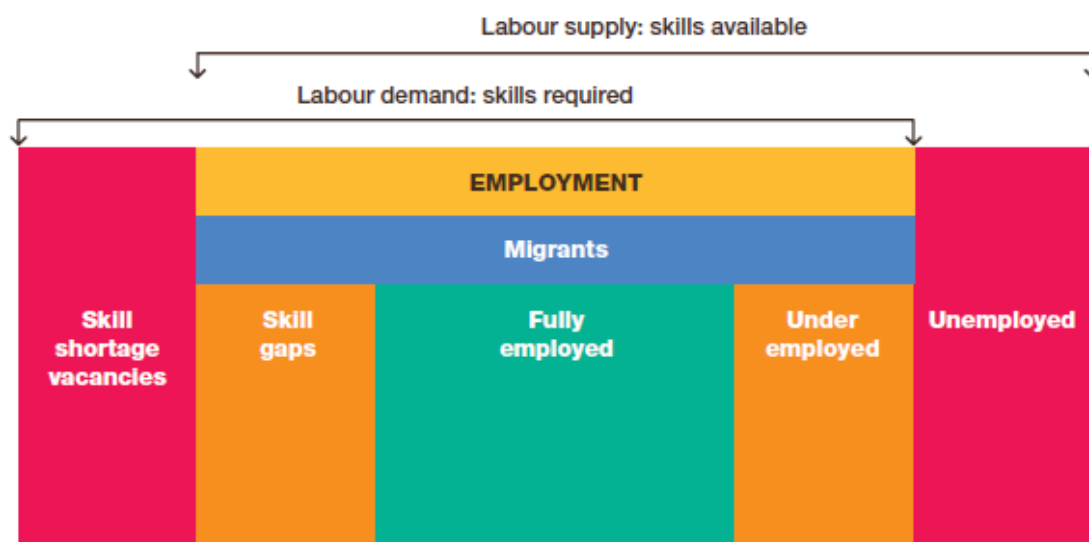
Source: UKCES (2010b)

Much of the demand data for this chapter is sourced from initial findings of the 2011 Employer Skills Survey (ESS) (Davies et al, 2012) which is a UK-wide skills survey carried out by UKCES incorporating the previous National Employer Skills Survey (NESS) for England and similar surveys for the devolved administrations[51]. The ESS methodology utilises the judgement of managers in terms of perceptions of the characteristics of their workforce. Although this provides highly useful information, there may also be ambiguity in relation to how employers understand and measure different skills and skill gaps, as well as employer bias in under- and/or over-estimating skill gaps, which should be taken into account when findings are interpreted.

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[51] It should be noted that there is some variation within this dataset from other datasets that have been used in earlier chapters, such as the Labour Force Survey. This is because the weighting for ESS is based on the Inter-Departmental Business Register (IDBR) which collects data not only on the number of businesses, but employment as well, with anyone who is on the payroll over the year being counted in the estimates of employees. This includes temporary and migrant workers, who are not necessarily picked up in the Labour Force Survey.

Throughout this chapter, vacancies are referred to using a number of different terms. Any business can experience a vacancy among its workforce, although sometimes businesses have greater difficulties in filling that vacancy, which may be for a variety of reasons, for example low levels of interest in the job due to unattractive conditions. These types of vacancies can be described as 'hard-to-fill vacancies' (HtFVs).

There is a further subset of hard-to-fill vacancies where the reasons for recruitment difficulties relate to low numbers of applicants with the required skills, work experience or qualifications. This subset can be described as 'skill shortage vacancies' (SSVs). SSVs arise when there are more vacancies with certain skills needs than there are people available with those skills, which can impact the business in a number of ways.

Although the relationship between skills and productivity is complex and there is not always a direct correlation between the two, skill shortages nevertheless have the potential to impact on a range of tangible economic measures, including GDP and GVA per worker. SSVs are important because they are a key factor in constraining organisations from meeting market needs, opportunities or public service objectives, and are a prime signal of the 'mis-match' between supply and demand (UKCES, 2010b).

5.2 Extent and nature of vacancies

5.2.1 Level of vacancies

Data from the UK Commission's ESS 2011 shown in Table 5.1 overleaf indicates that there are 14,641 vacancies in the agriculture, forestry and fishing sector, representing approximately three per cent of the sector's workforce (Davies et al, 2012). Across all sectors there are 635,907 vacancies representing two per cent of the total workforce in the UK, so levels of vacancies in the agriculture, forestry and fishing sector are very slightly higher than those seen for the economy as a whole. This is interesting considering that the sector is dominated by micro-businesses and high levels of self-employment, for whom recruitment is likely to be an infrequent activity, and yet vacancies as a proportion of employment at least matches that across the economy as a whole.

There are some differences in levels of vacancies between the four nations; in Scotland, vacancies typically account for a slightly greater proportion of the total workforce in the sector (four per cent), while in Wales and Northern Ireland sector vacancies represent two and less than one per cent of the workforce respectively.

Table 5.1: Profile of vacancies by sector in 2011, UK

	Vacancies	HTF vacancies	SSV (prompted and unprompted)	Vacancies as a % employment	HTF vacancies as a % vacancies	SSV as a % vacancies	*Weighted base*	*Unweighted base*
Agriculture, Forestry & Fishing	**14,641**	**5,785**	**4,238**	**3**	**40**	**29**	**466,870**	**19,506**
Energy Production & Utilities	9,343	1,590	1,236	3	17	13	333,050	47,228
Manufacturing	40,252	11,834	9,711	2	29	24	2,541,188	291,593
Construction, Building Services Engineering and Planning	47,241	19,103	12,394	2	40	26	2,235,270	150,111
Wholesale & Retail Trade	95,390	17,441	12,619	2	18	13	4,674,684	514,820
Transportation and Storage	25,734	4,739	3,182	2	18	12	1,320,126	114,658
Hospitality, Tourism and Sport	73,886	18,245	11,179	3	25	15	2,313,487	258,524
Information and Communication Technologies	29,361	5,449	4,937	5	19	17	614,641	53,681
Creative Media & Entertainment	37,885	6,824	5,502	3	18	15	1,086,978	87,953
Financial, Insurance & other Professional Services	58,847	11,732	10,623	3	20	18	2,052,039	112,945
Real Estate & Facilities Management	31,155	5,773	4,252	3	19	14	1,183,601	91,204
Government Services	35,917	9,330	5,938	2	26	17	1,780,058	223,796
Education	34,684	4,984	3,729	1	14	11	2,538,545	387,221
Health	27,811	5,281	3,330	1	19	12	2,004,436	219,765
Care	37,494	5,924	3,335	2	16	9	1,504,729	157,681
Not Within Scope	36,266	9,533	7,248	4	26	20	897,422	86,007
Total	**635,907**	**143,564**	**103,453**	**2**	**23**	**16**	**27,547,123**	**2,816,693**

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Bases vary. Vacancies as a % of employment based on all employment. Hard-to-fill vacancies as a % of vacancies based on all vacancies. SSVs as a % of vacancies based on all vacancies.

Table 5.2: Profile of vacancies by sector and nation in 2011

	Vacancies as a % employment				HTF vacancies as a % vacancies				SSV as a % vacancies			
	England	Scotland	Wales	NI	England	Scotland	Wales	NI	England	Scotland	Wales	NI
Agriculture, forestry & fishing	3	†4	2	0	36	†45	87	0	28	†22	85	0
Energy production & utilities	2	7	4	1	11	22	32	49	9	17	22	25
Manufacturing	2	1	2	2	28	39	30	33	23	36	27	29
Construction, Building Services Engineering and Planning	2	2	2	1	42	29	41	27	26	24	34	16
Wholesale & retail trade	2	2	2	2	18	17	23	32	13	10	12	18
Transportation and Storage	2	2	3	1	17	6	48	60	12	3	29	11
Hospitality, Tourism and Sport	3	3	4	2	23	25	56	29	13	17	41	23
Information and Communication Technologies	5	†5	3	3	18	†35	19	13	16	†28	17	13
Creative media & entertainment	3	†2	5	11	20	†1	18	7	16	†0	16	4
Financial, Insurance & other Professional Services	3	2	2	11	19	7	12	44	17	6	12	44
Real estate & facilities management	3	†1	2	1	18	†29	17	0	14	†22	12	0
Government services	2	1	2	2	25	10	46	43	17	5	4	36
Education	1	2	1	1	16	6	6	16	12	2	5	11
Health	2	1	1	1	19	19	17	27	12	9	13	27
Care	3	1	3	3	16	19	20	13	9	16	13	3
Total	2	2	2	2	22	20	36	44	16	14	22	22
Weighted base	23,198,476	2,381,601	1,182,314	784,732	545,064	45,749	25,542	19,552	545,064	45,749	25,542	19,552
Unweighted base	2,345,213	201,868	178,922	90,690	43,960	3,186	2,999	1,759	43,960	3,186	2,999	1,759

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Bases vary. Vacancies as a % of employment based on all employment. Hard-to-fill vacancies as a % of vacancies based on all vacancies. SSVs as a % of vacancies based on all vacancies. † Treat figures with caution due to small establishment base size of 50-99 in Scotland.

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5.2.2   Nature of vacancies

Two-fifths of vacancies that exist in the sector are considered HtFVs (40 per cent). This is corroborated by Lantra's primary research in the trees and timber industry, where 42 per cent of vacancies were described as HtFVs (Lantra, 2011a). This is a higher proportion compared with the economy as a whole (where 23 per cent of vacancies are HtFVs) and compared with most other sectors. The construction, building services, engineering and planning sector is the only sector with a similarly high proportion of HtFVs, which may reflect the construction sector's similarities with agriculture, forestry and fishing in offering jobs at entry level that require demanding work for low pay. Unattractive conditions are likely to play a key part in levels of HtFVs.

Micro-businesses, which are prevalent in the sector, are also likely to face specific difficulties in terms of recruitment, for example appearing less attractive as employers compared with larger companies, especially to younger age groups. Taking on new recruits may be more of a challenge for small businesses, as new recruits might need significant training and development, stretching resources to a greater degree than in a larger organisation. Small businesses may also be unable to offer trainees such a variety of opportunities compared with a larger organisation. Research also suggests that small businesses are more likely to use informal recruitment strategies (such as 'word-of-mouth') which may be less efficient in finding appropriately skilled workers (Caroll *et al.,* 1999). However, as growing SMEs are a key driver of new employment, it is important that businesses are able to recruit effectively regardless of size.

As well as the issues faced by micro-businesses, sector employers may also be more likely to experience recruitment difficulties related to rural location. Although not all sector businesses are geographically remote, many rural businesses can face issues such as low population density and the impact of demographic factors including 'out-migration' of younger people from the labour pool[52]. Meanwhile, there may also be problems for the supply side in terms of accessing available vacancies, caused by a lack of training, availability of public transport, unsuitable hours or wages. Although such issues exist on a national basis, there is evidence to suggest these are exacerbated by limited services and opportunities in rural areas (Lindsay *et al.*, 2003). Furthermore, where rural businesses only offer seasonal work, it may be more difficult for employees to find work for the whole year, and so they may be reluctant to stay in rural areas. The causes of HtFVs as perceived by sector employers are described in more detail in Section 5.3.4.

Around three in ten (29 per cent) vacancies in the agriculture, forestry and fishing sector are considered SSVs. This is a much higher density compared with the economy as a whole (where 16 per cent of vacancies are SSVs), indicating that skill shortages remain a more prevalent issue for the agriculture, forestry and fishing sector. It is interesting that other sectors with a high reliance on technical skills, for example the manufacturing and construction sectors, have a similarly high density of SSVs (24 and 26 per cent respectively), as UKCES has identified a greater density of SSVs in the skilled trades occupations across all sectors (UKCES, 2010b).

There are large differences in the incidence of HtFVs across nations. The vast majority of vacancies in Wales are considered HtFVs (87 per cent); meanwhile, close to half of vacancies in Scotland (45 per cent) and a third of the vacancies in England (36 per cent) are considered HtFVs. Wales also has a higher concentration of SSVs within the total number of vacancies (85 per cent of vacancies are considered SSVs). In both England and Scotland, around a quarter of vacancies are considered SSVs (28 and 22 per cent respectively).

This could possibly be an issue of scale, as larger labour markets are likely to be more efficient at matching supply with demand. There may also be other factors involved in terms of the geographic accessibility of work within these two nations compared with England, as people may be unable to travel further to fill vacancies, particularly in rural areas with less comprehensive public transport networks.

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[52] Out-migration involving young people often means moving away from rural areas to urban areas for education and/or work.

There are 8,285 employers with vacancies in the sector, including 4,141 employers with HtFVs and 2,660 with SSVs. As shown in Table 5.3, as a proportion of the total, the sector accounts for three per cent of vacancies nationally, five per cent of HtFVs and four per cent of SSVs. As described above, although within the sector there is a high density of both HtFVs and SSVs, i.e. a greater than average proportion of vacancies are classed as either of these types of vacancies within the sector. When considering all vacancies across the economy as a whole, the sector does not account for an overly large proportion of either HtFVs (5 per cent of all UK HtFVs) or SSVs (4 per cent of all UK SSVs).

Table 5.4 shows the occupational distribution of vacancies in the agriculture, forestry and fishing sector. Two per cent of employers with vacancies say these are in the skilled trades occupational group and the same proportion have vacancies in elementary occupations (also two per cent). This is likely to reflect the prevalence of these roles across the sector, including jobs such as:

- Skilled trades: sprayer operator, seed drill and fertiliser operators, stockperson, forestry/arboricultural worker, ground worker, tree climber, establishment/harvesting contractors, husbandry person, fisherman, fish farm worker, ghillie[53]

- Elementary groups: basic stockman, farm worker, general forestry/arboricultural worker.

The types of jobs available in different occupational groups, and the skills levels required for these, are described in more detail in the skills mapping table provided in Chapter 4 (see Section 4.1). It is likely that in future, management and more highly skilled occupational groups will become more important within the sector, which is discussed in more detail later in this report (see Chapter 6).

As shown in Table 5.5, within the agriculture, forestry and fishing sector, vacancies that are particularly likely to be considered HtFVs are those for elementary staff (52 per cent), caring, leisure and other services staff (52 per cent), and professionals (50 per cent). In elementary roles, just 29 per cent of vacancies are considered SSVs so it is likely that the majority of recruitment difficulties are related to issues such as unattractive working conditions, rather than skills shortages *per se*.

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[53] Ghillies advise and inform anglers on the best spots to fish and the tackle to use. They can be hired for the day on a fishery or on other waters they have experience of. Qualified guides are experienced anglers and are a very good source of information and knowledge.

However, vacancies for caring, leisure and other services staff are not only often HtFVs (52 per cent), but are also likely to be SSVs (51 per cent). One relevant role within the caring, leisure and other services occupational group is veterinary nursing, and higher levels of SSVs here are corroborated by Lantra's 2008 primary research into the veterinary activities industry, where a lack of appropriate skills and experience among applicants was mentioned as a key barrier to recruitment (Lantra, 2008b). In addition, almost half of the agriculture, forestry and fishing vacancies for professionals are considered SSVs (46 per cent).

Table 5.3: Employers with vacancies, hard-to-fill vacancies and SSVs in 2011

	Vacancies		HTF vacancies		SSV		Weighted base	Unweighted base
	Number	%	Number	%	Number	%		
Agriculture, forestry & fishing	**8,285**	**3**	**4,141**	**5**	**2,660**	**4**	*110,220*	*1,547*
Energy production & utilities	1,783	1	635	1	532	1	*12,610*	*1,614*
Manufacturing	17,423	6	7,684	8	6,040	9	*130,709*	*7,776*
Construction, building services engineering and planning	22,972	8	11,596	13	9,607	14	*306,403*	*8,961*
Wholesale & retail trade	50,681	18	13,499	15	9,778	14	*470,200*	*16,150*
Transportation and storage	13,036	5	4,127	5	2,662	4	*122,058*	*4,735*
Hospitality, tourism and sport	32,674	12	11,656	13	7,435	11	*220,055*	*11,318*
Information and communication technologies	9,146	3	3,596	4	3,386	5	*72,281*	*2,510*
Creative media & entertainment	16,182	6	5,506	6	4,746	7	*143,772*	*3,762*
Financial, insurance & other professional services	21,794	8	5,310	6	4,556	7	*170,887*	*5,343*
Real estate & facilities management	17,403	6	4,651	5	3,956	6	*166,486*	*3,424*
Government services	8,185	3	1,877	2	1,204	2	*54,687*	*2,605*
Education	14,466	5	3,220	4	2,386	4	*64,540*	*5,439*
Health	9,577	3	2,820	3	1,842	3	*52,370*	*3,398*
Care	15,589	6	3,956	4	2,054	3	*87,899*	*4,763*
Not in scope	15,583	6	6,497	7	5,121	8	*114,744*	*4,227*
Total	**274,779**	**100**	**90,771**	**100**	**67,965**	**100**	**2,299,921**	**87,572**

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All employers with vacancies.

Table 5.4: Vacancies reported by employers by occupation within agriculture, forestry and fishing sector and for whole economy in 2011

| | Agriculture, forestry and fishing | | | | | | | | | | Whole Economy | |
| | UK | | England | | Scotland | | Wales | | Northern Ireland | | UK | |
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Managers	198	**	46	1	*	*	*	*	*	*	18,783	1
Professionals	493	**	462	1	*	*	*	*	*	*	37,601	2
Associate professionals	134	**	130	2	*	*	*	*	*	*	51,880	2
Administrative/clerical staff	1,073	1	844	1	*	*	*	*	*	*	45,285	2
Skilled trades occupations	1,836	2	1,628	2	*	*	*	*	*	*	35,607	2
Caring, leisure and other services staff	1,314	1	1,173	1	*	*	*	*	*	*	31,635	1
Sales and customer services staff	581	1	481	1	*	*	*	*	*	*	37,961	2
Machine operatives	1,064	1	893	1	*	*	*	*	*	*	18,684	1
Elementary staff	2,728	2	1,444	2	*	*	*	*	*	*	41,164	2
Unclassified staff	26	**	26	**	*	*	*	*	*	*	3,023	**
Weighted base	8,285		6,041		*		*		*		2,299,921	
Unweighted base	193		164		*		*		*		87,572	

*Source: UK Commission's Employer Skills Survey (Davies et al, 2012).Base: All UK establishments with vacancies. * Data suppressed due to small base.*

*** Denotes a figures of greater than 0% but less than 0.5%*

Table 5.5: Profile of vacancies by occupation within the agriculture, forestry and fishing sector, 2011

	Vacancies	HTF vacancies	SSV	HTF vacancies as a % vacancies	SSV as a % vacancies	*Weighted base (number of vacancies)*	*Unweighted base (number of vacancies)*
Managers	*	*	*	*	*	*	*
Professionals	668	334	305	50	46	668	59
Associate professionals	*	*	*	*	*	*	*
Administrative/clerical staff	1,160	488	301	42	26	1,160	36
Skilled trades occupations	*	*	*	*	*	*	*
Caring, leisure and other services staff	2,388	1,246	1,225	52	51	2,388	90
Sales and customer services staff	*	*	*	*	*	*	*
Machine operatives	*	*	*	*	*	*	*
Elementary staff	4,124	2,140	1,181	52	29	4,124	68
Unclassified staff	*	*	*	*	*	*	*
Total	14,640	5,786	4,240	40	29	14,640	733

*Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Bases: All vacancies. * Data suppressed as unweighted establishment base < 25*

Table 5.6 shows the skills that employers felt to be lacking within SSVs. Employers in the agriculture, forestry and fishing sector were most likely to mention that job specific skills were lacking (74 per cent of SSVs involved this type of skill, compared with 66 per cent across the economy as a whole). However, the largest deviations from overall economy averages were in team working skills (69 per cent compared with 33 per cent across the economy as a whole), technical or practical skills (67 per cent as opposed to 46 per cent) and problem solving skills (57 per cent versus 37 per cent). Employers also felt oral communication, and planning and organisation skills were also lacking in the sector, representing 52 per cent and 56 per cent respectively. These types of skill shortages reflect those identified by employers in Lantra's primary research in the trees and timber industry (Lantra, 2011a).

Strategic management skills are typically cited as lacking in the sector, and there is some evidence to support that assertion as the proportion is six percentage points higher than the all-economy average.

Table 5.6: Skills lacking in SSVs within the agriculture, forestry and fishing sector and for whole economy in 2011 (UK)

	Agriculture, Forestry and Fishing		Whole economy	
	Number	%	Number	%
Basic computer literacy / using IT	545	13	16,832	16
Advanced IT or software skills	463	11	21,988	21
Oral communication skills	2,210	52	39,113	38
Written communication skills	1,359	32	33,859	33
Customer handling skills	1,558	37	41,349	40
Team working skills	2,929	69	33,728	33
Written Welsh language skills	0	0	1,574	2
Oral Welsh language skills	0	0	1,680	2
Foreign language skills	266	6	16,773	16
Problem solving skills	2,418	57	37,882	37
Planning and Organisation skills	2,355	56	42,431	41
Strategic Management skills	1,463	35	29,853	29
Numeracy skills	1,581	37	26,775	26
Literacy skills	1,252	30	30,151	29
Office admin skills	879	21	17,559	17
Technical or practical skills	2,831	67	47,992	46
Job specific skills	3,131	74	68,385	66
Experience/lack of product knowledge	26	1	1,668	2
Personal attributes e.g. motivation, work ethos, common sense, initiative, reliability, commitment, punctuality, flexibility)	268	6	2,743	3
Other	49	1	911	1
No particular skills difficulties	146	3	7,129	7
Don't know	124	3	3,777	4
Weighted base	4,238		103,453	
Unweighted base	93		7,197	

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All SSVs.

As shown in Table 5.7, among employers in the sector with HtFVs these are most commonly attributed to low levels of interest in the type of job (43 per cent). This is corroborated by the findings of Lantra's primary research in the trees and timber industry, where unattractive conditions were identified as a key barrier to recruitment, in particular the low wages, long hours and dangerous work associated with the industry (Lantra, 2011a). The issue is also mentioned to a much greater extent within the sector compared with the economy as a whole where the figure was 18 per cent (see Table 5.7). Attracting interested applicants is therefore a key issue in addressing HtFVs within the sector.

After low levels of interest, one in five employers (20 per cent) mention a low number of applicants with the required attitude, motivation or personality, and a similar figure state that there is a low number of applicants with the required skills (19 per cent). The latter issue is mentioned to a lesser extent compared with the economy as a whole (40 per cent), where it is the most commonly mentioned cause of hard-to-fill vacancies. This indicates that finding people with the required skills is less of an issue for the sector compared with the all-economy average, and in particular is less of a concern than the issue of attracting interested applicants.

Employers also frequently mention a lack of work experience (14 per cent), a lack of qualifications that the company demands (13 per cent) and, particularly in comparison with the economy as a whole, low numbers of suitable applicants where this is related to age (ten per cent compared with two per cent). This is corroborated by evidence outlined in Lantra's Assessment of Current Provision (ACP) for England (2010), which suggested that many employers feel the education system is failing to provide a suitably equipped workforce for employment, especially in terms of the practical or technical skills required for work in the sector (Lantra, 2011d). Significant mis-matches may exist where formal qualifications are not reflective of skills needed at the workplace.

Employers are also more likely, compared with the economy as a whole, to attribute HtFVs to seasonal work (nine per cent compared with one per cent) or work not being full-time or permanent (eight per cent compared with two per cent). This is likely to reflect the high demand for peak season labour in the agriculture, forestry and fishing sector. Recent research published for the Migration Advisory Committee suggests that it is becoming more difficult for farmers to meet seasonal labour demand, with a slowing of immigration from Central and Eastern Europe (Scott *et al.*, 2008).

Table 5.7: Causes of hard-to-fill vacancies within the agriculture, forestry and fishing sector and for the whole economy in 2011 (UK)

	Agriculture, Forestry and Fishing		Whole economy	
	Number	%	Number	%
Low number of applicants with the required skills	800	19	36,475	40
Lack of work experience the company demands	574	14	18,614	21
Not enough people interested in doing this type of job	1,797	43	16,685	18
Low number of applicants with the required attitude, motivation or personality	839	20	16,475	18
Poor terms and conditions (e.g. pay) offered for post	185	4	11,474	13
Low number of applicants generally	571	14	10,704	12
Lack of qualifications the company demands	529	13	10,257	11
Job entails shift work/unsociable hours	323	8	8,417	9
Remote location/poor public transport	154	4	5,532	6
Too much competition from other employers	36	1	5,406	6
Poor career progression / lack of prospects	81	2	2,025	2
Not full-time/permanent work	317	8	1,950	2
Low number of suitable applicants inc. Age of applicants	411	10	1,886	2
Poor recruitment channels/mechanisms (inc. lack/cost of advertising)	2	*	1,493	2
Seasonal work	364	9	1,248	1
Benefits trap	0	0	853	1
Lack of funding for the position	0	0	512	1
Difficulty with work permits/immigration issues for non-EU staff	8	*	223	*
Other	275	7	3,530	4
No particular reason	0	0	594	1
Don't know	241	6	1,506	2
Weighted base	4,141		90,770	
Unweighted base	78		5,160	

*Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All establishments with hard-to-fill vacancies. *Denotes a figure of greater than 0% but less than 0.5%.*

Perhaps unsurprisingly, and in common with the economy as a whole, the most frequently cited impact of HtFVs for the sector is an increased workload for other staff; 86 per cent of employers with HtFVs said they had this effect within their establishment (see Table 5.8). Notable proportions of employers with HtFVs have experienced increased operating costs (51 per cent), difficulties introducing new working practices (41 per cent) and difficulties introducing technological change (38 per cent) as a result of HtFVs.

Although it is possible for these types of effects to occur independently and yet be attributed to HtFVs, it is interesting that these aspects are mentioned to a greater extent within the sector than across the whole economy (39, 32 and 22 per cent respectively). This is particularly relevant given the need for businesses across the agricultural, forestry and fishing sector to introduce new working practices and technological change in order to address the sustainability and low carbon agenda. It will therefore be important to reduce levels of HtFVs if employers are to fully embrace new ways of working, contribute to climate change targets and make associated productivity gains.

A greater proportion of sector employers also mention outsourcing work as a result of HtFVs (33 per cent) compared with the whole economy (26 per cent). As mentioned earlier in this report, contracting is an important business, particularly in the agricultural and forestry industries. The data provided here suggests that, as well as being 'standard practice' at certain times of the year, outsourcing work is also a common way of dealing with recruitment difficulties. This is corroborated by Lantra's primary research in the trees and timber industry (Lantra, 2011a) where some employers suggested they would not advertise vacancies where these could be filled by contractors based on word-of-mouth recommendations. Employer engagement suggests outsourcing is particularly common in the forestry industry in Scotland, influenced by the fact that the Forestry Commission tends to use contractors and most of their harvester drivers are self-employed.

Within the sector, businesses with HtFVs are less likely to mention that these impact on meeting customer service objectives (34 per cent compared with 45 per cent). Businesses were also less likely to say they had lost business or orders to competitors (32 per cent compared with 42 per cent). These findings may reflect the fact that businesses in the sector do not often face the end customer, more often supplying another organisation in the food supply chain. Generally the agriculture, forestry and fishing sector is more affected by HtFVs than the rest of the economy on average, except in the areas of meeting customer service objectives and competition.

Table 5.8: Impact of hard-to-fill vacancies within agriculture, forestry and fishing sector and for whole economy in 2011

	Agriculture, Forestry and Fishing UK		Whole economy UK	
	Number	%	Number	%
Increase workload for other staff	3,559	86	75,165	83
Have difficulties meeting customer services objectives	1,418	34	40,550	45
Lose business or orders to competitors	1,321	32	37,879	42
Delay developing new products or services	1,549	37	37,635	41
Experience increased operating costs	2,094	51	35,766	39
Have difficulties meeting quality standards	1,325	32	30,498	34
Have difficulties introducing new working practices	1,710	41	29,065	32
Outsource work	1,355	33	23,666	26
Withdraw from offering certain products or services altogether	1,046	25	23,180	26
Have difficulties introducing technological change	1,558	38	19,905	22
None	299	7	5,476	6
Don't know	0	0	361	*
Weighted base	4,141		90,770	
Unweighted base	78		5,160	

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All employers with HtFVs.

In terms of overcoming difficulties with HtFVs (as shown in Table 5.9), around one in five employers in agriculture, forestry and fishing with these vacancies have redefined existing jobs (22 per cent) or increased advertising/recruitment spend (21 per cent). Furthermore, employers in agriculture, forestry and fishing were more likely to have redefined existing jobs (22 per cent) or used contractors to complete work (12 per cent), compared with the economy as a whole (14 per cent and five per cent respectively). Use of contractors may be one way in which HtFVs lead to increased operating costs for businesses, a key impact of HtFVs, as described above.

Table 5.9: Measures to overcome hard-to-fill vacancies within the agriculture, forestry and fishing sector and for the whole economy in 2011 (UK)

	Agriculture, forestry and fishing		Whole economy	
	Number	%	Number	%
Increasing advertising / recruitment spend	851	21	34,959	39
Using NEW recruitment methods or channels	507	12	26,927	30
Redefining existing jobs	913	22	12,397	14
Increasing the training given to your existing workforce	142	3	6,458	7
Increasing / expanding trainee programmes	88	2	5,781	6
Being prepared to offer training to less well qualified recruits	235	6	4,679	5
Bringing in contractors to do the work, or contracting it out	515	12	4,634	5
Increasing salaries	17	*	3,985	4
Recruiting workers who are non-UK nationals	250	6	3,231	4
Making the job more attractive e.g. recruitment incentives, enhanced T&Cs, working hours	36	1	1,325	1
Other	343	8	3,682	4
Nothing	679	16	12,792	14
Don't know	456	11	2,894	3
Weighted base	4,141		90,770	
Unweighted base	78		5,160	

*Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All employers with HtFVs. * Denotes a figures of greater than 0% but less than 0.5%*

Overall, 4,954 employers in the agriculture, forestry and fishing sector (across the UK but excluding Scotland) said there were particular jobs in which they had difficulties retaining staff, representing around five per cent of employers (see Table 5.10). As described in Section 5.3.3., where employers in the sector said they had vacancies, these were most likely to be in skilled trades (e.g. stockperson) or elementary staff occupations (e.g. farm worker), so these occupations also seem to be the types of jobs in which employers have difficulty retaining staff. However, this may also reflect the fact that these are the most prevalent job roles across the sector.

The proportion of employers with retention problems (five per cent) is similar to the figure in the whole economy (five per cent), although this is lower than for some other sectors such as hospitality, tourism and sport (nine per cent) indicating that retention difficulties in the sector are about average. It is not clear from available data whether employees are being lost from the sector or if this reflects 'churn' through employers. These levels of retention difficulties are supported by Lantra's primary research in the trees and timber industry, where retention was not highlighted as a particular issue, except where the ageing workforce is leading to higher exit rates (Lantra, 2011a). In fact, research suggests that while a rural location can hinder recruitment, it can actually aid retention as employees may be unlikely to find alternative opportunities in the same area (De Hoyos, 2011).

As shown in Table 5.10, the proportion of employers with retention difficulties was similar across the nations, although very slightly lower in Wales (three per cent).

Table 5.10: Has retention problems, by sector and geography in 2011

	UK (excl. Scotland)		England		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry & fishing	**4,954**	**5**	**4,236**	**5**	**360**	**3**	**358**	**5**
Energy production & utilities	555	5	484	5	62	8	9	2
Manufacturing	6,493	5	5,883	5	433	8	177	5
Construction, building services engineering and planning	10,569	4	9,710	4	722	5	138	1
Wholesale & retail trade	18,192	4	16,682	4	891	4	619	4
Transportation and storage	5,676	5	5,240	5	321	8	115	5
Hospitality, tourism and sport	18,345	9	16,670	9	1,126	10	548	9
Information and communication technologies	3,084	4	2,948	4	57	3	79	7
Creative media & entertainment	5,303	4	4,891	4	306	7	106	5
Financial, insurance & other professional services	6,271	4	5,876	4	339	6	55	2
Real estate & facilities management	5,826	4	5,649	4	139	5	38	2
Government services	2,496	5	2,200	5	208	8	88	4
Education	2,925	5	2,493	5	267	8	165	5
Health	3,297	7	2,961	7	249	9	87	6
Care	5,134	6	4,615	6	327	7	191	6
Not within scope	6,810	6	6,476	6	247	6	87	3
Whole Economy	105,929	5	97,014	5	6,054	6	2,860	4
Weighted base	2,124,807		1,960,298		98,952		65,558	
Unweighted base	85,069		75,053		6,012		4,004	

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All establishments in England, NI, Wales (question not asked in Scotland)

As shown in Table 5.11, employers in the agriculture, forestry and fishing sector were more likely to say that long/unsocial hours (46 per cent compared with 33 per cent in all sectors), and unattractive conditions of employment (43 per cent compared with 25 per cent in all sectors) were reasons for retention problems. Other reasons included geographic location (20 as opposed to 17 per cent in all sectors) and the nature of work being too difficult or physically and mentally tiring (10 per cent compared with four per cent in all sectors). These reasons reflect those described as causes of HtFVs, again indicating that the same issues which make it difficult to recruit also make it harder for employers to retain staff.

Table 5.11: Reasons for retention problems within the sector in 2011

	Agriculture, forestry and fishing (excl. Scotland)		Whole economy UK (excl. Scotland)	
	Number	%	Number	%
Not enough people interested in doing this type of work	2,542	51	53,834	51
Long/unsocial hours	2,263	46	35,466	33
Wages offered are lower than those offered by other firms	1,251	25	35,048	33
Staff don't want long term commitment	1,567	32	33,715	32
Lack of career progression	1,252	25	32,199	30
Too much competition from other employers	843	17	29,609	28
Impact of the benefits trap	787	16	28,902	27
Unattractive conditions of employment	2,137	43	26,861	25
Geographic location of the firm	993	20	18,467	17
Difficult to find experienced/skilled staff	340	7	10,930	10
Nature of work is too difficult/mentally and physically tiring	497	10	3,822	4
Other	713	14	8,960	8
None	50	1	344	*
Don't know	0	0	171	*
Weighted base	4,954		105,929	
Unweighted base	112		5,866	

*Source: UK Commission's Employer Skills Survey, 2011 (Davies et al, 2012). Base: All establishments in England, NI, Wales that find it difficult to retain staff (question not asked in Scotland). *Denotes a figures of greater than 0% but less than 0.5%*

The UK Commission's ESS 2011 also collected information on whether businesses have employed anyone in their first job after leaving school, college or university during the past three years. Overall, 21,769 businesses or 20 per cent of employers in the agriculture, forestry and fishing sector have done so (see Table 5.12). This is the fourth lowest proportion of all the sectors, with real estate and facilities management (14 per cent), transportation and storage (15 per cent) and government services (19 per cent) the only sectors with lower proportions. The proportion of businesses that have employed anyone in their first job is similar in England and Scotland (19 per cent and 20 per cent respectively),

and relatively lower in Wales. However, in Northern Ireland over twice as many businesses have employed someone in their first job in the past three years (43 per cent) compared with the UK average.

Regarding the UK as a whole, it is important to consider why there are relatively low levels of recruitment of younger people. Lantra's engagement with industry suggests that there are a number of issues involved. Again, evidence collated as part of Lantra's 2010 Assessment of Current Provision for England suggested that employers were dissatisfied with the quality of the education system. This was also reflected in Lantra's primary research in the trees and timber industry (Lantra, 2011a), where it was felt there was a gap for new entrants in terms of having the required training to meet legislative requirements, such as health and safety or chainsaw proficiency courses, compared with the skills required to actually work efficiently in the industry.

Furthermore, evidence gathered from employer engagement highlights that many employers have concerns over younger employees in terms of health and safety issues. Where young people are employed straight from school and have limited practical experience, employers may be prohibited from allowing them to use machinery and may also be understandably reluctant to do so, especially where they are required to work alone and machinery is expensive. The sector also places a high value on practical experience, seen for example with 'Grandfather Rights' legislation that allows industry accreditation of workers with a required number of years' experience (Defra, 2011f).

However, the sector has also traditionally suffered from a problem of 'poor image'. Lantra's engagement with industry suggests that the sector is not seen by young people and potential new entrants as offering a 'career of choice', a finding that for agriculture in particular has been addressed in industry's vision for the sector (AgriSkills Forum, 2010). The strategy states that a key part of industry's mission is 'to use the professionalism and highly technical nature of the industry to encourage new entrants'; there is also an ongoing drive to increase uptake of CPD across the sector, which it is hoped will increase perceptions of professionalism and in turn increase levels of new entrants.

These are just some of the reasons for low levels of new entrants and in fact there are probably a range of complex factors involved. However, there remains a pressing need to attract more new entrants as the sector has a rapidly ageing workforce. Lantra's Employment Forecasting Model also indicates that although net employment is due to decline in the sector by 27,000 jobs, this should be offset by replacement demands, generating an additional 185,000 jobs by 2020 (IER, 2011). The need to attract younger people is particularly relevant in the current economic climate, with youth unemployment having topped the one million mark in autumn 2011 (ONS, 2011b).

Table 5.12: Recruitment of people in first jobs by sector and nation in 2011

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Agriculture, forestry & fishing	21,769	20	14,815	19	†2,725	†20	1,183	11	3,046	43
Energy production & utilities	2,660	21	2,080	21	322	25	197	24	61	11
Manufacturing	31,047	24	26,304	23	2,442	26	1,437	27	863	23
Construction, building services engineering and planning	66,741	22	55,108	21	6,498	30	2,973	23	2,161	20
Wholesale & retail trade	120,702	26	101,878	25	9,862	28	5,297	25	3,665	26
Transportation and storage	18,432	15	16,069	15	1,496	19	476	11	391	17
Hospitality, tourism and sport	70,608	32	59,071	33	6,164	28	3,583	32	1,789	31
Information and communication technologies	14,960	21	13,659	21	†794	†22	241	12	266	24
Creative media & entertainment	31,843	22	28,704	23	†1,573	†14	1,082	23	484	24
Financial, insurance & other professional services	37,955	22	34,274	22	1,679	20	1,230	21	773	23
Real estate & facilities management	23,229	14	21,827	15	†699	†6	475	16	229	12
Government services	10,268	19	8,375	19	1,084	20	378	14	431	21
Education	28,641	44	24,132	45	1,812	41	1,450	45	1,247	38
Health	13,817	26	11,547	26	938	29	822	29	510	34
Care	26,557	30	22,175	31	1,955	23	1,481	34	947	29
All economy	**552,385**	**24**	**467,925**	**24**	**43,211**	**25**	**23,664**	**24**	**17,584**	**27**
Weighted base	*2,124,807*		*1,960,298*		*175,115*		*98,952*		*65,558*	
Unweighted base	*85,069*		*75,053*		*2,503*		*6,012*		*4,004*	

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: all employers. NB: Scottish employers were asked a slightly different question; results cannot be compared directly to UK, England, Wales, or Northern Ireland figures. Scottish employers have not been included in the UK base. † Treat figures with caution due to small establishment base size of 50-99 in Scotland

5.3 Extent and nature of skills issues

We now turn to the issue of skill gaps within employment. UKCES (2010b) describes known skill gaps as occurring within an existing workforce where individual employees lack the requisite skills to undertake the full range of duties in their job.

Although there will always be some element of inefficiency in terms of new employees taking time to get to grips with a job, some employers experience more significant gaps in the workforce. Skill gaps are important as they can affect the efficiency of a firm, but they also signal where future skill shortages may arise. For example, if a large number of firms experience similar skill gaps and hire to remedy this, a surge in demand for those skills may result. If the demand exceeds supply, this could eventually lead to recruitment difficulties and hence skill shortage vacancies.

5.3.1 Extent of skill gaps

UK Commission's ESS 2011 measures skill gaps using employers' perceptions of the number of staff in each role within the organisation who are less than fully proficient in their jobs. The data can then be used to produce two different measures of skill gaps; the proportion of employers who have skill gaps in their workforce, and the proportion of the workforce with skill gaps.

Considering the first measure, in total 10,665, or ten per cent of employers in the agriculture, forestry and fishing sector have skill gaps in their workforce (see Table 5.6). In terms of the workforce, this equates to 20,149 employees whom employers consider are not proficient in their jobs, which is equivalent to four per cent of the sector workforce overall. In Lantra's primary research in the trees and timber industry (Lantra, 2011a), 32 per cent of those surveyed mentioned skills they felt could be improved among their current staff, although this figure is not directly comparable.

Across the sector, the proportion of employers with skill gaps in their workforce is slightly lower than across the economy as a whole (ten per cent compared with 13 per cent for the whole economy), and is particularly low in relation to some other sectors such as hospitality, tourism and sport (where 20 per cent of employers report skill gaps in their workforce). The proportion of employees in the agriculture, forestry and fishing workforce who are reported to have skill gaps is four per cent, compared to five per cent for the economy as a whole. Skill gaps need to be addressed with appropriate training, and as outlined in Chapter 4, there may be a need to take more advantage of the Qualifications and Credit Framework (QCF) in providing industry with bite-sized learning and Continuing Professional Development (CPD). This also applies to Scotland in terms of the Scottish Qualifications and Credit Framework.

Table 5.13: Employers and employees with skill gaps by sector in 2011

	Employers with skill gaps				Employees with skill gaps			
	Number	%	Weighted base	Unweighted base	Number	%	Weighted base	Unweighted base
Agriculture, forestry & fishing	**10,665**	**10**	**110,220**	**1,547**	**20,149**	**4**	**466,870**	**19,506**
Energy production & utilities	2,000	16	12,610	1,614	17,250	5	333,050	47,228
Manufacturing	21,520	16	130,709	7,776	148,007	6	2,541,188	291,593
Construction, building services engineering and planning	31,925	10	306,403	8,961	99,184	4	2,235,270	150,111
Wholesale & retail trade	72,233	15	470,200	16,150	300,344	6	4,674,684	514,820
Transportation and storage	11,540	9	122,058	4,735	55,391	4	1,320,126	114,658
Hospitality, tourism and sport	43,000	20	220,055	11,318	193,549	8	2,313,487	258,524
Information and communication technologies	6,647	9	72,281	2,510	34,775	6	614,641	53,681
Creative media & entertainment	9,155	6	143,772	3,762	41,091	4	1,086,978	87,953
Financial, insurance & other professional services	20,954	12	170,887	5,343	92,599	5	2,052,039	112,945
Real estate & facilities management	13,185	8	166,486	3,424	64,302	5	1,183,601	91,204
Government services	7,980	15	54,687	2,605	94,735	5	1,780,058	223,796
Education	12,304	19	64,540	5,439	94,884	4	2,538,545	387,221
Health	9,776	19	52,370	3,398	101,986	5	2,004,436	219,765
Care	14,886	17	87,899	4,763	78,458	5	1,504,729	157,681
Whole economy	300,941	13	2,299,921	87,572	1,489,540	5	27,547,123	2,816,693

Source: UK Commission's Employer Skills Survey (Davies et al, 2012).   Base: All establishments, all employment.

Table 5.14 considers skill gaps across the devolved nations. The proportion of employers reporting skill gaps is slightly higher in Scotland (15 per cent) and somewhat lower in Wales (three per cent) and Northern Ireland (five per cent). The same trend is seen in relation to the proportion of employees with skill gaps (six per cent and four per cent respectively in Scotland and England, compared with two per cent in Wales and Northern Ireland). This suggests a greater issue with skill gaps in Scotland; however, it should be noted that sample bases for the nations are smaller and hence results may be less reliable.

Table 5.14: Employers and employees with skill gaps by nation in 2011

	UK		England		Scotland		Wales		Northern Ireland	
	Number	%	Number	%	Number	%	Number	%	Number	%
Employers with skill gaps	10,665	10	8,014	10	1,951	15	352	3	348	5
Employees with skill gaps	20,149	4	15,727	4	3,090	6	775	2	558	2
Employer weighted base	110,220		79,464		13,317		10,342		7,097	
Employer unweighted base	1,547		1,270		99		133		45	
Employment weighted base	466,870		358,073		55,022		31,065		22,711	
Employment unweighted base	19,506		16,212		2,001		968		325	

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Bases: All establishments; all employment. Note: Treat figures for Scotland with caution due to small base size of establishments.

Although the agriculture, fishing and forestry sector has a lower than average prevalence of skill gaps, it is useful to consider the areas in which gaps exist. Gaps are most commonly perceived for staff working in the elementary occupational group, as well as caring, leisure and other services. In both occupations, eight per cent of employees are considered to be less than proficient by employers. Furthermore, six per cent of those working in skilled trades occupations are considered to be less than proficient (Table 5.15).

Elementary and skilled trades roles are some of the most prevalent across the sector, so it is important that skill gaps in these roles are addressed. One way of achieving this may be through the wider professionalisation of the sector via increased CPD activities for the existing workforce, an aim described in the agricultural industry's 2010 strategy and CPD schemes (AgriSkills, 2010). There is also a high density of skill gaps for caring, leisure and other service staff. As described earlier in this report, vacancies in these roles are also likely to be SSVs (51 per cent). One job role relevant to this group is veterinary nurses; in Chapter 6 we outline the need to respond to demands in the veterinary sector by developing broader career structures and encouraging technician level roles in the industry. For examples of sector jobs in each occupational group see Table 4.1 in Chapter 4 of this report.

Table 5.15: Skill gaps by occupation in 2011

	Total employment	Number with skill gaps	% with skill gaps
Managers	161,747	3,121	2
Professionals	28,673	764	3
Associate professionals	14,377	762	5
Administrative/clerical staff	54,849	2,291	4
Skilled trades occupations	49,003	3,182	6
Caring, leisure and other services staff	18,981	1,438	8
Sales and customer services staff	12,218	649	5
Machine operatives	58,924	2,340	4
Elementary staff	68,098	5,603	8
Weighted base	*466,870*	*20,149*	*4*
Unweighted base	*19,506*	*989*	

Source: UK Commission's Employer Skills Survey (Davies et al, 2012).   Base: All employment.

Data on employers' perceptions of the impact of skill gaps on their business is shown in Table 5.16. Perhaps unsurprisingly, the most commonly mentioned impact of skills gaps is an increased workload for other staff. Almost three-quarters of employers with skill gaps said this is the case (71 per cent), which is a similar proportion to that for the economy as a whole (78 per cent). An increased workload for other staff was also mentioned as the most common impact of HtFVs (described in Section 5.3.2 'Impact of HtFVs').

Three in five (61 per cent) of those who felt that skill gaps impact on the establishment said this is in terms of increased operating costs; this is a greater issue for the sector compared with the economy as a whole, where the corresponding figure is 45 per cent. This was also outlined as an issue for the sector in terms of the impact of HtFVs. A higher proportion of sector employers also mention having to outsource work as a result of skill gaps (31 per cent compared with 15 per cent in the overall economy). Outsourcing is a very common operating practice in agriculture in particular, although the use of contractors may be a key area in which skill gaps can lead to increased operating costs.

As seen with HtFVs, businesses in the agriculture, forestry and fishing sector were also more likely than average to mention that skill gaps caused difficulties in introducing new working practices (46 per cent compared with 38 per cent across the whole economy). It is clear that HtFVs and skill gaps are likely to impact businesses in the sector in similar ways, though they each have slightly different levels of impact. While an increased workload for other staff is mentioned to a greater extent as an impact of HtFVs, increased operating costs were more likely to be mentioned as an impact of skill gaps.

Table 5.16: Consequences of skill gaps in 2011 (UK)

	Agriculture, forestry and fishing		All economy	
	Number	%	Number	%
Increase workload for other staff	4,456	71	144,234	78
Increase operating costs	3,825	61	82,833	45
Have difficulties meeting quality standards	2,060	33	74,405	40
Have difficulties introducing new working practices	2,921	46	70,317	38
Lose business or orders to competitors	1,498	24	59,139	32
Delay developing new products or services	1,755	28	46,767	25
Outsource work	1,938	31	28,173	15
No particular problems / None of the above	637	10	14,285	8
Don't know	0	0	344	*
Weighted base	*6,289*		*184,733*	
Unweighted base	*185*		*12,943*	

*Source: UK Commission's Employer Skills Survey (Davies et al, 2012).   Base: All employers with skill gaps that have impact on establishment performance.   *Denotes a figure of greater than 0% but less than 0.5%.*

Employers who have taken steps to overcome skill gaps (see Table 5.17) are most likely to have increased training activity or spend on training programmes (74 per cent). Around half have undertaken more supervision (54 per cent), more appraisals (51 per cent) or implemented a mentoring/buddying scheme (49 per cent). However, employers in the sector mention these actions to a lesser extent compared with the economy as a whole (where the figures are 82, 62 and 55 per cent respectively).

This is likely to reflect the fact that the sector is dominated by micro-businesses and sole traders, for whom these activities may not be as appropriate in comparison with businesses with greater numbers of staff. However, skill gaps are often addressed through training, and there is a low uptake of training across the sector generally. The presence of skill gaps may raise questions about the purpose and volume of available training, and/or its success in closing gaps, as well as employers' knowledge of available training and the ways in which it can be accessed and/or funded. Some employers may also have a limited understanding of the nature of skill gaps and how to fill these effectively. For agriculture in particular, Lantra's engagement with employers suggests that any training budget is often spent on legislative learning with little discretionary spend on training in other areas.

Table 5.17: Steps to overcome skill gaps within sectors (UK)

	Agriculture, forestry and fishing		All economy	
	Number	%	Number	%
Increase training activity / spend or increase/expand trainee programmes	5,263	74	185,527	82
More supervision of staff	3,878	54	139,442	62
More staff appraisals / performance reviews	3,626	51	123,245	55
Implementation of mentoring / buddying scheme	3,502	49	113,645	50
Reallocating work	2,248	32	76,053	34
Changing working practices	2,158	30	69,850	31
Increase recruitment activity / spend	835	12	33,319	15
Recruiting workers who are non-UK nationals	735	10	21,589	10
Other	7	*	3,156	1
Nothing	24	*	3,541	2
Don't know	8	*	348	*
Weighted base	*7,128*		*225,379*	
Unweighted base	*227*		*16,506*	

*Source: UK Commission's Employer Skills Survey (Davies et al, 2012). Base: All employers with skill gaps who have taken steps to improve the proficiency or skills of these staff, or have plans to do so. *Denotes a figure of greater than 0% but less than 0.5%.*

5.4   Extent of under-employment

Under-employment can be defined in terms of individuals being either over-qualified or over-skilled. An employee may be described as over-qualified if the qualifications they have are higher than the qualifications someone needs to get into their job, while someone is over-skilled if they do not have sufficient opportunity to use their experience, skill or abilities in their current job.

Therefore it can also be the case that the skills available within the workforce, rather than being deficient, are in fact more than sufficient, and employees' skills are being under-used. This could be a result of an employer under-utilising their workforce, although it may also be due to employees not having the 'right' qualifications and training in terms of their economic value to employers. Individual choice is clearly an important factor here, as the work people want to do and hence the training and learning they undertake may not always match up with the demands of the labour market.

The UK Commission's ESS 2011 collected information on the number of staff considered to be fully proficient that have both qualifications *and* skills that are more advanced than is required for their job. This data is used to produce two measures; the number of employees who are under-employed and the number of establishments who have under-employed workers among their staff. This data is summarised by sector in Table 5.18. Around 38 per cent of employers in the agriculture, forestry and fishing industry have employees who are over-qualified and over-skilled. This is lower than the corresponding figure for the whole economy, where 49 per cent of employers have over over-qualified and over-skilled workers.

Table 5.18 also shows that, when considering employees, a higher proportion of the agriculture, forestry and fishing workforce are over-qualified and over-skilled, some 19 per cent compared with 16 per cent in the whole economy. In fact, this is the highest proportion for any sector except hospitality, tourism and sport (24 per cent) and creative media (also 19 per cent). However, this might be explained by the high prevalence of micro-businesses in the sector having fewer employees between them resulting in a greater proportion than average being under-employed. Initial research in other sectors also suggests that migrant workers may have higher level qualifications than required for the role, for example some nurses entering the UK are working in nurse ancillary roles as opposed to nurse roles due to the issues surrounding the transferability of overseas qualifications and converting overseas qualifications into UK equivalents (Patel- Fenton, 2008). Similar issues in terms of transferability of qualifications has been found in other research which includes migrant workers across South Lincolnshire, an area where migrant workers can work in food and pack house industries (31 per cent of the study sample each), as well as agricultural roles (14 per cent of the study sample) (Zaronaite, 2006). This resulted in some migrant workers being in employment which did not match their skill level. An example provided was those workers with degrees, and in some cases doctors, working in pack houses. There is a lack of equivalent research which specifically looks at migrant qualifications within a sample of agriculture, forestry and fishing workers, therefore this research can only provide an indication for migrant worker qualifications across the UK as a whole.

Taking under-employment from the employer's perspective it appears less of an issue within the sector compared with the economy as a whole. Although the measure focuses on staff having both qualifications *and* skills that are more advanced than required (and qualifications do not necessarily equate to skills), the relatively low levels of under-employment may reflect the fact that the workforce is less formally qualified compared with the whole economy, and furthermore many roles in the sector do not have high levels of qualifications as an entry requirement.

Table 5.18: Extent to which workforce is 'over-qualified' and 'over-skilled' by sector in 2011 (UK)

	Employers with employees who are over qualified and over skilled				Employees who are over qualified and over skilled			
	Number	%	Weighted base	Unweighted base	Number	%	Weighted base	Unweighted base
Agriculture, forestry & fishing	**42,111**	**38**	**110,220**	**1,547**	**88,613**	**19**	**466,870**	**19,506**
Energy production & utilities	5,458	43	12,610	1,614	43,319	13	333,050	47,228
Manufacturing	56,009	43	130,709	7,776	252,633	10	2,541,188	291,593
Construction, building services engineering and planning	129,922	42	306,403	8,961	369,923	17	2,235,270	150,111
Wholesale & retail trade	241,146	51	470,200	16,150	846,216	18	4,674,684	514,820
Transportation and storage	61,038	50	122,058	4,735	202,809	15	1,320,126	114,658
Hospitality, tourism and sport	131,526	60	220,055	11,318	566,562	24	2,313,487	258,524
Information and communication technologies	33,764	47	72,281	2,510	93,637	15	614,641	53,681
Creative media & entertainment	66,845	46	143,772	3,762	205,573	19	1,086,978	87,953
Financial, insurance & other professional services	76,826	45	170,887	5,343	312,906	15	2,052,039	112,945
Real estate & facilities management	81,744	49	166,486	3,424	217,791	18	1,183,601	91,204
Government services	29,384	54	54,687	2,605	256,006	14	1,780,058	223,796
Education	34,623	54	64,540	5,439	341,455	13	2,538,545	387,221
Health	23,566	45	52,370	3,398	225,183	11	2,004,436	219,765
Care	47,114	54	87,899	4,763	258,385	17	1,504,729	157,681
Whole economy	1,118,691	49	2,299,921	87,572	4,456,192	16	27,547,123	2,816,693
Weighted base	2,299,921				27,547,123			
Unweighted base	87,572				2,816,693			

Source: UK Commission's Employer Skills Survey (Davies et al, 2012). . Bases vary. "Employers" columns based on all establishments. "Employees" columns based on all employment.

5.5   Impact of mis-matches

Mis-matches in the supply of, and demand for, skills can be reflected in terms of wage returns and also in the employment of migrant workers. These issues are discussed in the following section.

5.5.1   Wage returns

There is clearly a link between skills and wage returns. We might generally expect more highly skilled workers to gain higher returns, but there is evidence to suggest a positive relationship between wages and skill shortages. Where skill shortages exist, employers may be forced to compete for the available labour, driving up average wages (Frogner, 2002). The UKCES (2010b) outline a number of reasons for the development of wage premiums for particular skills, including short-term increases in employer demand and persistent skill shortages, but also the need to incentivise individuals to develop certain skills or simply reward skills not easily learnt. Returns to skills and qualifications can therefore be used to give an insight into levels of employer demand.

Table 5.19 shows average hourly wages for each sector since 2008 on a UK basis. It shows that the gap between wages in the sector and in the economy as a whole continues to widen. While the average hourly wage across all sectors increased from £13.94 in 2008 to £14.60 in 2010, the average hourly wage for agriculture, forestry and fishing declined in 2010 to pre-2008 levels, and is now at £10.38 per hour, making it the only sector where wages have decreased.

However, these figures are likely to be affected by a number of issues specific to the sector. ASHE does not cover the self-employed nor does it cover employees not paid during the reference periods, which are during February and April, and hence the survey excludes harvest and post-harvest casual employment. Furthermore, high levels of self-employment and unpaid family employment in the sector may skew results. In addition, employees in the agriculture, forestry and fishing sector often receive payment in kind or benefits other than wages, such as food and board, which are not counted here.

Table 5.19: Average hourly wage by sector in the UK (£, nominal terms)

	2008	2009	2010
Agriculture, forestry and fishing	**10.42**	**11.18**	**10.38**
Energy production and utilities	15.93	16.41	16.62
Manufacturing	13.86	14.28	14.37
Construction, building services, engineering and planning	14.66	15.29	15.39
Wholesale and retail trade	11.00	11.27	11.36
Transportation and storage	12.44	13.16	13.21
Hospitality, tourism and sport	9.14	9.35	9.52
Information and communication technologies	20.05	20.26	20.40
Creative media and entertainment	17.14	17.29	17.50
Financial, insurance & other professional services	21.06	21.45	21.99
Real estate and facilities management	11.36	11.64	11.71
Government services	14.40	14.87	15.62
Education	14.67	15.39	15.71
Health	14.97	15.79	16.45
Care	10.21	10.30	10.49
All economy	**13.94**	**14.39**	**14.60**

Source: Annual Survey of Hours and Earnings, 2010 (ONS).

Within the agricultural, forestry and fishing sector, average wages can also be broken down by 2 digit SIC code. As shown in Table 5.20, ASHE data indicates that average hourly pay is slightly higher in the forestry and veterinary activities sub-sectors (£13 and £12 per hour respectively), compared with the agricultural and fishing sub-sectors (both £10 per hour).

Table 5.20: Average hourly wage by sector in the UK (£, nominal terms)

	SIC07	Industry	Wage
Agriculture, forestry and fishing	1	Crop and animal production	10
	2	Forestry and logging	13
	3	Fishing and aquaculture	10
	75	Veterinary activities	12

Source: Annual Survey of Hours and Earnings, 2010 (ONS).

These figures, in particular the figures for agriculture, are somewhat in contrast with other data. The Defra Earnings and Hours of Agricultural Workers Survey (Defra, 2011g) estimates slightly lower averages for agricultural workers in 2010 compared with ASHE data (£8.20 for male full-time workers and £7.48 for females), but also suggests that average wages have increased year-on-year since 2000. Defra also provides figures for average earnings of non-permanent workers in 2010, which were £7.13 per hour for males and £6.47 for females.

Table 5.21 shows how average wages across the whole economy (all sectors) vary by nation, and how average wages have changed overall since 2008. Average wages are highest in England (£14.85 per hour) and lower in Wales (£12.68 per hour) and Northern Ireland (£12.50 per hour). This table does not provide a regional breakdown within the agriculture, forestry and fishing sector, as missing data for number of workers in ASHE raw data made it difficult to produce reliable weighted average wages across both nations and sectors. However, it is interesting that average wages for the whole economy have increased year-on-year between 2008 and 2010, despite average wages for the sector declining by £0.80 between 2009 and 2010 according to ASHE data.

Table 5.21: Average hourly wage across all sectors in the UK (£, nominal terms)

	2008	2009	2010
England	14.19	14.63	14.85
Scotland	13.05	13.61	13.88
Wales	12.13	12.48	12.68
Northern Ireland	12.06	12.59	12.50
United Kingdom	**13.94**	**14.39**	**14.60**

Source: Annual Survey of Hours and Earnings, 2010 (ONS).

A regional breakdown of hourly pay for the agriculture, forestry and fishing sector can also be sourced directly from ONS and is shown in Table 5.22 below. These estimates are subject to a relatively high degree of variation[54] and are calculated differently from those provided in Tables 5.19 to 5.21; however they suggest that, in 2010, average hourly pay in the sector was £9.18 in Scotland (increasing by 0.4 percentage points since 2009) and £8.20 in Wales (increasing by 3 percentage points since 2009). The estimates also suggest that the overall UK decline may be accounted for by declines in certain regions of England, rather than declining wages in Wales or Scotland.

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[54] Each of these estimates has a coefficient of variation (cv) - ratio of the standard error of an estimate to the estimate, expressed as a percentage – of greater than 5%. The smaller the cv, the higher the quality of the estimate

Table 5.22: Average hourly wage by region taken from ASHE (2010)

	2010	Annual percentage change
UK	8.38	-0.6
North East	7.31*	4.4
North West	7.68**	-4.4
Yorkshire and the Humber	8.50*	3.3
East Midlands	9.14	6.5
West Midlands	7.36*	-6.8
East of England	8.29	0.4
London	9.23**	Not available
South East	8.51*	-8.3
South West	8.20*	-0.4
Wales	8.20*	3.0
Scotland	9.18*	0.4

*Source: ONS (2011c). * Coefficient of Variation > 5% and <= 10%. ** Coefficient of Variation > 10% and <= 20%.*

Although there are a number of factors that may contribute to SSVs, the low wages across the sector are somewhat in contrast with the high density of SSVs, as we might expect a sector with a high density of SSVs to have higher average wages. As shown in Table 5.6 of this chapter, less than 0.5 per cent of employers in the sector say they have increased wages as a result of HtFVs compared with four per cent across the whole economy, and low wages were also mentioned as a barrier to recruitment by focus group participants in Lantra's trees and timber primary research (Lantra, 2011a). Although there are many other factors involved in SSVs, such as availability of appropriate training, this suggests that low wages in the sector are at least contributing to recruitment difficulties.

Agricultural wages have traditionally been the responsibility of the Agricultural Wages Board (AWB), which since 1948 has set minimum farm wages in England and Wales. In Scotland, wage-fixing in the agricultural industry has been in place in various forms since 1917, and more recently with the Scottish Agricultural Wages Board (SAWB). In England and Wales, beyond the first 'grade' of agricultural employment, the AWB has generally legislated for wages above the national minimum wage. However, the board was recently abolished, and wages will now be governed by National Minimum Wage Legislation. While some employers may welcome this change in allowing them more freedom to set wages and attract skilled employees, engagement with industry suggests there are also concerns that some employers will now be able to 'undercut' others, driving wages down and further exacerbating skill shortages. The impact of this new legislation will become evident in future data on agricultural wages for England and Wales.

5.5.2 Employment of migrant workers

The agriculture, forestry and fishing sector has also traditionally placed importance on the use of migrant labour, sourced from both within and outside the EEA. Many within the sector argue that the seasonal nature of work and the type of work available means that the domestic labour force cannot, or is unable and/or unwilling to, meet the skills needs of the sector. This may be due to perceptions of work and low wages, lack of affordable housing and there may also be an impact of the necessary cost involved in travelling to workplaces, as well as a general unwillingness of the population to relocate and work where jobs are available. The seasonality of the work and the relocation required may also act as costs which outweigh benefits involved in finding other work which is closer to home. The lack of affordable housing in the areas where seasonal workers are required, for example in the East of England would be particularly relevant where people would have to move from areas which are relatively cheaper to live.

The reliance on migrant workers suggests that for the agriculture, forestry and fishing sector it is not always possible for employers to address the 'mis-match' using only the UK's native population. In a mis-match situation both employers and migrants will respond in some way, and both are potentially in a position to benefit. Recent UKCES evidence from a study of student and migrant workers indicates that student and migrant workers working in the UK offer a flexibility of working which may be complementary with the working patterns of other workers, in this case low skilled UK workers (UKCES, 2011). Migrant and student workers were found to offer flexibility both in terms of the nature of the work undertaken and the working pattern. In addition, migrant workers were willing to undertake training but the nature of their temporary contracts meant this was generally difficult for employers to implement. In contrast, low-skilled workers did not have the same aspirations. It should be noted that this study is not sector-specific, but may provide indications of differences between migrant and UK low skilled workers in terms of their willingness to undertake work with particular working patterns, and in their training and progression aspirations.

Lantra's own research regarding migrant worker employment suggests again this willingness to work in so-called '3-D jobs (dirty, dangerous and demanding), and some employers suggested that the willingness of migrant workers essentially out-weighed their experience, skills and qualifications to such a degree that 'willingness was all they really looked for' (Lantra, 2007). These aspects of willingness and flexibility of migrant workers will affect levels of skill mis-matches where migrant workers will likely close gaps in skills due to their willingness to work in jobs which may not be their first choice, and also that they are willing to undertake training where it is possible to provide it.

For the agriculture, forestry and fishing sector, official statistics do not suggest a particularly high prevalence of migrant workers within the workforce. However, as stated in Chapter 3, there is evidence to suggest that official measures significantly underestimate the role of migrant labour in the sector. In the UK, the Migration Advisory Committee (MAC) has responsibility for making recommendations about occupations where skill demands may be filled through migration from outside the EU. In a period of economic downturn and rising unemployment, there are likely to be concerns about migrant employment; while findings on the link between migrant labour and unemployment of the resident population have often been mixed, a recent report by MAC found a negative association between working-age migration and native employment (MAC, 2010). The research suggested that displacement of British-born workers was around 160,000 of an additional 2.1 million jobs held by migrants.

These types of findings may suggest a need to address the mis-match by utilising the native labour force, rather than with migrant labour. Lantra, in response to the MAC's call for evidence on Tier 2, described how at present many sector employers recruit points-based system workers from the EEA through the 'shortage' and 'resident labour market' test routes under Tier 2, and via SAWS[55] under Tier 5. Based on consultation with employers, any changes to this system are likely to impact roles such as fruit pickers and land-based engineering technicians, as well as affecting the processing of vegetables, meat, fish and shellfish.

A key challenge to addressing labour shortages in the agriculture, forestry and fishing sector therefore is in terms of engaging the UK's unemployed, as well as other groups traditionally under-represented in the workforce such as young people, women and ethnic minorities. It is generally accepted that the sector suffers from a 'poor image' problem, which will need to be addressed using a range of solutions, such as clearer structures for career progression. Relatively fewer people from minority ethnic groups live in rural areas[56] which will also impact on the ability of the sector to encourage people from ethnic minorities who are already in the UK as they are more likely to be living in urban areas.

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[55] The SAWS scheme was due to end in 2011, though the NFU are lobbying to continue the scheme at least into 2013, and are making proposals for a new SAWS scheme (NFU, 2012).

[56] Owen, D (no date). Online [available]:
http://www2.warwick.ac.uk/fac/cross_fac/healthatwarwick/publications/occasional/ethnicprofile.pdf. Accessed 21st March 2012.

In terms of non-EEA migration, Lantra has also responded to MAC stressing the recruitment difficulties experienced by employers in a number of specific occupations, and the benefits of allowing migrants into these roles. It was suggested that a number of jobs, such as farm manager and nursery/forest manager should be placed on the MAC's shortage list for non-EEA migration. In addition, it was stated that any restriction of migration at graduate level is likely to have an impact on the transfer of knowledge to employers, and hence the wider environmental and low carbon agenda, increasing HtFVs as more general and less specialised types of knowledge are potentially lost to the industry.

6 Drivers of change and their skills implications

Chapter summary

- The sector has an ageing workforce which risks tacit skills being lost and raises the importance of career progression and CPD for the existing workforce.

- A growing global population and concerns over food security are increasingly important policy issues which place additional socio-economic importance on the sector.

- The sector will increasingly face both threats and opportunities from climate change.

- Agriculture, forestry and fishing is increasingly seen as providing environmental and health benefits and services over and above the production of commodities.

- Environmental regulations in areas such as the control of water and emissions are key areas where science and technology skills will increasingly be required.

- Animal health and welfare regulations and Common Agricultural Policy reform are pertinent drivers of change, increasing pressures on farm balance sheets and training budgets.

- The sector is likely to be more science and technology focused with the pressures of climate change, food security and demographics as precision agriculture and sustainable intensification are implemented.

- Ethical consumerism is generating market opportunities for the sector placing greater importance on effective leadership and management.

- Drivers do not tend to differ by nation, although there are some differences related to the structure and relative political importance of the sector and the implementation of policy.

6.1 Introduction

This SSA has discussed the current supply and demand for skills in the agriculture, forestry and fishing sector. Chapters 6 and 7 consider the structural trends and developments that are likely to affect the sector over the coming years, and analyses what the implications are for the demand and supply of skills.

This chapter identifies drivers of change which have implications for skills needs in the agriculture, forestry and fishing sector. The National Strategic Skills Audit for England presents a framework for categorising key drivers based on a study prepared for the cabinet office (UKCES, 2010b). The typology defines seven key driver categories which are presented in Figure 6.1.

Figure 6.1: Drivers of change: a framework
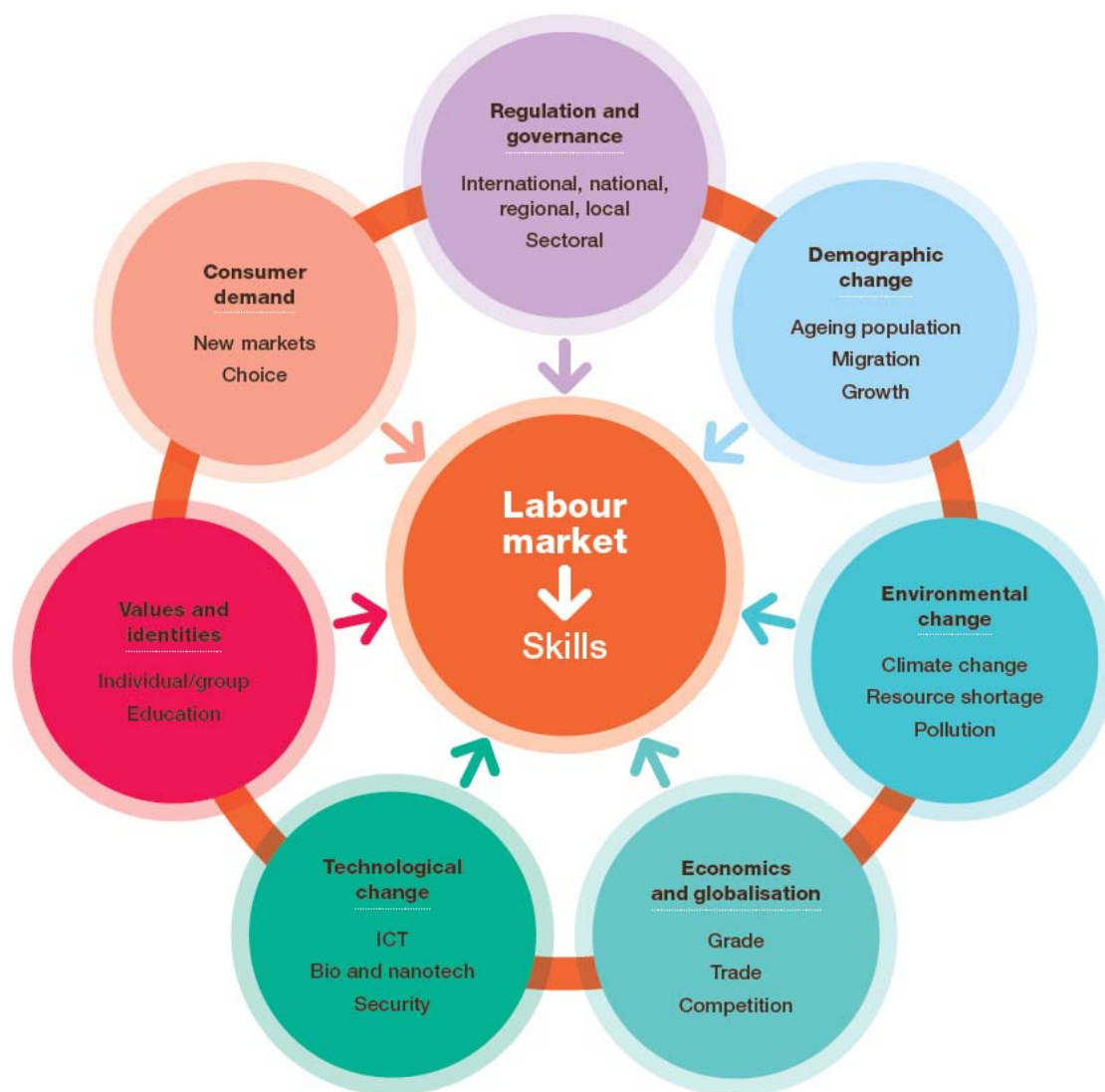
6.2 Drivers of change

6.2.1 Changing consumer demand

Consumer demand is a fundamental element of the economy. In varying degrees, and depending on which sector a business belongs to, businesses have to change their practices to best meet these new demands. Key trends generally in this area include a continuing rise in capitalism that will open up new markets in the developing world; diversification and fragmentation of consumer choice leading to niche market development; and the need to develop environmentally friendly products as consumers become more aware of sustainability (UKCES, 2010b).

The agriculture, forestry and fishing sector is a key supplier to the food and drink market. Consumers have been spending proportionately less of their income on food and drink over the past 40 years[57] although in recent years, this trend has reversed. This change is due to simultaneously rising food prices and falling growth of real incomes. Food prices have risen sharply since 2007 following rises in agricultural commodity prices and fuel prices, where the four-year rise between 2007 and 2011 was 26 per cent, which is over 12 per cent in real terms (Defra, 2011c). Real household disposable income is stagnating and consumers are saving more and spending less[58].

Increased pressure on consumers has led in part to tougher conditions for the organic food market. Organic food now accounts for four per cent of UK farmland but saw a decrease in sales of six per cent between 2009 and 2010 (The Soil Association, 2011). Although the rate of decline is lessening, this has implications for employment and skills in agriculture, particularly as organic farming delivers almost a third more jobs per farm on average than conventional agriculture (Defra, 2008). Organic farming is considered to be more entrepreneurial, with three times as many organic farms involved in direct or local marketing schemes than non-organic farmers (Lobley *et al.,* 2005). In 2009, the UK organic food market had an estimated worth of £1.84 billion, a decrease of 12.8 per cent from the year before (Swizz Import Promotion Programme, 2011). Thirty four per cent of organic food consumed in the UK is imported (Osch, 2008). Supermarkets tend to dominate and have significant control over the foods grown within the organic supply chain. Whilst literature is scarce regarding the impact of cheap organic imports on UK organic production, some authors suggest that the supermarket control of organic markets in the UK drive the types of food grown internationally (Rigby, 2003). An example of the impact of cheap organic imports

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[57] Declining from 24 per cent of income in 1963 to a low of 8.6 per cent in 2006.
[58] Real household disposable income has only grown by 0.6 per cent per year on average between 2007 and 2010 compared with 1.4 per cent on average between 2004 and 2007 (Myers, 2011).

comes from dairy farming, specifically UK organic milk production. There was for some years a shortfall in UK organic milk production. UK dairy farmers switched to organic milk production partly due to the drop in conventional milk prices. However, as supermarkets recognised price differentials between UK and EU prices, supermarkets began to source from EU countries. The result was that UK dairy farmers then had to sell organically produced milk to the conventional market due to the EU competition (Rigby, 2003).

Away from agriculture and horticulture, a key consumer trend affecting the forestry industry is the growing need for wood fuel as a feed source for heat generation. As the market becomes increasingly viable in domestic and commercial settings, the amount of managed woodland is likely to increase from both existing unmanaged woodland and newly planted woodland, increasing demand for technical skills such as chainsaw operation, aerial rescue and regulatory health and safety training requirements.

The shift to increasing use of wood fuel for heating contributes to the EU's renewable energy objective and is supported by the UK Government's Renewable Heat Incentive (RHI) scheme which provides a fixed subsidy for sustainable energy generation. The RHI has the potential to stimulate demand for several million tonnes of biomass including wood from currently unmanaged woodland (Broadmeadow & Ray, 2011).

In the fishing industry there is evidence of change in consumer behaviour in the UK away from established species such as cod and haddock, to lesser known species such as gurnard. Supermarkets are beginning to run marketing campaigns to promote lesser-known species (Talking Retail, 2011). Animal health and welfare issues are also increasingly important to UK consumers with greater awareness of practices in marine fishing and aquaculture increasingly affecting consumer demand (e.g. the practice of discards and the debate around farmed versus wild salmon).

In veterinary activities, changing consumer demand has led to the growth of online retailing for veterinary prescriptions and changes in maintaining client loyalty in the domestic sector. Pet owners for example are choosing to shop around for a veterinary practice to register their animals and are increasingly likely to opt to purchase non-prescription items from the variety of available retailers rather than the veterinary practice. As a result, the income for veterinary practices for linked and repeat sales may decrease.

6.2.2 Demographic change

The agriculture, forestry and fishing sector has an ageing workforce. Over half of all individuals employed in the sector are aged over 45 and over a fifth of individuals are aged over 60. This means that replacement demand for labour in the sector is likely to be high as older workers retire. While this may be mitigated by the current workforce extending their employment past 65, the trend has important implications for a sector where knowledge is often tacit and there is a risk of losing certain practical and heritage skills prevalent in the sector.

There is, in addition, a compounding issue of poor perceptions of agriculture, forestry and fishing as a feasible and rewarding career choice and the high barriers to entry to the agriculture industry in particular. This could mean a greater requirement for skills in succession planning, aided by better CPD systems and progression pathways, as indicated by Lantra's own primary research for the land-based and environmental sector (Lantra, 2010b).

This driver is not unique to the agriculture, forestry and fishing sector. An ageing workforce also has implications across the wider UK economy and other Western economies. This will be apparent in the need for individuals to work longer (as is apparent from the increasing state pension age) and for adults to acquire new skills at various points in their lives to adapt to technological and other changes in the workplace (UKCES, 2010b).

In the veterinary sector, gender issues rather than age are of greatest concern. The industry is highly skewed towards female practitioners. This has implications for the on-going development of skills in terms of training for new recruits and refresher training for those returning to the industry whereby career breaks are more common among the female as opposed to male workforce. Training for new entrants and those returning to the veterinary activity profession would need to incorporate legislative changes and advances in medical technology, and is therefore part of CPD.

More widely, the world's population reached seven billion recently and is expected to grow to around eight billion by 2030 and over nine billion by 2050 (Foresight, 2011). This implies greater strains on basic resources such as food and water, and highlights the importance of efficiency in the food production supply chain. The growing middle class in emerging economies such as Brazil, Russia, India and China (BRIC) are likely to increase the demand and price of meat and fish, presenting on one hand a medium-term opportunity for UK farmers, but there are potentially serious environmental implications and problems of food security on the other. The skills implications include understanding market forces in order to

increase UK productivity. Examples of this would be to increase uptake of export opportunities, and to grow UK produce in a more economically sustainable way to ensure food security. Evidence for the consumption of imported food and the implications of this for UK produce and food security is discussed in the previous section 5.7.1.

6.2.3 Economics and globalisation

Some of the explanations offered regarding performance of the agriculture, forestry and fishing sector in Chapter 2 are likely to persist into the future and filter into implications for skills. This section outlines economic and globalisation drivers of change in the agriculture, forestry and fishing sector. These drivers should be considered alongside the economic context in which the UK and the rest of the world find themselves in 2012. Reductions in Government expenditure are having profound implications for every sector and consumer in the UK. This includes the uncertainty over the future of the European Single Currency, as well as reduced applied R&D and technology transfer activity as governments reduce funding (AHDB, 2011).

One of the most significant economic effects for the agriculture, forestry and fishing sector is the devaluation of sterling against both the euro and the US dollar. This devaluation means that UK exports are cheaper in foreign countries, which should drive demand for increasing quantities of goods and services sold abroad. The result of a higher demand for UK exports is the cost of imports. Due to the cost of imported goods, the price of UK domestic products tends to increase as consumers substitute expensive imports for relatively cheaper domestic goods. Lantra notes that in other cases of organic produce, there have been occasions where organic imports have proven cheaper compared to domestic organic products (see section 5.7.1 with regard to UK and EU organic milk production), and therefore recognises that pricing fluctuates according to supply and demand.

However, input price inflation is increasingly becoming an issue. Oil prices drive the price of many farming inputs such as fertiliser and pesticides, as well as increasing production in emerging economies raising fertiliser prices further. Consequently, while farmers are receiving higher prices for their products, they are also costing more to produce. There is also a general rise in global food prices which influences the competitive position of some industries in the sector more than others. For example, agricultural livestock is more susceptible to grain price rises as it forms a significant input cost in feeding livestock (particularly for the pig and poultry industries). Grain is also competing as a source of energy, as well as a source of food.

The issues discussed above are all effects of globalised markets. While providing opportunities for our industries (such as the increase in demand for Scottish farmed salmon from China), they also pose significant threats. External factors such as natural disasters, famine, conflict and terrorism, while they may be less visible to those living in the UK, still have implications for food production and the ability of the UK to feed itself in the context of globalised food markets. In the early 2000s, the issue of food security moved from being a marginal concern to a governmental and industry concern by the end of the decade (Sustainable Development Commission, 2011).

Foresight (2011) prescribes a series of policy recommendations for high and low income countries as a way to begin to tackle food security. In relation to the UK agriculture, forestry and fishing sector, spreading best practice among farmers and growers is important to raise yields, increase input efficiency and improve sustainability. In the UK, this can be interpreted as the need to implement new technologies and to further build networks among farmers and growers. This implies that farmers and growers need to develop further their scientific and technical skills, while their ability to network effectively will also become more important. This ties in with a key objective of the AgriSkills strategy (AgriSkills Forum, 2010), which aims to use development of CPD schemes to stimulate research and ensure more effective knowledge and technology transfer in businesses, thereby promoting increased productivity and innovation.

Government Office for Science (2011a) outlines the global reduction of available arable land (mostly due to erosion and salination). It is expected that 30 per cent of the earth's land may be salinated by 2020 (50 per cent by 2050). Added to this burden is the effect of degradation and depletion of topsoil, which has meant a reduction in the quality of arable land and lower yields. Climate change (flooding and droughts), as well as population growth, urbanisation, poverty, desertification, all add to the global reduction in available land. Climate change, urbanisation and salination will be the particular issues for the UK. This is due to the fact climate change affects the weather globally, pressures on the UK Government to provide more housing may well increase the need to use rural land, and salination due to other farming practices including aquaculture. As a result, agriculture which requires arable land for cattle and top soil for growing will be particularly affected. This fact, and given the need for a more productive sector, makes the sustainable intensification of farming a priority. It involves simultaneously raising yields by increasing efficiency while reducing the environmental effects of food production. It requires economic and social change to recognise the multiple outputs required of land managers, farmers and other food producers,

and a redirection of research to address a more complex set of goals than just increasing yield (Foresight, 2011).

Finally, supply chain pressures have been a key driver of business practices in the agriculture industry over the past few decades. Multiple retailers dominate the grocery market with 91 per cent of the market accounted for by a small number of businesses (Defra, 2011c). Supermarkets have begun to use their market power to directly influence quality and environmental standards as well as encourage technology transfer through supply chain schemes.

All major supermarkets have supply chain schemes in one form or another. This includes livestock and arable producer groups, local and regional sourcing initiatives, seasonal initiatives, and ethical sourcing schemes. While not all businesses in the agriculture, forestry and fishing sector will be directly part of a supply chain initiative, they will be indirectly affected by the companies they supply, who in turn supply a supermarket.

6.2.4 Environmental change

Many nations are experiencing environmental change caused by on-going climate change (UKCES, 2010b). The agriculture, forestry and fishing sector is directly dependent on the climate with changing weather patterns altering the yield of arable crops and forestry products, the type of foodstuffs and wood products that can be viably produced, and the nature of disease threats to livestock. There are both opportunities and threats with climate change.

In agriculture, longer growing seasons and reduced frost damage in winter may raise yields. The geographical range of crops may be increased as well as the opportunity to introduce new crops or species. Conversely, extreme weather events are likely to become more frequent and severe, increasing the volatility of global food prices (Foresight, 2011). There may be increased threats in terms of tropical disease and invasive species impacting on the ecosystems that our farmers, foresters, fishermen and veterinarians operate in. Recent high-profile reports are detailing the rather distinct rain fall patterns in the North West of England and South East. An example of this is the necessity of contrasting plans for hose pipe bans to be implemented for the South East, whilst areas of the North West are on flood warnings issued by the Environment Agency. Therefore, even within parts of England there are tangible threats to the sector's food security, which are not only current threats but will become more commonplace as a result of climate change.

In forestry, while the detailed effects of climate change are uncertain, it is likely that a warming climate will affect different regions and nations of the UK differently (Broadmeadow & Ray, 2011). Scotland, northern England and much of Wales are likely to see increased productivity as a result of rising CO^2 levels, a longer growing season and a generally warmer climate. Meanwhile across the rest of England, droughts and severe weather events will become more common, and may lead to increasing pest and disease outbreaks (Broadmeadow & Ray, 2011). More generally, however, there are opportunities to expand the forestry sector as it becomes more productive in the north of the country, particularly given the sector's role in climate change adaption.

Climate change is likely to alter the relationship between natural climate-ocean variations and the effects of fishing activity and make management issues more complex to resolve. There is cautious acceptance that climate change will have major impacts on the abundance and distribution of marine fish (Defra, 2002). More recent research points to the warming of sea waters more likely to be a threat at equatorial zones, meaning distributions will shift pole-ward, and seasonal migrations will appear earlier. As a result, populations closer to the Polar Regions are likely to increase, meaning potentially greater stocks for the UK. Warmer temperatures will generally mean greater populations of fish overall, however this will depend on availability of suitable food for the fish (Barange, 2009).This will have implications for increased levels of management skills including negotiation and planning in the UK fishing industry.

In aquaculture, there are likely to be a mixture of impacts both positive and negative. Higher sea temperatures and oxygen levels are likely to increase productive capacity, however, higher temperatures may also mean a greater risk of disease and key feedstocks for farmed fish (which are sourced from marine fishing) may be threatened (Defra, 2002). There is also the threat of invasive species having an effect on established freshwater fishing activities and aquaculture with changing climatic conditions. Implications include the requirement of skills to better manage diseases as well as responding to the opportunity of declining fish stocks worldwide and the volume of aquaculture skills needed in future.

Governments are responding to the threat of climate change by setting binding targets for the reduction of carbon emissions and greenhouse gases (GHG). This affects agriculture, forestry and fishing as it is a key source of such emissions, particularly in the agriculture industry.

Use of fertilisers and energy on the farm are already important, and will continue to be important in the future. This is recognised by the Government currently via the Farm and Forestry Improvement Scheme (FFIS), whereby the agricultural and forestry sector is eligible for grants to invest in new green projects and machinery (Defra, 2012). Steps are being taken by governments across the world to encourage the development of renewable energy in response to climate change and the threat of energy security. In the UK, the Renewable Energy Directive sets a target for the UK to derive 15 per cent of its energy needs from renewable sources by 2020[59]. This target is binding in law and as such, presents a significant diversification opportunity for the sector. In particular, agricultural landowners, who own or manage three-quarters of the UK's land area, have

an alternative potential income stream to supplement and spread risk away from often volatile farming activities.

There are many renewable energy technologies available for implementation, at varying levels of commercial viability, depending on site conditions, scale and cost of technology. These include solar photovoltaic, wind, hydro and energy from waste schemes. Alongside power or heat generated renewably, certain technologies offer an additional direct benefit to farming operations. Specifically, Anaerobic Digestion (AD) has the potential to provide an alternative fertiliser for use in agriculture alongside providing heat and power[60]. This can potentially help farmers to offset rising fertiliser costs while offering a solution that minimises the environmental impact of nutrient management.

There needs to be improved knowledge transfer onto farms to understand the technology and its use and there is scope for cooperation between farmers to feasibly and mutually implement an AD scheme.

Issues concerning energy consumption are increasingly influencing sector businesses. To remain competitive, businesses need to progressively maximise their energy efficiency in the face of high energy prices. Furthermore, the sector is at the centre of research and development searching for possible solutions to the fuel problem itself. Biofuel diversification is seen as a solution as well as a significant economic opportunity for the agriculture and forestry industries through conventional forestry management or agricultural/energy crops

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[59] Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.
[60] AD is a natural process in which microorganisms break down organic matter, in the absence of oxygen, into biogas (burned to produce heat) and digestate (a nitrogen-rich fertiliser).

such as willow grown as short rotation coppice (SRC) or *Miscanthus*. Farmers will need to develop knowledge of the agronomy of different crops specifically for biofuels.

The Government Office for Science, as part of their Foresight project, identify that the availability of arable land will reduce over the next 50 years. Over time erosion, salination, acidification and nutrient depletion will lead to reduced fertility of arable land and reduce the scope for cultivation in many parts of the world (Government Office for Science, 2011a) (also see section 6.2.3 for this project). This could increase the likelihood of conflict, and put upward pressure on food prices and the income received at the farm gate. It also highlights the importance of the application of technology and appropriate use of pesticides in order to mitigate against the loss of fertile land.

The deterioration of farming and forestry land is related to the management of water resources. Fresh water availability is a key global challenge and while the UK is relatively well-supplied in the medium-term as far as volume is concerned, it is water quality that is a more pertinent short-term issue that makes the safe management of water an important skill. The use of water in agriculture is governed by the EU Water Framework Directive, which has been in force since 2000. While placing restrictions on businesses in terms of their practices, it acts to safeguard high quality water supplies. The issue of water quality is of particular importance in Northern Ireland, which was assigned seven nitrate vulnerable zones (NVZs) in 1999 under the directive and in 2003 introduced an action programme under the Nitrates Directive due to elevated nitrate levels (DARD, 2006).

Building on all these environmental drivers, the way our ecosystems are valued is changing. Ecosystems are critically important to our well-being and economic prosperity but are consistently undervalued in conventional decision making. For the first time, the UK National Ecosystem Assessment presents a comprehensive overview of the state of the natural environment and a new way of assessing our natural wealth (UK National Ecosystem Assessment, 2011).

The assessment advocates a mixture of regulation, technology and financial investment in a more integrated rather than sectoral-focused approach to managing ecosystems. The agriculture, forestry and fishing sector currently accounts for the largest majority of UK land use and already produces valuable ecosystem services (as is increasingly recognised by changes to EU subsidies). Therefore any changes to the way ecosystems are valued and managed will have a direct and fundamental effect on agricultural practices. However, the shape of this change is not clear. Following on from section 6.2.3 discussion of land availability, it could mean a fundamental shift in land use away from production to a mixture

of production and delivery of cultural, regulating and supporting ecosystem services with corresponding requirements for diversified skills.

6.2.5 Regulation and governance

Animal Health and Welfare (AHW) has become increasingly important to the agricultural livestock industry, veterinary activities, consumers, members of the public, and governments. The Animal Welfare Act 2006 and Animal Health and Welfare Act (Scotland, 2006) are the most comprehensive modernisation of laws on domestic and captive animals for a century and have meant modernising codes of practice applying extra pressures to sector businesses[61]. The importance of AHW has recently been highlighted by the continued social and economic effects of Bovine Tuberculosis (TB).

A new duty of care, together with the consolidation and review of over 20 pieces of animal welfare legislation relating to farmed and non-farmed animals has provided these industries with an array of factors affecting business performance and professional development alongside the economic threat of disease and the dangers it poses to our native wildlife. Furthermore, the importance of AHW is likely to increase with the warming climate, which may attract new disease threats to the country (e.g. Blue Tongue and Avian Flu). One issue is that higher welfare standards are not always reflected in the prices paid by consumers and farmers and growers do not face a level playing field in the face of international competition.

AHW regulation is also reflected in the EU's Common Agricultural Policy (CAP). The CAP directly subsidises agricultural holdings through the Single Payments Scheme while limiting imports into the EU by imposing tariffs and quotas on non-EU produce. CAP plays an important role in environmental management including AHW, which is set to increase through recently announced reforms. In 2003, a significant reform of the policy was passed by 'decoupling' payments from production (the Single Payment Scheme) and in October 2011, a formal proposal was made by the European Commission to further reform the programme (European Commission, 2011b).

Subject to approval, from 2014 CAP will operate a 'Basic Payment Scheme' which aims to reduce the disparities in payment between nations as well as between farmers in individual nations. The proposals include the 'greening' of farm payments, where a proportion of direct payments will become conditional on implementing certain agricultural practices that are

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[61] Other developments include electronic identification (EID) for sheep, mandatory since December 2009. EID enables accurate recording of animals (e.g. milk yield, lambing results, weight) and has raised significant training needs for sheep farmers.

beneficial for the climate and the environment (European Commission, 2011b). Significantly, the reform process proposes to cap farm payments for individual operators at €300,000. Limited amounts of coupled payments will be introduced to mitigate against the adverse effects of redistribution of direct payments on a national basis (European Commission, 2011b). While there are likely to be differences in how the reforms will be implemented specifically to each nation of the UK, the broad changes and subsequent impacts will remain the same for all.

Stagnant budgets and caps to farm payments will no doubt have short-term financial implications for many farmers in the UK. This may have implications for the skills of the workforce, which may be at threat as the amount of resources available for skills and professional development reduces. In the longer term, however, agricultural subsidies are likely to be phased out completely. There is increasing pressure internationally for a reduction in subsidies, and while this change is likely to be incremental, its likelihood is high (Government Office for Science, 2011b) and may have implications for the skills required in agriculture. Specifically, the CAP reforms may lead to a fundamental change in the rural economy meaning that farming will be less prevalent and other rural land uses, such as energy generation, environmental protection and sport and leisure may become more common. This may require the further development of entrepreneurial skills across the workforce.

The recent rounds of reform of the Common Fisheries Policy (CFP) are set to make the marine fishing industry more sustainable in the long-term through the promotion of sustainable management methods, simplified rules and decentralised management, a new system of transferrable fishing concessions, new marketing standards and labelling requirements, and a ban on discards through the adoption of selective fishing gear (European Commission, 2011a). As part of the reform, the UK has negotiated increased quotas at the cost of less time at sea (BBC, 2011).

Agriculture, forestry and fishing is the most dangerous sector in the UK in terms of its fatality rate. In 2010/11 the fatality rate was 8.2 per 100,000 workers, higher than both manufacturing (one per 100,000) and construction (2.4 per 100,000)[62]. There is also evidence to suggest that official figures grossly underestimate levels of incidence rates, with the majority of incidents in the sector going unreported (HSE, 2006).

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[62] Source: HSE (2012).

Due to the high incidence of accidents and fatalities, the industry has been made a priority sector by the Health and Safety Executive (HSE). This drive by the HSE and Government in general is, over time, likely to increase the presence of health and safety training and development into pre-existing courses, jobs and working practices. The drive from HSE is for industry to take ownership of this issue having recently endorsed a cross-industry safety charter driven by key trade associations.

The veterinary sector is not directly supported in the same way as agriculture and forestry. Historically, however, the government has played a prominent role in regulating the supply and demand for veterinary services, acting as both a provider and consumer of services as well as heavily supporting (through subsidies and price controls) the largest private consumer, the agriculture industry. In this sense, the veterinary industry has been significantly intertwined with government and the agriculture sector. However, over time this interdependence has become disconnected (Lowe, 2009).

The public good functions that are delivered by veterinary services have moved away from production towards promoting and protecting animal welfare, combating animal disease and safeguarding public health and food assurance. This means an expansion in demand for veterinary services, but away from the traditional focus of food production and instead focusing on disease control and assurance. Correspondingly, private practice business models have moved away from dealing with large animals to companion animals (which now account for 54 per cent of practices, see Chapter 2) as Government priorities have changed (Lowe, 2009).

These changes in turn mean that services to farms have become increasingly disconnected. Farm animal veterinary businesses have consolidated, there are concerns over the attractiveness of the on-farm veterinary sub-sector to attract new entrants and ultimately farmers are unable to access the services they need (Lowe, 2009). In order to respond to new demands in the veterinary sector, there is a need to develop broader career structures to make services more accessible to farmers, including the need to encourage technician level roles and paraprofessionals in the industry.

The regulatory burden on farmers, growers, foresters, fishermen and veterinarians is likely to increase in conjunction with environmental change, AHW and CAP reforms. There is a danger that regulatory and legislative restrictions will proliferate further and lead to additional training requirements in terms of understanding the regulations and their impact on businesses alongside a general decline in competitiveness.

6.2.6 Technological change

Science and technology is important in agriculture. Over the last 50 years there has been remarkable growth in agricultural productivity. Much of this increase has been a result of new technology being implemented. For example, since the advent of the green revolution in the early 1960s, gross world food production has grown from 1.84 billion tonnes in 1961 to 4.38 billion tonnes in 2007 - an increase of 138% (Royal Society, 2009). With future pressures of a growing population and greater competition for land, increasing agricultural productivity through science and technology will become ever more important.

While underpinning research and development activity sits outside the remit of this assessment (as it is typically contained within academic institutions, biotechnology and pharmaceutical companies), the agriculture, forestry and fishing sector is often at the forefront of applications of new technology and science. This means that farmers, growers, foresters and other occupations in the sector will need to have greater understanding and skills within science and technology.

This driver in the agriculture, forestry and fishing sector is linked to the Science, Technology, Engineering and Mathematics (STEM) agenda which seeks to increase the prevalence of science and technology related knowledge and skills such as data analysis and interpretation; research and experimental design; testing hypotheses; analysis and problem-solving; and technical skills. Managers in farming, horticulture, forestry and fishing were defined as STEM occupations in a recent report by the UKCES (UKCES, 2011b).

Genomic technologies/genetically modified (GM) food has the potential to alleviate some of the issues of food security, although there are significant ethical and regulatory barriers to its implementation. These technologies are broadly classified according to the traits that are targeted, into input traits (e.g. herbicide tolerance and insect resistance) and output traits (e.g. withstanding drought, extreme cold and salt (Foresight, 2010)). Potential developments include widening the scope of pest and herbicide tolerance as well as improved utilisation of nutrients (such as fertilisers).

There is growing acceptance of GM technologies across the world, and it is considered by some as the best hope for the significant step changes in productivity needed to feed a growing population. The UK could be at risk of becoming uncompetitive, with more public funded scientific development no doubt crucial if new technologies are going to receive wider acceptance (AHDB, 2011). There is likely to be a demand in the longer term for farmers to aid a possible shift to GM adoption through greater public facing skills such as stakeholder engagement as well as the need for STEM skills.

A related technology is in the analysis of genetics to aid selective breeding. Applying genetic marker technology will become increasingly common as research is applied at the practical level.

New farming methods are already altering the dependence on traditional farming. One such method is precision farming. This practice uses satellite technology, IT and advances in agricultural machinery to observe and respond to intra-field variations. For example, GPS technology, sensors and machinery can combine to apply water or nutrients precisely when and where they are needed. Other applications include harvesting crops using GPS technology to reduce overlap and increase efficiency. The skills implications of this technology are significant as farmers and growers will require an additional set of technical skills based around the use of IT as well as analytical skills and scientific knowledge.

Another area of change is in the discipline of vertically integrated farming, which could increase the demand for aquaponics skills in urban settings (Foresight, 2010). The practice produces food (vegetables and fish) in a closed system that is completely sustainable, and is currently being adopted in small numbers by restaurants and shops as a way of vertical diversification of their businesses (into the earlier part of their supply chains).

A final technological change in the sector is the increasing viability of nanotechnology in the production of food. Already, nanotechnology has delivered improvements to pesticide delivery and the field is likely to bring radical new products and approaches to assist crop production (Foresight, 2010).

6.2.7 Values and identities

This driver is arguably one of the broadest as it incorporates a wealth of considerations concerned with individual and group identities, education, citizenship and attitudes towards government(s) (UKCES, 2010b). This section outlines how these aspects relate specifically to agriculture, forestry and fishing.

The past decade saw the rise of the ethical consumer with the establishment and growth of fairtrade food and increased awareness of sustainability, particularly applied to the fishing industry. Notwithstanding the recent decline in the organic food market, spending on ethical food and drink has increased by 27 per cent in the last two years alone, and the market was worth £6.5 billion in 2010 (Cooperative Bank, 2010). Ethical behaviours are on the rise, with the proportion of people buying to support local shops increasing by 17 percentage points between 1999 and 2010, and 46 per cent buying purely for ethical reasons in 2010 compared with 29 per cent in 1999 (Cooperative Bank, 2010).

This change in preferences is mirrored in farm assurance schemes as well as supermarket supply chain initiatives. Research into the AHW implications of farm assurance schemes by the University of Warwick suggests that there are around 15 farm assurance schemes (e.g. Lion Quality, Red Tractor or Freedom Foods) covering all agricultural sectors with nearly 90,000 members (Kilbride, Mason, Honeyman, Pritchard, Hepple & Green, 2011). Meanwhile, supermarkets have responded to ethical consumerism through ethical supply chain practices, locally and regionally sourced supply initiatives as well as schemes to support seasonal British produce. The trend towards preferences for locally sourced food presents further diversification and market access opportunities for the agriculture, forestry and fishing sector in directly supplying food to the local community.

In 2010, the UK Government began a consultation process on ownership and management of 18 per cent of England's woodland currently run by the Forestry Commission (Forestry Commission, 2011). It caused a huge reaction and widespread media coverage. Since that point, the true value of the trees and forests has been further explored through the establishment of an Independent Panel on Forestry. The panel was created out of the fierce debate evoked by the consultation and aimed to explore views on the forest in more depth. The panel's progress report shows the scale of feeling toward the woodland, and highlights the need for multipurpose forestry.

In England alone, there has been a marked increase in the proportion of the population that are obese. The proportion gradually increased over the period examined from 13 per cent in 1993 to 22 per cent in 2009 for men and from 16 per cent to 24 per cent for women (The NHS Information Centre, 2011). This upsurge in obesity has commonly been blamed on changing diets, work practices and values, but increasingly policy discourse has proposed to tackle the problem. The Department of Health has released a number of reports related to the Government's agenda for reducing obesity in the UK population. 'Healthy Lives, Healthy People' is a call for action that recommends a life course approach to tackling obesity (Department of Health, 2011). Rather than the historical focus of reducing childhood obesity, a life course approach tackles obesity at all stages. Responsibility has been given to local authorities for obesity prevention who have been charged with changing external environments so people can make better choices. In common with other drivers around ethical food, farmers and growers, the promotion of healthier lifestyles could present market opportunities as well as increased access to green spaces.

A final driver relates to changing attitudes to companion animal ownership whereby there is a growth in farm animals in domestic settings as well as an increase in exotic companion animals.

6.3   Scale of drivers

This section summarises the drivers outlined under the seven categories defined above and explores the scale of each driver in terms of its impact or implications for skills development. We also identify where a driver is an ongoing or new driver and whether it affects the supply or demand for skills.

Table 6.1: Scale of drivers

Category	Driver	Scale of driver	Ongoing/ new driver	Impact on supply or demand
Consumer demand	New and niche market development	**Medium** Emerging markets in Asia, South America and Africa are likely to provide opportunities for the sector as part of a wider food and drink industry		
	Increasing food prices and implications for organic farming	**Moderate** Organic food accounts for only four per cent of the agricultural area but delivers significant public benefits over and above this. Meanwhile higher output prices are providing higher margins for producers and greater potential to invest in workforce development	New driver	Demand
	Increased demand for wood fuel	**Large** Significant amounts of unmanaged woodland, particularly on farmland across many areas in the country. Consumer demand likely to remain high given the likelihood of rising/sustained rises in energy costs	Ongoing	Demand
	Greater demand for non-traditional fish species	**Moderate** The public is increasingly concerned with welfare in the fishing industry, which is likely to drive demand both in domestic and European markets – often the final destination for many species caught in UK waters	New driver	Demand
	Consumer demand for veterinary services	**Low** The size of the sector means that changing consumer demand is unlikely to have large-scale skills implications		
Demographics	Ageing workforce	**Large** As baby boomers are retiring the effects of an ageing population will begin to be felt. However, there is anecdotal evidence of farmers' sons and daughters entering agriculture instead of pursuing careers in other areas	Ongoing	Supply
	Gender imbalances	**Low** Do not have significant skills implications for the wider sector. However, in veterinary activities, gender imbalance may be a more significant factor in attracting practices to specialise in farm and large animals	Ongoing	Supply
	Growing global population	**Medium** Significant long-term effects including the sustainable intensification of agriculture, pressure on fisheries and opportunities in aquaculture and aquaponics	Ongoing	Demand

Category	Driver	Scale of driver	Ongoing/ new driver	Impact on supply or demand
Economics and globalisation	Exchange rates	**Moderate** With continued uncertainty regarding the economic recovery in Britain, significant negative pressures remain in keeping the value of the pound low, which is a benefit for exporters and businesses in general. However, exchange rates are also driving input costs higher leading to lower profit margins. Indirectly affects skills through lower investment in training	New driver	Demand
	Food security	**Moderate** This driver will impact on the levels of technology adaption to increase yields. More importance is likely to be placed on the technical skills needed to feed the country	Ongoing	Demand
	Sustainable intensification	**Moderate** This driver will become increasingly important over time as growing populations put more strain on food resources. Will have significant impacts on skills with greater focus on scientific and higher level skills	New driver	Demand
	Supply chain initiatives	**Moderate** Many farms are already directly or indirectly subject to supply chain standards. The skills to implement knowledge transfer and new technology are likely to be of great importance in future	Ongoing	Demand
Environmental change	Warming climate	**Large** This driver is significant locally and globally. The warming climate directly affects the sector with forecasts suggesting that warmer conditions may increase yields in northern Europe. May impact on skills through changing viability of produce that can be feasibly grown	Ongoing	Demand
	Reducing carbon emissions	**Large** This driver is already affecting skills required in all industries and will persist for many years	Ongoing	Demand
	Renewable energy	**Moderate** This driver is becoming increasingly pertinent given the climate change agenda and increased uncertainty over fuel security (and energy prices). It will drive skills needs towards greater management skills, but only where a conscious choice is made	New driver	Demand
	Biofuels	**Low** There may be limited opportunity to diversify to biofuels on a large scale because of competition from the US and Brazil; however, a useful diversification crop in spreading risk and generating high returns	New driver	Demand

Category	Driver	Scale of driver	Ongoing/ new driver	Impact on supply or demand
	Availability and salination of arable land	**Low** As this driver is very long-term the scale of impact is low, but has the potential to compound other problems in future. Few immediate implications for skills	New driver	Demand
	Increased need to manage water resources	**Low** Falls within existing environmental stewardship schemes and existing regulation, but important	Ongoing	Demand
	Ecosystem services	**Medium** This driver will place different demands on farmers, growers and foresters as the way ecosystems are valued changes. New skills required may include community engagement, conservation and land management, as well as technical/scientific knowledge	New Driver	Demand
Regulation & governance	Animal health and welfare	**High** There are short-term implications within the sector already being affected by Bovine TB, and the threat of Blue Tongue and other diseases make compliance very important	Ongoing	Demand
	Health and safety	**Medium** The sector has a very high accident rate. This needs to be addressed by fundamentally challenging attitudes to risk management among smaller businesses	Ongoing	Demand
	Regulatory Burdens	**Medium** The regulatory environment may become increasingly complex placing large demands on owners to interpret and apply regulation, with adverse impacts for profitability or increasing environmental hazards through non-compliance	Ongoing	Demand
	CAP/CFP reforms	**High** 2014 represents another step change in CAP reforms and will have large impacts on all aspects of farming and forestry. In fishing, CFP reforms are set to bring fundamental changes to the industry in terms of more sustainable fishing and increased quotas for fewer vessels	Ongoing	Demand
	Health and safety	**Medium** This on-going driver is of medium scale as our industry engagement suggests it is a key existing driver of training in the sector	On-going	Demand

Category	Driver	Scale of driver	Ongoing/ new driver	Impact on supply or demand
	Regulatory burdens	**Medium** Training in the sector is also highly driven by regulation making this driver inherently important	On-going	Demand
	Changing nature of the veterinary sector	**High** There is an urgent need to expand and better meet the veterinary service needs of farmers through better career structures and focus on technical skills in once again supporting a productive livestock farming sector	New driver	Supply
Technological change	Science and technology-led farming	**High** Alongside the importance of the STEM agenda nationally, the sector will need to be increasingly science and technology-driven to make productivity gains and help to mitigate against climate change and other sector drivers	New driver	Supply
	Increased viability of GM food	**Medium** The effects of GM food have been limited in the past because of resistance to the technology on moral grounds across Europe. This may change over time, with concerns over food security likely to be the main driver of change	New driver	Demand
	Genomics	**Low** This is emerging technology that does not immediately affect skills in the sector, although it is linked with the importance of encouraging STEM skills in the workforce	New driver	Demand
	Precision agriculture	**High** The increasing use of science and technology has direct implications for the agriculture, forestry and fishing sector. It is linked to the bottom line and requires significant capital investment	On-going	Demand
	Nanotechnology	**Low** This driver has significant potential to revolutionise agriculture in the long-term and as such doesn't have many specific effects on skill requirements in the sector currently	New driver	Demand
Values and identities	Growth of ethical consumerism	**Moderate** This driver requires farmers, fishermen and foresters to become more ethical in their business practices and presents opportunities for the provision of locally sourced food	On-going	Demand
	Changing attitudes to woodlands	**Moderate** Forestry is becoming a higher priority in terms of the wider services it can provide to communities and has implications for the wider skills needed in the industry, but change is long-term	New Driver	Demand

Category	Driver	Scale of driver	Ongoing/ new driver	Impact on supply or demand
	Obesity	**Low** Significant political capital is being invested in reducing obesity as a cost to the NHS and society at large. This can be a market and diversification opportunity for farmers, growers and foresters	On-going	Demand
	Changing attitudes to animal companion ownership	**Low** Does not present a large impact for skills issues, more an opportunity to expand small vets practices into new areas to respond to consumer demand	New	Demand

Source: Lantra, 2012.

6.4　Differences in drivers across the four nations

On the whole, the drivers presented in the previous section apply generally across each nation of the UK. There are a few differences between nations and these are related to:

- The extent to which agriculture, forestry and fishing is an economic priority

- The structure and nature of farming differing by devolved nation.

In Northern Ireland, the sector is relatively more important to the economy than in the other three nations (as evidenced in Chapter 2). This importance is reflected in agri-food industries being a priority sector (Northern Ireland Advisor on Employment and Skills, 2011). The policy responses to specific drivers may therefore be different in the context of Northern Ireland. For example, the nation may be in a better position to provide training to address skill needs because of the influence of CAFRE. A recent inspection report for CAFRE suggested good student retention rates, and commented on the fact that students are well informed about possible career opportunities within the food industries (Education and Training Inspectorate, 2010). A key difference in Northern Ireland's industrial structure is the prevalence of grassland, which makes issues of grassland management to counter poor soil quality of paramount importance.

In Scotland, the forestry and fishing industries in particular are more prevalent than other nations. This will make drivers pertinent to those sectors more important in Scotland. This includes responding to the growing market for wood fuel and the impact of the CFP. Similar to Northern Ireland, plans for the food and drink industries have been established by the Scottish Government, thus increasing the priority on agriculture and fishing within the sector generally (Scottish Government, 2009a). This policy not only means supporting economic growth in the Scottish food and drink industry, but also means making food and drink affordable and ensuring people know and understand more about what they eat. The latter element has clear implications related to the drivers highlighted previously in relation to health and obesity policies.

In addition to this, other Government policies from this year (2011-2012) directly relate to the forestry industry, whereby plans for low carbon economies and an overall 'greener Scotland' mean that renewable energy sources and sustainable woodland areas are priorities for current thinking in Scotland (Scottish Government, 2011b).

In terms of drivers in Wales, the food and drink industry has been set as a priority area by the Welsh Assembly Government. The 'One Wales' policy sets out economic plans for Wales, which highlights the importance not only of family farming for sustainable food production, but also makes a commitment to support farmers' markets to stimulate enterprise and growth in business (Welsh Assembly Government, 2007). As a result, some of the drivers discussed earlier in the chapter are likely to be mitigated against more in some nations than in the UK generally.

7 Future skills needs

Chapter summary

- Our analysis of skills needs emphasises the requirement for business and management skills such as business planning, project management and risk management.

- Knowledge and appreciation of the sciences and application of ICT are key future skills needed to deliver sustainable intensification and precision farming, particularly in the face of issues around food security, growing global populations and climate change.

- The sector is expected to have greater shares of employment in managerial, professional and technical occupations, mirroring the broad trends across the UK economy.

- Skilled trades are expected to decline in volume as the sector becomes increasingly professionalised.

- The sector deviates from national trends in the proportion of elementary occupations expected, which is set to decline in the sector in the context of increasing shares nationally.

- However, replacement demand remains high with an ageing population having a significant influence on skill requirements.

7.1 Introduction

This chapter identifies the skills that are likely to be needed among the future agriculture, forestry and fishing workforce as a direct implication of the drivers for change identified in Chapter 6. We present sectoral and occupational forecasts of employment change and assess the extent to which these baseline projections tally with our view of drivers for change.

7.2   Current and future skill needs

Drivers of change are identified in the previous chapter specifically if they have implications for skills. These drivers may already be having implications in terms of the skills workers need to do their jobs, and they may also present future requirements for skills that have not yet materialised. The summaries of future skills needs presented in this chapter refer the reader to the previous chapter where fuller discussion of the drivers for change are presented.

We discuss skills implications with reference to the framework presented in Chapter 6 and we then summarise skills needs in Table 7.1.

Many of the skills implications overlap and it is important to note that there are likely to be complementarities and multiplier effects between different drivers and their subsequent skill implications. These skill needs have been developed with the help of industry engagement teams within Lantra, alongside the drivers for change presented in the previous chapter.

7.2.1   Changing consumer demand

Previous discussion surrounding consumer demand and behaviour is presented in section 6.2.1 regarding the tougher conditions on consumer affecting organic markets, the growing need for wood fuel, and the changing consumer behaviour affecting the fishing industry.

- **New and niche market development –** Marketing, market analysis and business planning skills are likely to be required to develop new products and service new markets. Leadership skills will be vital in leading organisations into new markets.

- **Increasing food prices and implications for organic farming –** More effective marketing of organic produce is required to offset consumers moving away from organic produce. There is an opportunity to link organic food to the trend for localised markets/ethical consumerism which requires skills in market analysis and business planning. If the market becomes unsustainable, skills may be required to move back to orthodox agriculture among some producers (e.g. spraying) or further diversification into intensive/precision agriculture will be needed. Higher level business planning and risk management are also likely to be required.

- **Increased demand for wood fuel –** This driver will increase the need for skills in forestry so woodland management, chainsaw proficiency and health and safety are likely to be required by a greater volume of people. Also, foresters may need to negotiate access to unmanaged woodland requiring contract negotiation and management skills. This extends to agriculture where the high demand from farmers for chainsaw training to bring unmanaged woodland into management will benefit from the high price of wood. However, with a larger market for forestry products comes an increased need for intermediate skills in woodland management, identification, storage of wood, negotiation and marketing. In general, information for consumer markets on the appropriateness and efficiency of different types of fuel as well as storage is required to complement the growth of the market in a sustainable way.

- **Greater demand for non-traditional fish species –** This has meant that sustainable farming of suitable fish has become more prominent due to consumer demand for oily fish coupled with over-exploitation of popular species. Skills to understand marine protection zones and skills for handling, stocking, feeding and protection of non-traditional fish from predators will also need to increase to meet demand.

- **Changing business model in veterinary activities –** In veterinary activities, legislation changes and changing consumer demand have led to the growth of online retailing for animal medication, both prescription and non-prescription, and changes in maintaining client loyalty in the domestic sector. The shift towards other models of service is driving change in the sector to be more customer-focused. Customer care and marketing skills are therefore a requirement as is specific training to permit the retail of animal medication by those other than veterinarians.

7.2.2 Demographics

Previous discussion surrounding demographics is presented in section 6.2.2 regarding the ageing workforce, poor perceptions of the sector, gender imbalances, and the growing size of the global population.

- **Ageing workforce –** Alongside the need to attract more entrants into the sector at the policy level, better succession planning and CPD are vital to ensure that the low number of younger people in farming can fill managerial positions or farm ownership as they become increasingly available as older workers/owners retire. There is a real danger of traditional skills being lost because of high replacement demand; such skills may be a future requirement alongside mechanisms to pass on such skills.

- **Gender imbalances –** In veterinary activities, specialist knowledge and technical skills required to address gaps in large animal practices are exacerbated by the decrease in the mixed animal practice model and higher proportions of veterinarians choosing to work in companion animal practice.

- **Growing global population –** This will require increased productivity of agricultural and horticultural businesses. Consequently, skills will be required in resource management, nitrate applications, soil management, water management and technical and scientific skills to shift farming practices to a model where precision farming is more commonplace.

7.2.3   Economics and globalisation

Previous discussion surrounding economic and globalisation is presented in section 6.2.3 relating to food security and reduced availability of arable land and devaluation of sterling against the euro and dollar.

- **Exchange rates –** Skills are required across all industries to encourage export growth to take advantage of favourable terms of trade, namely leadership and management, as well as market analysis

- **Food security –** In agriculture, scientific and technical skills are required to ensure food security. This may include skills in monitoring soils, nutrient levels and disease surveillance. Spreading best practice is needed through more collaboration, networks and associations, and this activity requires better social networking skills and use of social media. In fishing, skills are required to implement more efficient and sustainable gear to maximise productivity, which includes management skills, business planning and raising capital. In veterinary activities, skills are required to ensure high levels of disease surveillance in animals that are destined for the food chain. This includes disease identification, epidemiology and the sharing of good practice information with other veterinarians and livestock keepers.

- **Sustainable intensification –** Attaining a sustainable food production system will require skills in business planning with financial and environmental constraints (double bottom line), environmental management and diversification strategies. There will be an increased demand for conservation, scientific and community engagement skills as farmers need to understand new systems of production, apply scientific principles and engage better with their local communities to aid the transition to greater sustainability. Sustainable intensification of farming requires generally higher level skills such as project management, leadership, market diversification and ICT knowledge.

- **Supply chain initiatives –** This involves understanding the market opportunities and quality control/assurance mechanisms to remain competitive and stay allied to supermarket supply chain initiatives.

7.2.4 Environmental change

Previous discussion surrounding climate change is presented in section 6.2.4 including issues for the UK, current rainfall patterns and the implications for the sector in the UK.

- **Warming climate –** Climate change increases uncertainty among businesses in the sector as enterprises are directly affected by the weather and climate. Skills to manage risk are likely to be required across all industries as a result of overall climate change. Further skill requirements in agriculture include farm carbon accounting, crop agronomy, knowledge of new/evolved pests and diseases and soil management. In forestry, skills are required in planning woodlands to account for likely changes in climate alongside knowledge of new species and sustainable forestry practices, as well as pest and disease identification. In fishing, skills are likely to be needed in negotiation and business planning to adapt to changing stocks. Disease management will become increasingly important in aquaculture and fisheries management. Finally, in veterinary activities, skills required include health monitoring and tropical disease identification and treatment.

- **Reducing carbon emissions –** In agriculture, better skills in business planning for energy efficiency, nutrient planning and application practice, differential application and manure management plans are required. Skills such as project management are likely to be needed in the deployment of anaerobic digestion systems as well as inter-farm collaboration requiring negotiation, planning, team working and community engagement skills.

- **Renewable energy –** In agriculture, technical knowledge is likely to be required regarding fuel crops and feedstocks. A wide range of additional skills are needed including management of sustainable crop-growing practices, negotiation of energy contracts, project management, scientific awareness, advanced ICT skills, contract law, managing and marketing digestate, budgeting, stakeholder engagement, grant applications and business planning. For the forestry industry, skills in coppicing and other sustainable forestry management practices are needed to meet increased feedstock demand.

- **Biofuels –** Farmers and growers will need greater knowledge of new varieties of feedstocks and how to manage these in the context of their existing crops.

- **Availability and salination of arable land –** This will require skills in water and nutrient management alongside high level skills to aid the shift to sustainable intensification of agriculture.

- **Increased need to manage water resources –** Understanding of, and skills in interpreting and applying, regulations are needed alongside changing business practices. Technical skills are also needed for understanding and applying nutrient science.

- **Ecosystems services –** The shift towards a wider variety of services produced in the countryside means that farmers will need better customer facing skills, skills in market diversification, negotiation and leadership.

7.2.5 Regulation and governance

Previous discussion surrounding regulation and governance for the sector was presented in section 6.2.5 with particular regard to The Animal Welfare Act 2006 and Animal Health and Welfare Act (Scotland, 2006) and EU's Common Agricultural Policy (CAP), as well as the skills implications of regulation and governance.

- **Animal health and welfare –** In agriculture, future skills include the application of veterinary medicines which comply with legislative regulations. In veterinary activities, ensuring the practice team has access to training to allow the sale and dispensing of veterinary medicines will be important.

- **CAP and CFP reforms –** Further skills in environmental conservation such as species identification will be required to respond to the 'greening' of CAP payments. There will also be fundamental pressures on farming businesses as reduced farm payments will mean a loss of profitability. In the long-term, there is a trend towards less support for production and more environmental support, therefore skills may need to change in line with this fundamental shift. Environmental management, market diversification and cost control to manage the future shift away from subsidised farming is likely to be required. In the fishing industry, CFP reforms are likely to require workers to have better business planning to manage transition to sustainable gear and fishing methods, and improved management skills to deliver sustainable fisheries. Better negotiation skills for managers are likely to be needed due to the introduction of transferrable quotas.

- **Changing nature of the veterinary sector –** The changing nature of veterinary business models means that good leadership and change management skills are likely to be required in order to satisfy the needs of customers and also comply with more stringent rules on AHW. Future changes to the Veterinary Surgeons Act may involve developing broader career structures to include more paraprofessional roles. This may involve a greater requirement for associated technical skills such as lay TB testing, artificial insemination, pregnancy diagnosis, foot and dental care. In agriculture, the importance of AHW means that biosecurity action planning and disease outbreak contingency planning is a critical skill requirement for agriculture.

7.2.6 Technological change

Previous discussion regarding technological change was presented in section 6.2.6, including the STEM agenda and GM food production.

- **Science and technology-led farming –** Higher level skills including scientific understanding and ICT skills will increasingly be required. CPD will need to be promoted to ensure farm managers and consultants keep up-to-date with the latest research and technology in farming.

- **Increased viability of GM food –** Promoting and championing the use of GM as a way of meeting food security and feeding a growing population is important to secure future productivity gains. GM food is likely to become increasingly viable over the long-term and agricultural employees may as a result require skills in business planning, environmental monitoring and management, compliance to stringent regulations, help to manage public perceptions and engage with communities and other land owners.

- **Genomics –** Understanding genetic markers and the scientific trial process will be needed for the sector.

- **Precision agriculture –** Project management and business planning will be required as precision agriculture involves a step change in farming practices. Farmers and growers will need to develop analytical skills and strong ICT skills including the use of GPS systems and bespoke applications. A general scientific understanding will be required.

- **Nanotechnology –** Future skills needs include business planning and risk management alongside scientific knowledge, testing and application.

7.2.7   Values and identities

Previous discussion regarding values and identities is presented in section 6.2.7 including changing attitudes towards food, food assurance schemes and Government considerations surrounding obesity.

- **Growth of ethical consumerism –** As ethical considerations permeate consumer decisions, all industries are likely to require skills in carbon footprinting, understanding consumer markets, negotiation, complying with complex routes to market and managing buyer relationships. Food and drink production, marketing and community engagement are also further potential skills requirements in the future.

- **Changing attitudes to woodlands –** In forestry community engagement, teaching, presentation and facilitation skills will be needed.

- **Obesity –** Presents a market opportunity to farmers both in terms of a potential diversification as more people want to pursue leisure activities in the countryside, as well as an increased demand for healthier foods. Also presents an opportunity to veterinarians to market the role of companion animals in promoting good public health through exercise, diet awareness and interaction with others. Skills needs may therefore include marketing and public engagement.

- **Changing attitudes to companion animal ownership –** Presents an opportunity for veterinary businesses to attract non-agricultural customers keeping food species either as companions or for small-scale production e.g. chickens and eggs. Alongside this there is growth in the keeping of 'exotic' companion animals such as reptiles and birds. Skills needs may include marketing and knowledge of species' requirements.

Table 7.1: Skills implications of drivers of change

Category	Driver	Current skills requirements	Future skills requirements
Changing consumer demand	New and niche market development	**All industries** Marketing; market analysis; business planning and leadership skills	**All industries** Marketing; market analysis; business planning and leadership skills
	Increasing food prices and implications for organic farming	**Agriculture** Marketing; market analysis; business planning	**Agriculture** Orthodox farming skills; higher level, business planning; risk management skills for shift to precision agriculture
	Increased demand for wood fuel	**Forestry** Woodland management; chainsaw proficiency; health and safety; negotiation; contract negotiation and management skills **Agriculture** Chainsaw training	**Forestry** Sustainable woodland management; species identification; storage of wood; negotiation and marketing
	Greater demand for non-traditional fish species/market opportunity	**Fishing** Addressing diminishing fish stock quotas and regulations	**Fishing** Skills for handling, stocking, feeding and protection of non-traditional fish from predators
	Changing business model in veterinary activities	**Veterinary** Customer care skills; marketing skills	**Veterinary** ICT skills to build and maintain online business presence
Demographics	Ageing workforce	**All industries** Succession planning and commitment to CPD	**All industries** Heritage and tacit skill needs
	Gender imbalances	**Veterinary** Specialist knowledge and technical skills	**Veterinary** Development of paraprofessional roles to support provision of services to agriculture livestock
	Growing global population		**All industries** Resource management; nitrate application and management; soil management; water management; environmental conservation; precision farming
Economics and globalisation	Exchange rates	**All industries** Leadership and management; market analysis	
	Food security	**Agriculture** Monitoring soils, nutrient levels and disease surveillance **Fishing** Management skills; business planning; skills to raise capital **Veterinary** Disease surveillance	**Agriculture** Collaboration/interpersonal skills; networking; social networking skills and understanding/use of social media

Category	Driver	Current skills requirements	Future skills requirements
	Sustainable intensification	**Agriculture** Business planning; environmental management; diversification strategies; conservation; scientific and community engagement skills	**Agriculture** Project management; leadership; market diversification; ICT
	Supply chain initiatives	**All industries** Understanding the market opportunities; quality control/assurance mechanisms to remain competitive	**All industries** Understanding the market opportunities; quality control/assurance mechanisms to remain competitive taking into account all technological changes
Environmental change	Warming climate	**All industries** Risk management **Forestry** Woodland planning; new species knowledge; sustainable forestry	**Agriculture** Farm carbon accounting; crop agronomy; knowledge of new/evolved pests and diseases; soil management **Forestry** Pest and disease identification **Fishing** Negotiation and business planning in the fishing industry to adapt to changing stocks. Disease management will be needed in aquaculture and fisheries management **Veterinary** Health monitoring; tropical disease identification and treatment
	Reducing carbon emissions	**All industries** Business planning for energy efficiency **Agriculture** Nutrient planning and application practice; differential application; manure management plans	**Agriculture** Project management for renewable energy schemes; negotiation; planning; team working and community engagement
	Renewable energy	**Agriculture** Technical knowledge regarding fuel crops and feedstocks **Forestry** Sustainable coppicing skills and other sustainable forestry management practices	**Agriculture** Management of sustainable crop-growing practices; negotiation of energy contracts; project management; scientific awareness; more advanced ICT skills; contract law; managing and marketing digestate; budgeting; stakeholder engagement; grant applications; business planning
	Biofuels	**Agriculture** Knowledge of new varieties of feedstocks; crop management	
	Availability and salination of arable land	**Agriculture** Pesticide application; water management; nutrient management	**Agriculture** Land management; higher level technical and scientific skills to aid shift to sustainable intensification of agriculture
	Increased need to manage water resources	**All industries** Business planning; understanding and interpreting regulations; technical skills in understanding and applying nutrient science	
	Ecosystem services		**All industries** Customer facing skills; market diversification; negotiation; leadership

Category	Driver	Current skills requirements	Future skills requirements
Regulation and governance	Animal health and welfare	**Agriculture** Application of veterinary medicines **Veterinary** Dispensing and selling of veterinary medicines	
	CAP and CFP reforms	**Agriculture** Species identification **Fishing** Business planning; sustainable fisheries management	**Agriculture** Environmental management; market diversification and cost control **Fishing** Negotiation skills
	Changing nature of the veterinary sector	**Veterinary** Develop broader career structures; develop paraprofessional and technical level roles	**Veterinary** Skills for biosecurity action planning; disease outbreak contingency planning
Technological change	Science and technology-led farming	**Agriculture** Higher level skills including scientific understanding; ICT skills	**Agriculture** Promoting CPD
	Increased viability of GM food		**Agriculture** Business planning; environmental monitoring and management; compliance to stringent regulations; public engagement
	Genomics		**Agriculture** Understanding genetic markers and the scientific trial process
	Precision agriculture	**Agriculture** Project management; business planning	**Agriculture** Analytical skills; ICT including use of GPS systems and bespoke applications; scientific understanding
	Nanotechnology	**Agriculture** Business planning; risk management	**Agriculture** Scientific knowledge, testing and application
Values and identities	Growth of ethical consumerism	**All industries** Carbon footprinting; understanding consumer markets; negotiation and complying with complex routes to market; managing buyer relationships	**All industries** Food and drink production; marketing; community engagement
	Changing attitudes to woodlands	**Forestry** Community engagement; teaching; presentation; facilitation	
	Obesity		**All industries**: Marketing; public engagement
	Changing attitudes to companion animal ownership	**Veterinary** Marketing; species-specific knowledge	

Source: Lantra, 2012.

Our examination of future skills needs demonstrates the sheer breadth of potential skills that might be needed as a result of drivers of change in the sector. Many of these needs fundamentally challenge the types of skill that currently predominate in occupations within the sector. Skills will become increasingly STEM focused, require greater business and management and ICT. Overall, this exercise highlights the importance in particular of professionalising the workforce, as the sector in particular has many specific barriers to training.

7.3 Future trends

We set these likely changes in the context of macroeconomic trends affecting the levels of employment and replacement demands for labour in the sector. We have used Working Futures 4 projections to provide a set of forecasts for the agriculture, forestry and fishing sector for this purpose.

The 2010-2020 Working Futures forecasts are the fourth in the series and examine the sectoral, occupational and spatial pattern of output and employment across the UK. The projections are based on a macroeconomic model of the economy and make projections based on the latest labour market information, econometric methods and judgement. The projections consider macro-level trends as well as economic policy such as the effects of the Comprehensive Spending Review. They are considered indicative likely trends and orders of magnitude given a continuation of past patterns of behaviour and performance, rather than precise forecasts of the future.

The UK economy overall in 2020 is forecast to have a greater share of jobs in managerial, professional, associate professional and technical roles compared with 2010. This is estimated to be an additional two million jobs across the three occupational categories. Administrative and secretarial and skilled trades occupations are set to decline in importance with the proportion of the workforce accounted for by these groups at ten per cent in 2020 compared with around 12 per cent in 2010. Table 7.2 shows the full projection.

Forecasts for the agriculture, forestry and fishing sector reflect the broad trends in the national economy. Skilled trades, such as farmers and foresters, are set to see a decline of 15,000 workers by 2020. However, this accounts for a reduction in the share of the sector workforce from 51.3 to 50.9 per cent (only 0.4 percentage points). Offsetting this decline in skilled trades is the increasing proportion of managerial, professional and technical occupational groups, which again mirrors national trends. Some farmers are classified however in the Manager, Director and Senior Official SOC, for example those who are farm managers and/ or owners. This will affect the overall proportion of skilled trade to managerial roles within the sector.

However, the number of people in these three occupational groups is projected to increase very little between 2010 and 2020. It is expected that fewer elementary occupations (such as farm and forestry workers) will be required in the sector. It is evident from the fact that elementary occupations are set to increase in volume in the national economy overall (increase of 101,000 roles) although in the sector itself, there is a projected decline (where the proportion of elementary occupations are falling). Table 7.3 shows the full projection for the agriculture, forestry and fishing sector.

This view of the sector in quantitative terms matches our expectation that skills requirements will more generally be required in managerial, scientific, ICT and leadership roles.

Table 7.2: Workplace job growth by occupation (UK)

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020 Net change
		Numbers (000s)			% shares		(000s)
Managers, directors and senior officials	3,016	3,279	3,560	9.9	10.6	11.1	544
Professional occupations	5,843	6,189	6,712	19.2	20.1	21.0	869
Associate professional and technical	3,926	4,138	4,476	12.9	13.4	14.0	551
Administrative and secretarial	3,698	3,466	3,312	12.1	11.2	10.3	-387
Skilled trades occupations	3,526	3,389	3,295	11.6	11.0	10.3	-230
Caring, leisure and other service	2,719	2,801	3,032	8.9	9.1	9.5	313
Sales and customer service	2,608	2,555	2,610	8.6	8.3	8.2	2
Process, plant and machine operatives	1,950	1,829	1,737	6.4	5.9	5.4	-213
Elementary occupations	3,173	3,209	3,274	10.4	10.4	10.2	101
All occupations	30,458	30,855	32,008	100.0	100.0	100.0	1,550

Source: Working Futures Warwick Institute for Employment Research / Cambridge Econometrics, 2011.

Table 7.3: Workplace job growth by occupation within agriculture, forestry and fishing (UK)

Employment growth	2010	2015	2020	2010	2015	2020	2010-2020 Net change
		Numbers (000s)			% shares		(000s)
Managers, directors and senior officials	37	37	37	7.4	7.5	7.7	0
Professional occupations	34	35	39	6.8	7.2	8.1	4
Associate professional and technical	18	19	20	3.6	3.8	4.1	1
Administrative and secretarial	27	23	20	5.3	4.7	4.3	-7
Skilled trades occupations	257	251	241	51.3	51.5	50.9	-15
Caring, leisure and other service	32	35	39	6.4	7.2	8.2	7
Sales and customer service	6	5	5	1.2	1.1	1.0	-1
Process, plant and machine operatives	21	18	16	4.2	3.7	3.3	-5
Elementary occupations	69	65	58	13.8	13.3	12.2	-11
All occupations	501	488	474	100.0	100.0	100.0	-27

Source: Working Futures Warwick Institute for Employment Research / Cambridge Econometrics, 2011.

Data on net changes in employment hides important information about churn in the labour market. This churn or replacement demand is created by individuals retiring or moving to different sectors of the economy. The latest Working Futures data provides information on replacement demands for every occupation within the sector. We do however only have a partial picture of replacement demand in the skilled agricultural and related trades occupation. The data suggests that employment in the occupational category is likely to be higher in the sector due to its older workforce. The Working Futures data suggests that for the skilled agricultural and related trades occupational group, replacement demand in 2020 is 52 per cent of the 2010 employment level. This represents the highest level of replacement demand of all occupational groups.[63]

This high level of replacement demand for the sector is verified by Lantra's own employment forecasting model. Lantra commissioned forecasts in 2010 which help us to estimate and account for replacement demand in the agriculture, forestry and fishing sector. The forecasts in Table 7.8 cover the sector as defined in this SSA with the exception of the marine fishing industry. They are however linked to the previous iteration of Working Futures and therefore do not reflect the most recent economic conditions and economic policy. [64] The forecasts do however demonstrate the scale of additional jobs that are still likely to be required given that recent trends are unlikely to affect replacements demands to a significant degree.

Table 7.4: Employment growth and replacement demand, 2010-2020

Employment growth			2010 - 2020		
000s	**2010**	**2020**	Net change	Replacement demand	Total requirement
Managers and senior officials	113	84	-29	41	11
Professional occupations	40	31	-9	14	5
Associate professional and technical occupations	57	43	-13	19	6
Administrative clerical & secretarial occupations	37	29	-9	15	6
Skilled trades occupations	131	99	-33	42	9
Personal service occupations	20	15	-5	8	3
Sales and customer service occupations	92	74	-18	33	15
Process plant & machine operators	38	29	-8	13	5
Elementary occupations	80	64	-15	28	13
All occupations	609	469	-140	212	72.70

Source: Lantra Employment Forecasting Model, 2010.

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[63] Please note that this occupational group includes elements of gardening and landscape gardening and does not cover the entire picture across the wider sector.
[64] They are also more indicative in nature as there are significant robustness issues when disaggregating to the extent the model does.

Indicatively, the projections show that replacement demands for the sector are for an additional 200,000 jobs over the next ten years. While the latest round of working futures suggests that net employment is due to decline in the sector by 27,000 jobs, replacement demands should offset this structural trend generating an additional 185,000 jobs by 2020.

7.3.1 Drivers and their impact on employment and skills

This section should be read in conjunction with section 6.2 regarding drivers of change, and Table 7.1. which summarises the skills implications.

The occupational structure forecasts above suggest skills requirements will shift away from the requirement for lower level to higher level skills. However, where the sectoral occupational forecasts differ significantly from the national forecasts is in the likely demand for elementary occupations. In the UK overall, growth in elementary occupations is still set to provide significant employment growth, but in the agriculture, forestry and fishing sector, elementary occupations are set to decline. This is reflective of agriculture, forestry and fishing's general position of technological or ICT adoption relative to other sectors. There are further capital intensive productivity gains likely to be made in agriculture which will reduce the requirement for elementary occupations as compared with other sectors where these gains have, on the whole, already been made. Simultaneously in the agriculture, forestry and fishing sector, managerial, professional and associate professional occupations (which require higher level skills) are set to become more common. The driver related to technological change referred to in Chapter 6 is particularly relevant here in terms of its influence on employment, whereby technological or ICT adoption will effect the jobs required in the sector.

Importantly, not every nation is expected to be subject to the same changes. For example, Wales and Northern Ireland are set to see a less prominent increase in managerial occupations with traditional structures of higher levels of elementary occupations likely to persist.

8 Priority areas for action

Chapter summary

- This chapter draws together all the evidence presented in preceding chapters and formulates priority areas for action for the agriculture, forestry and fishing sector.

- High priority (crucial) skills for immediate action include setting up structures to demonstrate, record and promote the professionalisation of the sector, succession planning for small businesses, environmental management skills, risk management, scientific knowledge and technology transfer and better ICT skills.

- Other high priority (but not crucial) skill needs are marketing, market analysis, planning and project management, woodland management, crop agronomy and pest and disease identification and control, as well as practical conservation skills.

- Medium priority skills include public engagement, formal recognition of technical and paraprofessional roles, negotiation and influencing skills, as well as customer care, communication and presentation skills.

8.1 Introduction

This SSA looks at business structures, workforce characteristics, skill gaps, drivers of change and their skill implications, and contributes significantly to our knowledge of the agriculture, forestry and fishing sector. It is important to get a good understanding of the diversity of the agriculture, forestry and fishing sector as this understanding shapes the priority areas for action.

The industries and professions comprising the agriculture, forestry and fishing sector share many common characteristics such as a high predominance of micro-businesses, high levels of self-employment, and a high proportion of working owners. Against this background, the SSA contributes to a better understanding of current and future skills needs for the sector.

8.2   Setting the priorities

8.2.1   Areas for action

In this final chapter of the skills assessment, we seek to identify the skills issues which should be considered priorities, both in the short and longer term. Building on an approach followed by UKCES (2010b), we focus on the issues where there are:

- Current or anticipated future skill needs which are significant in scale or volume already in the sector, or in future

- Significant current or emerging skill needs that are already making an impact on the economic performance of the sector, or where the need satisfies wider national priorities

- Concerns about whether skills needed will be adequately met.

Drawing on all the available evidence in this SSA, the areas for action are as follows:

- **Professionalisation –** Workers in the sector are often highly skilled but seen to be less qualified in terms of the formal qualification system. Facilitating higher levels of skills in the workforce is important to respond to the challenges the sector faces. Recognising and recording such skills development highlights the need to develop continuous professional development (CPD) programmes and embed these in the working practices of the sector.

   There are common perceptions of the sector having low qualifications and a lack of career progression. This poor image of the sector is seen to be compromising recruitment, especially of young people, into the sector. The professionalisation of the sector is important in terms of attracting new entrants and will facilitate the provision of clear career pathways, raising the prevalence of higher level skills.

- **Succession planning / new entrants -** The workforce is ageing and there is a need to safeguard sustainable businesses in order to deliver greater productivity. This means the sector needs better succession planning skills. Furthermore, the high price of land, and the lack of pension provision for older farmers creates a disincentive to would-be owners and managers. Addressing these issues is even more important in the context of small and micro-businesses that predominately make up the sector, as well as the challenges posed by the ageing workforce and high levels of replacement demands.

- **Environmental management skills** – technical skills are needed to best manage nitrates, pesticides, water, waste and other intermediate inputs. The sector operates as a key provider of public goods, as well as generating externalities (which are effects not related to the price mechanism). These can have positive or negative spill-over effects and so the skills associated with these externalities will become more valued. This is evidenced by the 'greening' of the CAP.

- **Risk management –** involves the assessment, prioritisation and mitigation of risks to business profitability. These risks can be external where the business is less in control of risk mitigation. For example, climate change impacting primary food production will see greater price volatility in world markets. This is turn will have adverse (or in some cases positive) impacts on business profitability. Understanding and managing these risks will be a key skill.

  The sector has the highest rate of accidents across all sectors of the economy. Internally managing the risk of accidents in the sector is a key skill and is important to maintaining both business productivity and the health and well-being of workers in the sector.

- **Scientific knowledge and technology transfer** – is needed to underpin the application of new technology. Managers and technicians need an understanding of scientific methods including mathematics, chemistry and biology to aid the adoption of precision agriculture, application of genomics, soil and water testing, as well as disease control and surveillance. A better flow from research bodies into direct technology transfer for industry would facilitate this knowledge transfer as well as ensuring the availability of CPD programmes and regular reviews of curricula for learners in further and higher education and training. This is critical to achieving the sustainable intensification of food production. This may require a step change in attitudes from both employers and employees toward higher take-up of STEM-related qualifications and corresponding entry requirements / graduate training schemes.

- **Better ICT skills to aid technological change** – the sector will likely need to operate / implement production technology within the context of increasing use of ICT. This is particularly the case when developing a more sustainable food production system. Higher level ICT skills will be required as a result including the use of smartphones and handheld devices, GIS / GPS applications, spreadsheets, and the internet. An issue for the sector is the availability and speed of broadband services in rural areas which are important considerations for the delivery of better ICT skills.

- **Business skills to diversify and work flexibly to meet the needs of sector** – For the veterinary activities industry there is a need to change how they offer their services in order to promote animal health and welfare bio security by improving knowledge transfer to support increased levels of productivity leading to increased profitability for farmers. For the other industries, the skills to interpret market forces and entrepreneurial skills are key to diversification, for example by adding value to existing products up the supply chain.

- **Marketing and market analysis –** there are several high profile opportunities that the agriculture, forestry and fishing sector can benefit from given better knowledge and skill in marketing, skills to access foreign markets and new skills to diversify into a related enterprise. For example, the decline of consumer interest in organic food means there is a requirement for marketing skills and customer relations to best position products and increase demand. Such entrepreneurial skills are important to the sustainability of sector businesses.

  The agriculture, forestry and fishing sector operates in a globalised environment and requires better market analysis skills to collect, understand, analyse and act on market information. Improved knowledge of commodity markets and financial instruments would allow better operational decisions to be made.

- **Planning and project management –** an underlying theme of all the drivers affecting the sector is the increasing levels of skill required in business planning. The political, environmental, economic and regulatory context within which the agriculture, forestry and fishing sector operates has ever increasing layers of complexity and so the need for better overall planning is vital in meeting the challenges the sector faces. Allied with this is the need to manage discrete projects in the context of a wider business plan, including the need to implement renewable energy schemes and other diversification projects and environmental requirements.

- **Woodland management** – the increased demand for wood fuel means an increase in the volume of technical skills required not only in the forestry industry but also across the whole of the agriculture industry. Better management of woodland is needed not only to meet new consumer demands for wood fuel but also to increase and sustain biodiversity within woodlands.

- **Practical conservation** – increased funding and conditionality of environmental stewardship of the countryside within agriculture means that further skills are required in terms of environmental conservation and management including species identification, knowledge of habitats, and ecology.

- **Crop agronomy and pest and disease identification –** these skills are required to help mitigate against the risks of climate change while at the same time identifying changing patterns of pests and diseases, understanding their effects on their business and taking appropriate action to control them. Crop agronomy includes the ability to understand new agronomy techniques and to adopt and grow new varieties that are capable of handling changes in climatic conditions (e.g. drought resistant wheat, and potatoes that require less water inputs). The veterinary activities industry will need additional knowledge to identify and treat new diseases such as the Scmallenberg virus introduced by midges from Europe in 2010 which have survived as a result of a warming climate.

- **Public engagement in agriculture, forestry and fishing –** Historically, the agriculture, forestry and fishing sector in many ways has been at arms length from many consumers and communities. However, the role of the sector in wider society is becoming increasingly important. The need for increased productivity alongside the need to maintain excellent animal health and welfare standards, environmental standards and maintain eco-systems means that business leaders in the sector will increasingly need to manage public perceptions and engage more effectively with local communities. This also includes the need to deliver an increasing proportion of the national energy mix through renewable energy schemes.

- **Formal recognition of the technical skills for paraprofessionals** - The working role of paraprofessionals such as bovine foot trimmers, lay tuberculosis (TB) testers, artificial insemination (AI) technicians, and equine dental technicians will be required to meet anticipated changes to legislation in relation to the Veterinary Surgeons Act. Such occupations are increasingly seeking professional standards on which to base skills development, and are on the periphery of veterinary activities industry.

- **Negotiation and influencing skills –** will become a more important skill for the sector over time. It will be important to the development of renewable energy projects, managing sustainable fisheries as a result of CFP reform, and in meeting the new market demand for wood fuels. In addition, the increasing use of contractors in the agricultural and forestry industries means there is a need to develop stronger negotiation skills to ensure securing of contracts.

- **Customer care, communication and presentation** - In veterinary activities there is a distinct trend toward the industry becoming more customer focused, particularly with the introduction of online retailers into the sector. Veterinary practices need to demonstrate the benefits of receiving a holistic service from one organisation.

More generally, it is likely that the sector will have greater contact with consumers and so customer care skills are likely to be more important. With the opportunity that renewable energy schemes present, better communication and presentation skills may be required in order to best implement such projects. This skill need is important in improving the image of the sector, and promoting and developing a more professionalised sector.

8.2.2   Priority areas for action

We now rank our identified areas for action, identifying the need to address issues over either the short, medium or longer term. We adopt a risk based approach first used by Skills Australia (2008), and focus on the following criteria:

- **Degree of certainty** – this considers the likelihood of drivers of skill demand materialising and/or the risk of supply side failure, with four assessment levels; unknown, possible, likely and certain.

- **Magnitude –** this considers the scale of action required. We use three assessment levels: small, medium and large.

- **Lead time –** this criterion seeks to assess the length of time taken to rectify the skills deficit. In doing so it considers whether there is an absence of alternative preferred strategies to overcome the deficit. It deploys three categories; short (less than three years), medium (three to five years) and long (over five years).

- **Criticality –** this final criterion seeks to assess the potential risk to economic growth as well as the environment.

Table 8.1 assigns a rating with an accompanying rationale to each of the factors above. Depending on how these factors combine, each skills deficit is given an importance rating indicating how much of a priority it is for action. The ratings used are:

- **Red**, reflecting skills deficits of critical importance to the sector and require immediate action, either because there are current skills needs not currently being met or because lead times are such that early action is required.

- **Pink**, reflecting skills deficits which are again of critical importance to the sector but may be of smaller scale or have a shorter lead time.

- **Amber**, reflecting skills deficits that are important to the sector rather than critical given the level of information or degree of certainty.

Table 8.1: Priority action matrix

Skill / occupational priority	Industry(ies) affected	Degree of certainty	Magnitude (scale of action required)	Lead time	Criticality
Professionalisation	Agriculture, Forestry and Fishing	**Certain** Many drivers multiply the need for a more professionalised workforce including ageing population, technological change, climate change and CAP reform	**Large**: requires a fundamental shift in the attitudes and high levels of leadership, as well as the underlying infrastructure to record and encourage CPD	**Medium** While lead time is short for the underlying infrastructure (as Lantra are currently implementing a CPD scheme) the shift to a more professional workforce is likely to require a longer lead time	As the professionalisation of the sector is required to meet quality standards, anticipated changes to the Veterinary Surgeons Act, increased productivity and is critical in meeting the challenges facing the sector. Also, critical to aid the transition from craft/technician to management level in a sector with many barriers to training and low incidence of formal qualifications
Succession planning / new entrants	Agriculture	**Certain** the requirement for succession planning is already apparent with high proportions of older managers and owners coupled with the difficulties for new entrants (e.g. high price of land, and capital requirements)	**Large** The issue of succession / new entrants is wider than just planning, it is linked with the underlying incentives for older owner/managers to hold on to farms so scale of action is large	**Short** for better succession planning skills to be developed among the workforce but longer to address disincentives for new entrants, as well as image problems and salary perceptions	To aid the new ideas and leadership to enable technological and scientific change to permeate the sector
Environmental management skills	Agriculture, Fishing	**Certain** environmental stewardship schemes, stringent AHW regulations and EU rules governing pesticide and fertiliser applications mean that this skill is already a requirement in industry	**Medium** as this is an ongoing skill need, so the scale of action required is not necessarily as large as newer drivers	**Short**	The greening of the CAP means that this will be increasingly important skill to maintain the profitability of food production. Critical to the wider environment/society as the stewardship of the countryside is important in terms of conservation efforts, promoting tourism and maintaining traditional habitats and containment issues in fishing - especially aquaculture

Skill / occupational priority	Industry(ies) affected	Degree of certainty	Magnitude (scale of action required)	Lead time	Criticality
Risk management	Agriculture, forestry, fishing and veterinary	**Certain** on two counts. Firstly to reduce fatalities and secondly monitor and manage environmental challenges posed by climate change	**Large** accident rates are still high in the sector and better risk management practices are needed. Meanwhile only 4% of holdings are currently seeking advice about the impact of climate change	**Short**	Critical to managing the effects of climate change as well as reducing the accident rate in the sector which have knock on effects on the profitability and productivity of the sector
Scientific knowledge and technology transfer	Agriculture, forestry, fishing	**Likely** combination of need to mitigate against climate change, sustainable intensification, and precision agriculture make increased scientific knowledge a certainty	**Large** skill gap cannot be remedied through the provision of short courses, higher academic requirements are likely to be needed	**Long**	Critical to managing effects of climate change and delivering greater productivity in a sustainable way. Important to maximise the efficiency of production systems.
Better ICT skills to aid technological change	Agriculture, forestry, fishing	**Likely** technological drivers of change, ICT skills will become increasingly required. There may be new requirements for specialist roles within existing sector businesses	**Medium** change is already underway in terms of the advances in equipment and the corresponding ICT skills required	**Medium** the development of ICT skills is likely to coincide with improvements in ICT infrastructure in rural areas	Plays a critical current and future supporting role in helping businesses to adopt to implement technological change
Business skills to diversify and work flexibly to meet the needs of sector	Agriculture, forestry, fishing and veterinary	**Likely** For veterinary activities at present, salary and unsocial hours are a deterrent and creating a skills gap. For other industries diversification is increasingly important	**Large** Significant current and future demand creates a need for sector businesses to respond	**Short** Whilst many of the skills exist, its about better marketing to make better services to farmers more accessible	Critical to the implementation of higher Animal Health and Welfare standards

Skill / occupational priority	Industry(ies) affected	Degree of certainty	Magnitude (scale of action required)	Lead time	Criticality
Marketing and market analysis	Agriculture, forestry, fishing and veterinary	**Likely** growing export opportunities coupled with the trend toward renewable energy generation and the impact of CAP reform on production mean this is likely	**Small** no large scale shifts needed to deliver, likely to be better provision of short and flexible bite-sized learning	**Short**	Critical for some sub-sectors where changes in CAP will cause fundamental changes. Primary production including organic farming thus securing foothold in new, emerging areas of the sector and cross sector activities. Less critical because of long lead times for production in agriculture and forestry in particular
Planning and project management	Agriculture, forestry, fishing and veterinary	**Certain** Additional complexity in businesses is likely to be commonplace given more uncertain returns, lower subsidies and the opportunity presented by renewable energy	**Medium** business planning in the form of nutrient plans, farm health plans are quite commonplace but the skills for managing projects may be lacking requiring larger intervention	**Short**	Many businesses in the sector are effective at planning e.g. improved systems for licensing aquaculture development; it is how the planning process reflects rapidly changing circumstances that will be important.
Woodland management	Agriculture, forestry	**Certain** we are already seeing change in consumer demand in this area	**Small** affects all managers with specific or overall responsibility for large scale projects	**Short**	Less critical to an expanding sector where the infrastructure already exists to meet the skills gap
Practical conservation	Agriculture, forestry, fishing	**Certain** as a complement to environmental and woodland management skills	**Small** in many cases these skills have a strong foundation in existing practice	**Short**	Many of these skills are currently being developed through environmental stewardship schemes and the Marine Bill will become more important when CAP reforms make subsidies more conditional on environmental practices
Crop agronomy and pest and disease identification	Agriculture, forestry, fishing and veterinary	**Likely** 29% of holdings are already adapting to the threat of new pests and diseases and this is likely to increase in importance	**Medium**	**Long**	Critical to strengthen aspects of biotechnology and biodiversity and mitigating against the threats of climate change

Skill / occupational priority	Industry(ies) affected	Degree of certainty	Magnitude (scale of action required)	Lead time	Criticality
Public engagement	Agriculture; Forestry, Fishing	**Likely** greater requirement on the sector to engage and interact with the wider public	**Small/Medium**	**Medium**	Not critical to economic growth. Skill in public engagement takes time to develop via mixture of off and on the job training
Formal recognition of the technical skills for paraprofessionals	Veterinary	**Likely** to better serve agricultural markets and in response to changing legislation and the AHW agenda – specifically responding to the threat of new disease threats	**Medium** requires existing management structures to incorporate change	**Medium**	Critical to the viability of farm businesses and the long term sustainability of the veterinary sector
Negotiation and Influencing skills	Agriculture, forestry, fishing and veterinary	**Possible** allied with the need for project management and diversification, it is possible that skills in negotiation and influencing will be needed	**Small**	**Short**	Less critical to secure value for money and the buy in of stakeholders
Customer care, Communication and presentation	Agriculture, forestry, fishing and veterinary	**Likely** increased need for improved skills from customers and diversification of businesses	**Small**	**Short**	Less critical to economic growth

Source: Lantra, 2012.

8.3   Conclusions

The set of drivers which are impacting on the agriculture, forestry and fishing sector suggest that tomorrow's workforce will need to ensure a balance between high level technical and high level business management skills. The degree of change occurring within the sector is significant and these changes provide a driver to raise the professionalism of the sector. This in turn will lead to the increased need for high level, broader business and technical skills within the workplace. Given the high demand for business management and development skills, better access to relevant business advice and guidance would provide support to businesses in analysing their skill needs and signposting to appropriate solutions.

Against this backdrop, there is widespread recognition that in the future the UK's agriculture, forestry and fishing sector will have to achieve sustainable intensification – producing more in an environmentally friendly way. Thus the sector will have to operate with consideration of carbon reduction, resource efficiency, while mitigating against the impact of input price inflation and ensuring a reasonable return on investment. Diversification will also become more important, adding another layer of complexity.

The implications for priority actions based on the findings outlined in this report can be drawn together under two broad themes that are particularly important for the future of the sector.

Upskilling the workforce

The agriculture, forestry and fishing sector faces a multitude of business demands ranging from legislative and audit compliance, to supply chain requirements and customer needs. Employers have to ensure that both themselves and their workforce are competent and professional. Training is often undertaken outside of formal national qualification frameworks, and these do not usually reflect the sector's preference for short specific technical courses. Systems to formally record such achievement and document the skilled nature of the sector's occupations would raise the perception and image of the sector to one with a highly skilled, professional workforce.

For small businesses, knowing where and what skills to invest in, and how to keep up to date and compliant, is particularly challenging. There is also a very low uptake of leadership and management training. Businesses will need to develop better managers and leaders through improving management skills, long term business planning skills and the application of science and technology in sector businesses.

The context within which the sector is operating is becoming increasingly complex, while at the same time being increasingly influenced and driven by key national priorities such as reducing greenhouse gas (GHG) emissions, mitigation against climate change, and providing food and fuel security. Risk management, project management and environmental management techniques will need to be increasingly deployed to meet these challenges.

Taken together, a lack of any coherent sector-wide structure to record knowledge and technology transfer (KTT) and continuous professional development (CPD), as well as a lack of management and leadership skills, mean that the sector is not meeting its full potential.

Entry, progression and sector careers

The size of businesses in the sector creates a number of specific challenges, in particular related to the future availability of skilled staff. Many businesses within the sector experience difficulties in recruiting young people and/or mature entrants due to poor reputation and image of the industry, perception of low wage and poor working conditions, and limited career progression opportunities. Two thirds of employers are unaware of apprenticeship programmes.

Businesses need access to an adequate supply of appropriately skilled and qualified workers at all levels. By promoting the range of rewarding opportunities across all occupational groupings to inform long term career and development prospects, as well as understanding of the potential the sector can offer to individuals of all ages and capabilities, industry has realised that such entry and progression routes, together with the professionalisation of the workforce, will have a measurable impact on the supply and retention of entrants coming into the sector.

In addition, sector businesses are keen to ensure that the education system provides opportunities for young people to contextualise their learning and gain experience within the sector, helping them in the longer term to make further education and career choices.

To conclude, the Sector Skills Assessment has brought together many issues and challenges facing the agriculture, forestry and fishing sector. We have discussed the changing skill mix as job roles are redefined and broadened given the need for diversification and compliance to legislative, technological and climate change needs.

Technical appendix

The provision of core data

To ensure consistency and comparability across all 15 SSA reports, data from core labour market information sources was centrally collected, processed and formatted. It was then distributed by the UK Commission to Sector Skills Councils for inclusion within the reports.

Core data was centrally produced from the following sources:

- The Labour Force Survey

- The UK Commission's Employer Skills Survey 2011

- Working Futures 2010-2020

- Regional Accounts (information on Gross Value Added)

- Mid Year Population Estimates

- European Continuing Vocational Training Survey

- Business Demography Statistics

Data from the Labour Force Survey, regional accounts and mid-year population estimates was collated, processed and formatted by Cambridge Econometrics and the Institute for Employment Research (IER), Warwick.

Data from the UK Commission's Employer Skills Survey 2011 was collated and processed by IFF Research and formatted by the UK Commission.

Data from Working Futures was collated, processed and formatted by IER.

Data from the European Continuing Vocational Training Survey and Business Demography Statistics was collated, processed and formatted by the UK Commission.

All data was quality assured by contractors, the UK Commission and by Sector Skills Councils.

It has been necessary to suppress some data within the reports to adhere to official guidelines regarding data quality. The details of suppression strategies applied to data from specific sources are described in more detail below. Data for Scotland, Wales and Northern Ireland has been suppressed because of small sample numbers in some tables.

Methodological information for core labour market information sources

Method used to derive estimates of gross value added (GVA) per employee job by SSA sector and nation

No official estimates are currently available for the level of productivity by sector and UK nation. The figures presented in this report have therefore been estimated by the UK Commission using the following process.

Levels of workplace gross value added at current basic prices by SIC 2007 Section were derived from the official estimates published by the Office for National Statistics as part of its Regional Accounts series. Levels of employee jobs were taken from the Business Register and Employment Survey for 2009.

The sectoral "footprint" definitions used as the basis for the SSA reports are not coterminous with SIC Sections, however, and in some cases draw on 2-digit SIC divisions. At present the official GVA estimates for nations and regions are only available at a SIC section level.

To overcome this an approach was used which has been developed by Welsh Government to derive gross value added estimates for its priority sectors. This same approach was applied to the SSA sectors across the UK nations. Approximate estimates of GVA at 2-digit level are available for much of the economy from the Annual Business Survey (ABS). These were used to allocate GVA at the 2-digit level with the results being constrained to the official GVA totals by SIC section taken from the Regional Accounts. For those areas of the economy not covered by the ABS, shares of employment at the 2-digit level were used instead, taken from the Annual Population Survey.

Labour Force Survey

About the survey

One of the key data sources used within this report is the Office for National Statistics' (ONS) Labour Force Survey (LFS). The LFS is a survey of households living at private addresses (plus in NHS accommodation and student halls of residence) in the UK.

The survey is carried on a quarterly basis. The sample is made up of around 41,000 responding (or imputed) households in Great Britain every quarter, and around 1,600 households in Northern Ireland. The LFS uses a rotational sampling design which means that, once selected, a household[65] is kept in the sample for a total of five consecutive quarters.

Interviewers can accept answers to questions by proxy if a respondent is unavailable. This is usually from another related adult who is a member of the same household. About a third of LFS responses are collected by proxy. Information on individuals aged 16 – 19 is most likely to be obtained by proxy.

Full user guidance can be accessed here: http://www.ons.gov.uk/ons/guide-method/user-guidance/labour-market-statistics/index.html

Preparation of LFS data for this report

The UK Commission provided report authors with a core set of tables based on LFS data for mandatory inclusion within Sector Skills Assessment reports. The data within these tables was prepared by two contractors: Cambridge Econometrics (CE) and Warwick Institute for Employer Research (IER).

Data was prepared in three stages:

1. The original survey data was gathered and coded by IER to the categories and classifications required for the SSA tables. This was then sent to CE
2. CE used the data prepared by IER and derived the indicators and aggregated the data to the dimensions required for the tables
3. The UK Commission checked tables and distributed to report authors

Annual data presented within this report is based on an average of four consecutive quarters of data. Data prior to 2009 is based on SIC2003 and data for 2009 and 2010 is based on SIC2007 codes.

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[65] Note, it is the address that is selected and not necessarily the particular people who live there.

Reporting of LFS data

In line with ONS convention, annual LFS data presented within this report has been suppressed if individual cell sizes fall below 6,000. This is because cell sizes of fewer than 6,000 are deemed to be low quality estimates.

Analysis of employment uses all four categories of employments status within the LFS: employee, self-employed, government scheme & unpaid family worker.

Please note, some tables present a total for *All sectors* while others present a total for *Whole economy*. The values for these totals are different because the *Whole economy* total includes the 'Not within scope' category (i.e. sectors that don't fall within an SSA sector), whereas *All sectors* is the total for just the 15 SSA sectors.

UK Commission's Employer Skills Survey 2011

The UK Commission's Employer Skills Survey 2011 (UK Commission's ESS 11) was the first large-scale economy-wide employer skills survey to be conducted across the whole of the UK. The survey was managed by the UK Commission for Employment and Skills and was conducted by three contractors: IFF Research, BMG Research and Ipsos Mori (Davies et al, 2012). The project steering group included representatives from all four nation governments, the Alliance of Sector Skills Councils, the Department for Work and Pensions and the Skills Funding Agency.

Fieldwork was carried out from March to July 2011. Two waves of interviews were conducted. The main survey involved telephone interviews with approximately 87,600 employers and a follow-up survey focusing on investment in training was undertaken with over 11,000 respondents. The data presented within this report draws only on information gathered from the main survey.

The table below provides information on the number of employers interviewed by sector and nation for the main survey.

SSA sector	England	Scotland	Wales	NI	UK
Agriculture, forestry and fishing	1,270	99	133	45	1,547
Energy production and utilities	1,306	106	133	69	1,614
Manufacturing	6,774	182	470	350	7,776
Construction	7,538	300	660	463	8,961
Wholesale and retail trade	13,919	333	1,129	769	16,150
Transportation and storage	4,078	152	300	205	4,735
Accommodation, food and tourism activities	9,630	324	909	455	11,318
Information and communication	2,262	56	111	81	2,510
Creative media and entertainment	3,301	99	227	135	3,762
Financial, insurance & other professional	4,525	146	391	281	5,343

SSA sector	England	Scotland	Wales	NI	UK
services					
Real estate and facilities management	3,113	85	133	93	3,424
Government	2,078	163	188	176	2,605
Education	4,597	164	391	287	5,439
Health	2,912	107	242	137	3,398
Care	4,028	101	338	296	4,763
Not within scope	3,722	86	257	162	4,227
Total	75,053	2,503	6,012	4,004	87,572

UK Commission's ESS 11 is a quota survey. Quotas were set on a size by sector within nation / English region basis. In Northern Ireland and Wales, where more interviews were carried out than the required minimum to get national representation, they were predominately distributed in proportion to the population.

In order to include the maximum number of questions without extending the overall length of the interview, the sample was randomly split in half for some sections, and one set of employers were asked one module of questions, and the other half of the sample different questions.

The survey is a local unit (establishment) survey. This means that for large multi-site organisations several branches/ locations may have been interviewed. The establishment level sampling reflects that the survey asks employers about issues that need to be answered by people with day-to-day contact with employees rather than head office.

Respondents are those who have the best overview of HR and training within the establishment. This will tend to be HR or training managers in large establishments and owner/managers or senior managers within small establishments.

The valid population of establishments being used in UK Commission's ESS 11 is all establishments with the exception of sole traders (this means that establishments with one employee and no working proprietors (for e.g. flower stall at a station, where there is one person working but they don't own it themselves) are included). In addition, establishments with multiple working proprietors but no employees are also included.

Sampling error for the survey results overall and for different sub-groups by which analysis is presented in the report is shown in the table below. Sectoral figures are presented for the 14 SIC 2007 sections which were used for the survey sampling approach.

Figures have been based on a survey result of 50 per cent (the 'worst' case in terms of statistical reliability), and have used a 95 per cent confidence level. Where the table indicates that a survey result based on all respondents has a sampling error of +/- 0.32 per cent, this should be interpreted as follows: 'for a question asked of all respondents where the survey result is 50 per cent, we are 95 per cent confident that the true figure lies within the range 49.68 per cent to 50.32 per cent'.

As a note, the calculation of sampling error has taken into account the finite population correction factor to account for cases where we are measuring a significant portion of the population universe (i.e. even if two sample sizes are the same, the sampling error will be lower if in one case a far higher proportion of the population was covered).

These confidence intervals are based on the assumption of a normal distribution of responses.

Sampling error (at the confidence 95 per cent level) associated with findings of 50 per cent

	Population	Number of interviews	(Maximum) Sampling Error
Overall	**2,299,921**	**87,572**	**+/-0.32**
By country			
England	1,960,298	75,053	+/-0.35
Northern Ireland	65,559	4,004	+/-1.5
Scotland	175,114	2,503	+/-1.94
Wales	98,950	6,012	+/-1.22
By size of establishment			
1-4	1,466,397	18,955	+/-0.99
5-24	648,446	47,770	+/-0.61
25-99	147,319	15,951	+/-1.03
100-249	25,945	3,270	+/-2.27
250+	11,814	1,626	+/-3.12
By sector			
Agriculture	98,458	939	+/-3.18
Mining & Quarrying	2,222	188	+/-6.84
Manufacturing	128,255	7,704	+/-1.08
Electricity, Gas and Water	10,583	1,426	+/-3.35
Construction	241,429	6,654	+/-1.18
Wholesale and Retail	441,365	15,340	+/-0.78
Hotels & Restaurants	167,215	8,471	+/-1.04
Transport and Communications	210,801	7,885	+/-1.08
Financial Services	52,381	1,881	+/-2.22
Business Services	551,612	14,488	+/-0.80
Public Administration	26,058	1,617	+/-2.36
Education	65,499	5,439	+/-1.27
Health and Social Work	140,269	8,161	+/-1.05
Community, Social and Personal Services	163,774	7,379	+/-1.11

Looking specifically at sampling error for SSA sectors at national level, Agriculture in Scotland provides an illustrative example. 99 interviews were completed for this sub-group. Applying the assumptions outlined above, this gives a maximum sampling error of around +/- 10 percentage points. This demonstrates the indicative nature of the detailed survey estimates for smaller sectors.

Within the report, data based on unweighted bases of less than 25 have therefore been suppressed for quality reasons. In addition, data based on unweighted bases of between 25 and 50 have been marked as indicative. More stringent thresholds have been applied in Scotland because of the lower total number of interviews that were conducted. Estimates based on unweighted bases of fewer than 50 have been suppressed, whilst estimates based on bases of 50-99 are marked as indicative in the relevant tables.

Finally, occupations within the survey are defined by 2010 Standard Occupational Classification codes and sectors are defined by 2007 Standard Industrial Classification codes.

Please visit the UK Commission's Employer Surveys website for further information including the full survey report and questionnaire. https://ness.ukces.org.uk/default.aspx

Working Futures

Working Futures 2010-2020 is the latest in a series of detailed projections of UK employment, productivity, labour supply and skills. The projections have been prepared by the Institute for Employment Research (IER) and Cambridge Econometrics (CE) on behalf of the UK Commission for Employment and Skills (UKCES).

The projections are calculated from a number of different data sources, including the Annual Business Inquiry, the Business Register and Employment Survey, and the Labour Force Survey. The results provide a picture of employment prospects up to 2020 by industry, occupation, qualification level, gender and employment status for the UK as a whole, the four nations, and English regions.

As with all projections and forecasts, the results presented in Working Futures should be regarded as indicative of likely trends and orders of magnitude given a continuation of past patterns of behaviour and performance, rather than precise forecasts of the future. At a time of great uncertainty about the short to medium term prospects for the economy, it is important to stress the value of Working Futures in aiding understanding of likely prospects for employment in the longer term (i.e. in 2020). Readers should therefore focus on the

relative position of sectors, and occupations in 2020 and treat the projected values as broad indicators of scale rather than exact predictions.

Further methodological details can be found on the UK Commission's website - http://www.ukces.org.uk/publications/working-futures-technical-report

Lantra Primary and Secondary Research

Sector Skills Council's (SSC) own research and analysis provides valuable insights into specific sectoral, sub-sectoral and occupational issues. Within the context of SSA reports, this granularity is vital to tell the story behind broader trends and identify key areas that could be of interest to the four national governments.

To ensure confidence in the findings of SSC generated research, sponsors require reassurance regarding quality and reliability. Therefore, detailed methodological information for all research presented and referred to within the report is provided in the table below.

Detailed methodological information for all research mentioned in this report authored by Lantra

Study title	Commissioner	Year	Methodology	Statement of methodological and statistical robustness
A Study of the Business Needs of Those Employing Migrant Workers in the Land-based Sector	DEFRA	2007	236 employer telephone interviews (out of 1,648 businesses contacted). The telephone interviews provided the opportunity for employers to then take part in more in-depth, face-to-face interviews. Face-to-face interviews with migrant workers (18 interviews) and 76 interviews with employers. Plus Literature review.	The face-to-face interviews with workers have complimented the findings from employers. Although lacking robustness at the 95% level, the telephone interviews include a wide spread of regions across England.
Skills and Labour Market Information Fisheries Management Industry-Scotland	Lantra	2004	Survey of 100 businesses as well as 56 angling clubs. Telephone and face-to-face interviews where possible, online or postal where this was not possible.	Not a statistically robust sample. The mixture of methodologies may have produced different results within the four areas of telephone, face-to-face, online or postal questionnaire use.
United Kingdom Food Supply Chain	Improve	2010	Analysis of secondary data : the most recent existing employment, business and economic data from official national datasets and government sources including all sectors of Food Supply Chain	Data based on official data sources so comprehensive in terms of coverage and statistical robustness.

Study title	Commissioner	Year	Methodology	Statement of methodological and statistical robustness
Welsh Food and Drink Skills Project	Lantra	2011	Representative sample of approximately 2,000 businesses (700 in Lantra sector) across Wales which was collated through a large scale telephone survey and a series of qualitative interviews and workshops, which also included industry stakeholders, employers, learning providers and students.	Good number of respondents and the methodology includes interviews to corroborate surveys. Positively, quotas were used for business size and sub-sector including Lantra's footprint suggesting representativeness for the data set. The qualitative aspect involved a number of methodologies however which may limit robustness in terms of findings, as would the small amount of double-counting where some 'stakeholders' were also 'employers'. Overall, a robust study but with the caveat related to the qualitative aspects and small amount of double-counting.
A Study of the Business Needs of Those Employing Migrant Workers in the Welsh Agriculture and Production Horticulture Industries	Lantra	2007 b	Literature review and primary research (29 telephone; 60 face to face).	This study should be considered indicative because of low sample sizes
Volunteers Skills Research	Lantra	2008	1. A quantitative survey of 342 volunteers across the UK 2. A quantitative survey of 85 organisations that host volunteers 3. A qualitative survey of 43 organisations that use volunteers, hereinafter referred to as the 'Volunteer Advisory Groups'.	This study included a good mix of different individuals and organisations potentially involved in volunteering. The study presents a good geographical spread.
Your future and farming report	Young Farmers Clubs	2009	Survey of 128 young farmers club members	In terms of respondent numbers, this study is not statistically robust.
The Trees and Timber Industry in Great Britain: Size, Structure and Skills	Lantra	2011	6,758 telephone calls were made to employers to find employees in the Trees and Timber industry. Response rates were 15%. Not all calls were relevant.	The confidence intervals for this study are wide, indicating that the study is not statistically robust. This is due to the fact the original SIC and SOC code use within the sector does not represent the sector particularly well, and this primary Lantra research was an attempt to show the 'hidden' workforce for the first time.
Skills Assessment for the Environmental and Land-based Sector in Northern Ireland	DARD	2010 a	Desk research of official Labour Market Information. Primary research with 991 businesses in Northern Ireland. Interviews conducted by market research organisation. Formative qualitative research	Statistically representative and supported by qualitative research.This study is based on both official statistics and primary evidence where the official statistics did not include some industries in the Lantra footprint. Weightings were also applied to the sample

Glossary

ABI	Annual Business Inquiry	**CAFRE**	College of Agriculture, Food and Rural Enterprise
ABS	Annual Business Survey	**CAP**	Common Agricultural Policy
ACP	Assessment of Current Provision	**CFP**	Common Fisheries Policy
AD	Anaerobic Digestion	**CPD**	Continuing Professional Development
ADAS	ADAS is the UK's largest independent provider of environmental consultancy rural development services and policy advice.	**DEFRA**	Department for the Environment, Food and Rural Affairs
AHDB	Agriculture and Horticulture Development Board	**EEA**	European Economic Area
AHW	Animal Health and Welfare	**ESS**	Employment Skills Survey
AI	Artificial Insemination	**EU**	European Union
ASHE	Annual Survey of Hours and Earnings	**FFIS**	Farm and forestry improvement scheme
AWU	Annual Work Unit	**GDP**	Gross Domestic Product
BAME	Black, Asian and Minority Ethnic	**GHG**	Greenhouse Gases
BIS	Department for Business Innovation and Skills	**GIS**	Geographic Information System
BRES	Business Register and Employment Survey	**GM**	Genetically Modified
BRIC	Brazil, Russia, India, and China	**GVA**	Gross Value Added
BT	Bovine Tuberculosis	**HPW**	High Performance Working

GPS	Global Positioning System		**HSE**	Health and Safety Executive
HtFV's	Hard to Fill Vacancies		**RESAS**	Scottish Government's Rural and Environment Science and Analytical Services Division
IDBR	Interdepartmental Business Register		**RPA**	Rural Payments Agency
KTT	Knowledge and technology transfer		**SAWS**	Seasonal Agricultural Workers Scheme
LFS	Labour Force Survey		**SIC**	Standard Industrial Classification
LMI	Labour Market Intelligence		**SOC**	Standard Occupational Classification
MAC	Migration Advisory Committee		**SRC**	Short Rotation Coppice
MMO	Marine Management Organisation		**SSA**	Sector Skills Assessment
NESS	National Employer Skills Survey		**SSV's**	Skills Shortage Vacancies
NFU	National Farmers Union		**STEM**	Science, Technology, Engineering and Mathematics
NFYFC	National Federation of Young Farmers' Clubs		**TB**	Tuberculosis
NHS	National Health Service		**TIFF**	Typical Income for Farming
NOS	National Occupational Standards		**UKCES**	United Kingdom Commission for Employment and Skills
NVZ's	Nitrate Vulnerable Zones		**VAT**	Value Added Tax
ONS	Office of National Statistics		**WFJ**	Work Force Jobs
PAYE	Pay As You Earn		**WRS**	Workers Registration Scheme
QCF	Qualifications and Credit Framework			
R&D	Research and Development			

RCVS   Royal College of Veterinary Surgeons

RDPE   Rural Development Programme for
             England

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The UK Commission for Employment and Skills is a social partnership, led by Commissioners from large and small employers, trade unions and the voluntary sector. Our mission is to raise skill levels to help drive enterprise, create more and better jobs and economic growth.

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