January 2017

Background Evidence for the Development of the Department of Agriculture, Environment and Rural Affairs (DAERA) Knowledge Framework

Department of
Agriculture, Environment
and Rural Affairs
www.daera-ni.gov.uk

INVESTORS
IN PEOPLE

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SECTION 1 INTRODUCTION

This document summarises the evidence that has been collated by the Department to inform the development of a Departmental Knowledge Framework (Education Strategy). The document is divided into sections, which, along with this short Introduction section, include:-

Section 2 provides a summary of the industry context in which the Department is operating.

Section 3 sets out the policy context which influences the Department's educational and training provision.

Section 4 gives details on a research evidence base that has been collated to inform development of the Department's future education policy interventions. This evidence includes information on the future demand for, and some of the benefits arising from, education, skills and lifelong learning within the land based, food and rural sector.

Section 5 sets out the origins of the Department's past and current involvement with education, training and knowledge exchange. This includes an overview of the trends in the uptake of courses over the past 10 years as well as an outline of the Department's involvement in industry training.

Section 6 outlines how this evidence base will be used to inform the development of a Departmental Knowledge Framework.

Annex 1 provides a glossary of abbreviations found in the document.

Annex 2 outlines what qualification levels mean.

This document has been developed over an extended period of time, the majority of which was before the restructuring of Northern Ireland Civil Service (NICS) Departments in May 2016 when the Department of Agriculture and Rural Development (DARD) became part of the Department of Agriculture, Environment and Rural Affairs (DAERA).

SECTION 2 INDUSTRY CONTEXT

2.1 Agriculture – economic data

Agriculture plays a more important role in the economy of Northern Ireland than is the case in the United Kingdom as a whole. Gross output from farming was £1.7 billion in 2015[1], generating a gross valued added (GVA) of £350 million. Agriculture in Northern Ireland makes a very important contribution to the economy, accounting for 1.4% of GVA in 2014[2]. For the UK agriculture accounted for 0.6% of GVA in 2014.

The June 2015 Agricultural Census in Northern Ireland[3] recorded 16,637 full-time and 13,431 part-time self-employed farmers in Northern Ireland. A further 3,463 people were employed as farm workers on a full-time basis and 3,971 on a part-time basis.

Table 1 outlines the economic position of the agriculture sector providing an indication of the importance of the sector to the Northern Ireland economy in comparison to the United Kingdom and Republic of Ireland. Farming accounted for about 3.2% of the civil employment, higher than the UK average. Perhaps of more significance is the fact that approximately 80% of the total Northern Ireland land area of 1.4 million hectares is in agricultural use, which defines much of the rural landscape character. The agricultural industry is predominantly grass based, with grazing livestock accounting for more than two-thirds of the gross industry output.

[1] https://www.daera-ni.gov.uk/articles/aggregate-agricultural-account
[2] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/northern-ireland-agri-food-sector-key-statistics-2015-final.pdf
[3] https://www.daera-ni.gov.uk/publications/agricultural-census-northern-ireland-2014

Table 1 Agriculture: general data 2014

	Northern Ireland	Scotland	Wales	England	UK	ROI
Share of total GVA (%)	1.4	0.9	0.6	0.6	0.6	2.4
No employed in agriculture, forestry and fishing ('000)	26	39	32	252	348	106
Share of employment (%)	3.2	1.5	2.3	1.0	1.1	5.5
Number of farms ('000)	24	52	35	101	212	140
Average farm size (ha)	41	118	46	89	81	33

Source – Table 2 Northern Ireland Agri-Food Sector Key Statistics June 2015[4]

Table 2 presents data on the GVA and employment within agriculture and the food and drinks processing sectors. It is clear that both the agriculture and the food and drink processing sectors make a much greater contribution to GVA and employment in Northern Ireland than in the United Kingdom as a whole.

Table 2 Agri - food sector GVA and employment, 2014

	Northern Ireland		United Kingdom	
Gross value added	**£m**	**%GVA**	**£m**	**%**
Agriculture	450	1.4	9,922	0.6
Food and drink processing	720	3.8	22,271	1.5
Employment	**'000 persons**	**% of total employment**	**'000 persons**	**% of total employment**
Agriculture, forestry and fishing	26	3.1	348	1.1
Food and drink processing	21	2.6	412	1.3

Source – Table 4 Northern Ireland Agri-Food Sector Key Statistics June 2015[5]

[4] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/northern-ireland-agri-food-sector-key-statistics-2015-final.pdf
[5] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/northern-ireland-agri-food-sector-key-statistics-2015-final.pdf

2.2 Farm Structure Survey 2013

The 2013 Farm Structure Survey[6] showed there were approximately 24,500 farm businesses in Northern Ireland. Farms were largely family owned and on 99% the principal occupier or a member of his or her family was the farm manager. Fifty four per cent of farms are run on a part-time basis, requiring less than half the annual labour input of a full-time worker to operate. These farms account for 25% of the Northern Ireland agricultural land area and 15% of the total number of livestock units. They produce around 9% of our gross agricultural output.

The remaining 46% (i.e. those requiring more than half of a standard labour unit to operate) farm 75% of the land, have 85% of the livestock units and produce 91% of the gross agricultural output.

Although the median age of all farmers was 58 years, the data shows that the age profile differed markedly across the various farm business size categories. Notably, as the farm business size increased, there was a greater tendency for farms to be managed by younger farmers.

A significant number of farmers on very small holdings had some form of off-farm employment. This was in contrast with the position on larger units, where the majority concentrated solely on their farming activities.

The last few years have witnessed a major change in agricultural support policy: the radical CAP reform agreement of 2003 has fundamentally altered the economics of agricultural production. The decoupling of direct EU support from production has freed farming to respond to the demands of the market place and its customers. CAP reform post 2013 has focused attention on competitiveness, innovation and environmental stewardship. The Department must consider the extent to which CAP funding streams and measures can be used to enhance skills and capabilities within the agri-food industry over the 2014-20 programming period to deliver against these strategic priorities within the context of a DAERA Knowledge Framework.

[6] https://www.daera-ni.gov.uk/publications/european-union-farm-structure-survey-2013

2.3 Food and Drink industry in Northern Ireland

The Northern Ireland food processing industry comprises a diverse range of business operations, from small scale, family owned food production and processing enterprises with a domestic or niche market orientation to larger firms focused on the national retail and food service markets and the exploitation of wider international markets.

According to the Size and Performance of the Northern Ireland Food and Drinks Processing Sector, -subsector statistics time series data 1989 - 2014/15[7] gross turnover in the Northern Ireland food and drinks processing sector increased by 5.2% between 2012 and 2013, from £4,254 million to £4,477 million. Between 2013 and 2014 there was a further increase of 1.6%. In 2014, 73% of sales were to markets external to Northern Ireland. It is estimated that the value added by the sector was worth £720.7 million to the Northern Ireland economy in 2014.

An estimated 20% of all private sector employment in Northern Ireland is derived from the agri-food sector[8]. The sector remains an important bedrock for economic performance in rural areas and employed 20,758 full-time employee equivalents in 2014[9].

In addition to the direct full-time employees, it is estimated that the food and drinks processing sector sourced a further 2,547 full-time employee equivalents from Employment Agencies in 2014. This was 26.8 per cent higher than the 2,008 full-time employee equivalents sourced in 2013.

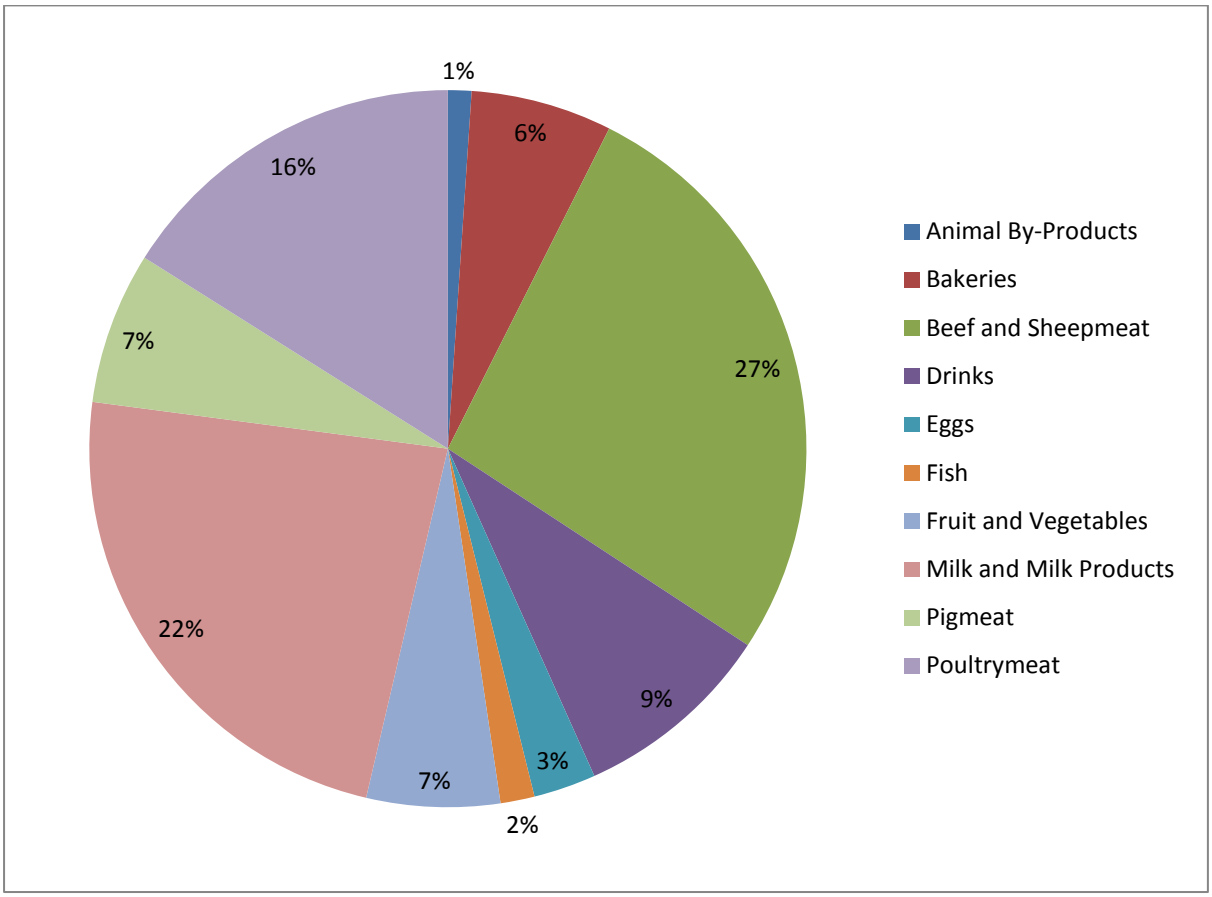
The food and drinks sector also provides important links between supplies of primary and intermediate inputs (agricultural and farming sector) and the retail sector and is an important supplier to other sectors within the local economy.

The food and drinks sector comprises a number of key sub-sectors and in terms of turnover with milk and milk products, beef and sheep meat and poultry meat

[7] https://www.daera-ni.gov.uk/articles/size-and-performance-ni-food-and-drinks-processing-sector
[8] https://nifda.co.uk/wp-content/uploads/2016/02/NIFDA-Goldblatt-Mcguigan-Report.pdf
[9] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/Time%20series%20data%20published%20in%20July%202016.XLSX

representing the most important subsectors. **Figure 1** presents a breakdown of turnover by the main subsectors.

Figure 1 NI Food and Drink Sector gross turnover by subsector in 2014



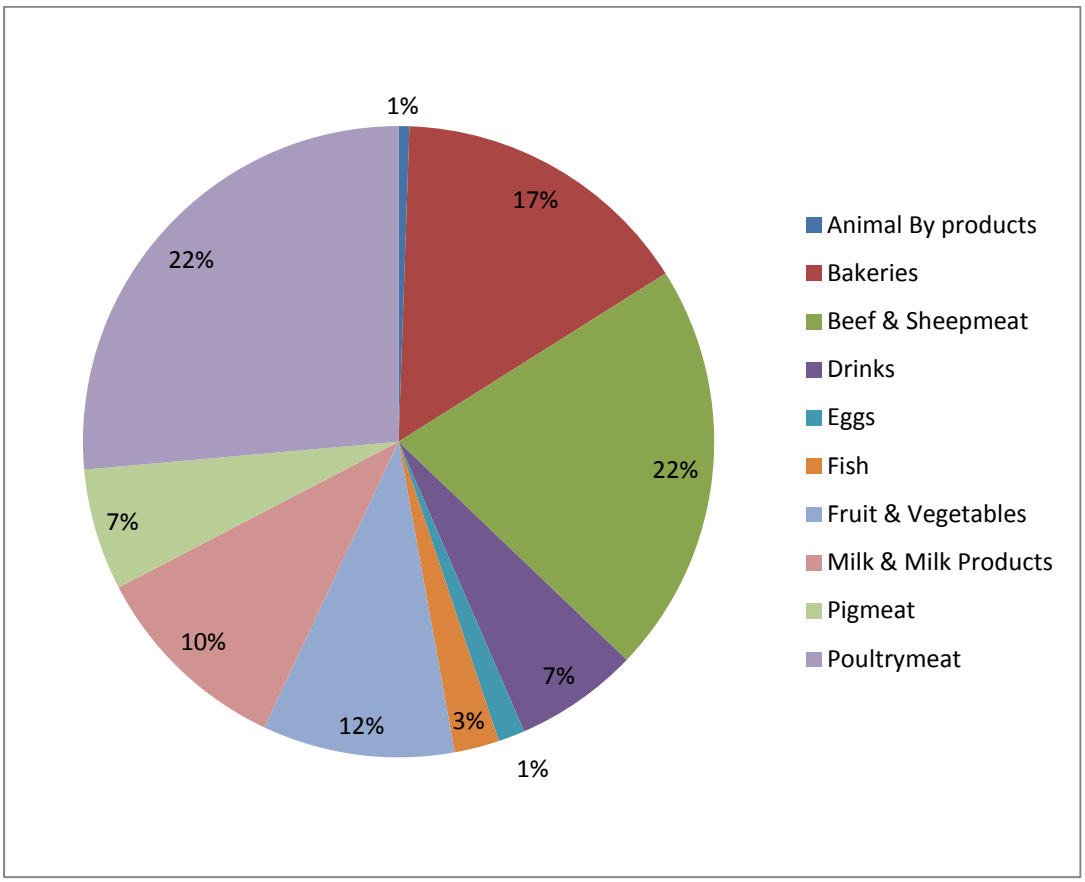
Source: Size and performance of the Northern Ireland food and drinks processing sector - subsector statistics time series data 1989 - 2014/15 *10*

The food and drinks sector has always made an important contribution to the Northern Ireland economy in terms of exports. In 2014, some 73% of the sector's output was sold outside of Northern Ireland, with over £2 billion in sales to the Great Britain market, £708m to the Republic of Ireland and £581m to markets outside the UK and Ireland[11] .

The 3 largest employers in the sectors combined (poultry meat, beef and sheep meat and bakeries) accounted for some 60% of the total number of employees in the sector.

[10] https://www.daera-ni.gov.uk/publications/size-and-performance-ni-food-and-drinks-processing-sector
[11] https://www.daera-ni.gov.uk/articles/size-and-performance-ni-food-and-drinks-processing-sector

Figure 2 Percentage share of employment within the food and drinks industry by sub-sector 2014



Source:
Size and performance of the Northern Ireland food and drinks processing sector - subsector statistics time series data 1989 - 2014/15
[12]

2.4 The Food and Drink Manufacturing and Processing Future Skills Action Group

The food and drink manufacturing and processing industry is an important employer in the Northern Ireland economy, accounting for just over one quarter of all manufacturing jobs. In recognition of the economic importance of this sector the then Department for Employment and Learning (DEL), the then Department of Agriculture and Rural Development (DARD) and Invest NI established a Future Skills Action Group in 2011. The group was charged with bringing together key stakeholders from government, education and the local food and drink manufacturing processing industry to identify the key skills challenges facing the sector, and to

[12] https://www.daera-ni.gov.uk/publications/size-and-performance-ni-food-and-drinks-processing-sector

develop and implement solutions to address the skills gaps of the existing workforce and to raise the skills levels of new entrants.

The work of the Group covered three main areas:

- To coordinate existing resources and activities within the sector to meet current and future skills needs;
- To advise, design, develop, test, trial and evaluate new interventions which are able to meet existing and future skills needs within the sector; and
- To act as a 'Champion' for the sector.

Moving forward, the Future Skills Action Group will also help address key recommendations highlighted in the 'Going for Growth' Strategic Action Plan, for example, the development of a strategic and cohesive approach to skills provision for the sector.

Skills, lifelong learning, industry led research and development, innovation and technology transfer will play an ever more important role in ensuring that the agri-food industry can meet the challenges which lie ahead.

2.5 Horticulture Industry

The Agri food Strategy Board "Going for Growth" Report[13] proposed that arable crops, fruit and vegetables should grow by 76% in terms of turnover and 44% in terms of employment by 2020.

The Northern Ireland horticulture industry may be small in UK terms but like UK horticulture, in general it has good prospects for growth. Currently the Northern Ireland horticulture industry is conservatively estimated as employing some 7,770 people in about 1 560 small businesses, generating produce with a farm gate value of £71.7m. This doesn't include the value of the landscape/amenity sector which is estimated to be worth well in excess of £80m per year. Additionally, the horticultural produce food processing sector is estimated to be worth in the region of £190m with some 1,770 employed.

[13] http://www.agrifoodstrategyboard.org.uk/uploads/Going%20for%20Growth%20-%20Web%20Version.PDF

The College of Agriculture, Food and Rural Enterprise (CAFRE) offers a range of Horticulture full-time and part-time programmes from Level 2 to Foundation Degree level[14]. The two year Foundation Degree, validated by the Ulster University, consists of three taught semesters and one semester of industry experience. In 2015/16 there were approximately 70 students enrolled on the Foundation Degree programme at CAFRE's Greenmount campus. Two thirds of these students were studying on a part-time basis. The NI Horticulture Forum is supportive of a full three year Honours Degree in Horticulture and believes this would contribute substantially to addressing some of the industry "asks" of Government which include supporting education, research and technology transfer.

The Horticulture Innovation Partnership's (HIP) Ornamental & Landscape Horticulture R&D Strategy 2015-2020[15] was published in January 2016. The Strategy aims to identify the research and development requirements to underpin the sustainable production of plants and the creation and management of private and public landscapes, including sport and recreation. The Strategy states that the outcomes will deliver sustainable wealth creating opportunities for the UK economy, contribute to the health and well-being of the population, and strengthen the environmental resilience of urban and peri-urban areas. The research and development themes outlined in the Strategy include:

- Health and well-being;
- Communities and Tourism;
- Ecosystem service delivery, Environmental Resilience and Bio-diversity; and
- Improving sustainable resource use and biosecurity.

Industry contributors to the strategy include the Horticulture Trades Association (HTA), The Royal Horticultural Society (RHS), The Landscape Institute, University of Sheffield, British Protected Ornamentals Association (NFU), Association of Professional Landscapers, Winchester Growers, Lowaters Nursery, Dove Associates and the Agriculture and Horticulture Development Board (AHDB).

[14] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[15] http://www.hip.org.uk/assets/uploads/publication/HIP_R&D_Strategy_2015_Summary_web.pdf

The HIP Strategy is aligned with and supports the Ornamental Industry Roundtable Action Plan 2015-2020[16], a government-industry partnership initiative that has identified 12 key work areas to increase growth and competitiveness.

Horticulture is becoming increasingly complex with ongoing technological advances and the industry needs able, well qualified and versatile people to utilise these advances. The future success of the Northern Ireland horticulture industry depends on the development of young people with the ability, training and leadership skills to realise the opportunities for the industry to grow.

2.6 'Going for Growth' Report

The Agri-Food Strategy Board (AFSB) was established in May 2012 by the then Minister of Agriculture and Rural Development and the then Minister of Enterprise, Trade and Investment to deliver on the Executive's Programme for Government target to develop a strategic plan for the agri-food sector.

During its first year the Board developed and launched the Agri-Food Strategy Board '*Going for Growth'* Report [17] (June 2013) which recognised that the Government has an important role to play in setting the framework for growth and outlined the actions necessary to stimulate growth in areas such as innovation, R&D, skills, education, exports, Foreign Direct Investment and entrepreneurship. The AFSB's vision for the industry is:

"Growing a sustainable, profitable and integrated Agri-Food supply chain, focused on delivering the needs of the market"

The 4 overarching targets for the sector are to grow, by 2020:

- Sales by 60% to over £7bn;
- External Sales by 75% to £4.5bn;
- Value Added by 60% to £1bn; and
- Employment by 15%.

[16] https://www.rhs.org.uk/about-the-rhs/pdfs/about-the-rhs/mission-and-strategy/ornamental-horticulture-roundtable-action-plan
[17] https://www.daera-ni.gov.uk/publications/going-growth-strategic-action-plan-support-ni-agri-food-industry

The *Going for Growth* Action Plan contained 118 recommendations, 9 of which were directed specifically towards skills. The Executive published its Response to Going for Growth in October 2014, commending the AFSB's ambition and welcoming the vision and targets contained within the report. The Executive Response [18] outlined how Departments and agencies intended to progress actions to address the 80 plus recommendations for Government within the report. The Executive also agreed to give priority consideration to support for the agri-food sector, and in particular the proposals for the Farm Business Improvement Scheme, worth up to £250m over the period to 2020, to be progressed via the Rural Development Programme (RDP) 2014-2020. One of the specific actions was the development of an education strategy (Knowledge Framework) by 2017.

2.7 Equine industry

The Equine Council for Northern Ireland is currently working in conjunction with DAERA and CAFRE to develop an Equine Programme. One of the intended outputs of the programme is an economic assessment of the value of the equine industry to the Northern Ireland economy.

A previous publication from March 2007, The Strategy for the Equine Industry in Northern Ireland[19] refers to a mapping study entitled 'Research on the Equine Sector in Northern Ireland', completed in 2005 by BDO Stoy Hayward which concluded that the sector was a substantial industry in its own right.

It provided the following statistics (which were accepted by the Equine Sub Group of the Departmental Rural Stakeholder Forum as the best possible estimate of the numbers of horses and ponies in Northern Ireland and which were calculated through primary research within the industry, desk research and consultations with a range of individuals working in the industry):

- Total horse and pony population exceeds 35,500
- Value of spend on services and products is approximately £110m
- Value of land used is approximately £148.5m relating to almost 30,000 acres

[18] https://www.dardni.gov.uk/sites/default/files/publications/dard/ni_executive_response_to_going_for_growth.pdf

[19] http://www.equinecouncilni.com/_file/JZZe9SWu7W_121754.pdf

- Labour value is approximately £54m and 5,657 FTEs and
- Capital buildings worth an estimated £121m.

It is expected that these figures will have changed in the past 10 years.

2.8 Fisheries

The entire Northern Ireland fishing industry (which includes sea fisheries, aquaculture, inland fisheries, processing and the support sector) employs around 1,900 people (both full and part-time). This includes some 600 employed in the processing sector, 832 in the catching sector and 171 within aquaculture. The main commercial inland fishery is the Lough Neagh eel fishery which provides employment for approximately 300 fishermen and helpers.

The main educational and training needs of the fisheries sector are met by SeaFish, a levy body that represents the UK seafood industry[20].

2.9 Environment[21]

Northern Ireland has a land area of 13,542 km^2 with lowland landscapes comprising 67% and upland landscapes comprising 33%. With 80% of the Northern Ireland landmass in agricultural and forestry use, agriculture has a significant impact on the flora and fauna of the rural environment, with much of the rural landscape reflecting centuries of agricultural activity.

Northern Ireland has a large area of conservation value land and there are nine Areas of Outstanding Natural Beauty classified as Protected Landscapes, in addition, the Giants Causeway is a World Heritage Site. The protection of cultural values, the promotion of public enjoyment and the fostering of the social and economic well being of local communities sit alongside nature conservation.

In conjunction with Ulster Wildlife (UW) and partners, Lantra has conducted research to look at employability skills within the Environmental Conservation industry in

[20] http://www.seafish.org/
[21] https://www.daera-ni.gov.uk/publications/2014-2020-rural-development-programme-version-2

Northern Ireland[22]. A key aim of the research was to identify the skills gaps and skills shortages facing employers.

When asked what skills their staff lacked, a third of businesses cited technical and practical skills. This was also the case for casual staff. Increasing training activity is by far the most popular remedy to skills deficiencies, cited by 60 per cent of those answering the question.

Further analysis was carried out which separated the skills into three distinct categories: technical/practical skills, environmental conservation specific skills, and general business skills. When aggregated, environmental skills accounted for 68 per cent of all identified skills shortages. The main skills gaps identified included soil management, producing grass, reseeding and fencing, soil sampling/analysis, hedge laying, planting trees and identification of trees.

22 http://www.lantra.co.uk/sites/default/files/Create%20Landing%20page/NI%20Env%20Con%20Skills%20Survey%202016%20-%20FINAL.pdf

2.10 Summary of key points from Section 2 – Industry context

- Agriculture defines much of the rural landscape character in Northern Ireland with approximately 80% of the total land area being in agriculture use.
- Agriculture makes a very important contribution to the Northern Ireland economy accounting for 1.4% of GVA. In June 2015 there were 16,637 full-time and 13,431 part-time self-employed farmers in Northern Ireland. A further 3,463 people were employed as farm workers on a full-time basis and 3,971 on a part-time basis.
- The 2013 Farm Structure Survey[23] showed that there were approximately 24,500 farm businesses in Northern Ireland. Farms were largely family owned with 54% being run on a part-time basis. Notably as farm business size increased there was a greater tendency for farms to be managed by younger farmers. A significant number of farmers on very small holdings had some form of off-farm employment.
- The Food and Drink manufacturing and processing sector in particular is an important employer, accounting for over one quarter of all manufacturing jobs in Northern Ireland.
- Horticulture is becoming increasingly complex with ongoing technological advances and the industry needs able, well qualified and versatile people to utilise these advances. The future success of the Northern Ireland horticulture industry depends on the development of young people with the ability, training and leadership skills to realise the opportunities for the industry to grow.
- The 'Going for Growth' Strategic Action Plan outlines how Departments and agencies intend to progress the actions that are necessary to ensure that the agri-food industry can meet the challenges which lie ahead, namely, stimulate growth in areas such as innovation, R&D, skills, education, exports, Foreign Direct investment, and entrepreneurship.
- There is a need to consider the extent to which CAP funding streams and measures can be used to enhance skills and capabilities within the agri-food industry.

[23] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/fss-2013.pdf

- Notwithstanding a number of strategies, the extent and depth of the equine industry remains to be clearly defined. This is being addressed by the development of an Equine Programme by DAERA and CAFRE in partnership with the Equine Council for Northern Ireland.
- The entire Northern Ireland fishing industry employs around 1,900 people. The main educational and training needs are met by SeaFish.
- Northern Ireland has a large area of conservation value land and there are nine Areas of Outstanding Natural Beauty classified as Protected Landscapes, in addition, the Giants Causeway is a World Heritage Site. Recent research carried out by the Ulster Wildlife and Lantra cites skills gaps including soil management, producing grass, reseeding and fencing, soil sampling/analysis, hedge laying, planting trees and identification of trees

SECTION 3 POLICY CONTEXT

3.1 Departmental Strategic Plan

The overarching policy context for the preparation of a Departmental Knowledge Framework was the Department of Agriculture and Rural Development's Strategic Plan 2012 -2020[24]. The Strategic Plan set out the Department's long-term strategic direction over a period where the agri-food industry would be facing a period of considerable opportunity and challenge. It focused on a number of interdependent goals to address key issues and contributes to the achievement of the Department's vision of Northern Ireland as a "thriving and sustainable rural economy, community and environment to promote social and economic equality".

The Strategic Plan specifically recognised that the industry had increased its demand for research and development, education, and training and skills development to meet the opportunities and challenges that lie ahead. To address this, the Strategic Plan attended to industry needs and aligned these with the Department's strategic objectives on competitiveness, the environment, animal health and rural development.

Moving beyond the 2012-2020 plan, the draft DAERA 2020 strategic plan outlines the following outcomes;

1. Sustainable agri-food, fisheries, forestry and industrial sectors
2. A clean, healthy environment, benefiting people, nature and the economy
3. A thriving rural economy, contributing to prosperity and wellbeing

Farmer and grower educational attainment is a Strategic Performance Measure. The draft plan will be finalised when a Programme for Government (PfG) has been agreed.

[24] No longer available on Departmental website

3.2 Common Agricultural Policy Reform

The role of the Common Agricultural Policy (CAP) is to provide a framework that supports and encourages producers to address the economic, environmental and territorial challenges facing the sector. This translates into three long-term CAP objectives, namely, viable food production, sustainable management of natural resources and climate action and balanced territorial development.

The most recent reform, which concluded in 2014, recognised that EU agriculture needed to attain higher levels of production of safe and quality food, while preserving the natural resources that agricultural productivity depends upon. This can only be achieved by a competitive and viable agricultural sector operating within a properly functioning supply chain and which contributes to the maintenance of a thriving rural economy.

3.2.1 Pillar I

Following the reform of the CAP, a new system of Pillar I Direct Payments was introduced on 1 January 2015. From that date, the Single Farm Payment Scheme was replaced by the Basic Payment Scheme, a Greening Payment and a Young Farmers' Payment. The Young Farmers' Payment provides a 'top-up' to the Basic Payment for those who qualify as a young farmer. The CAP Regulations allow for optional eligibility criteria to be put in place for those wishing to benefit from the Young Farmers' Scheme.

The then DARD Minister decided that a Level 2[25] qualification in agriculture would be required in order to qualify for a payment under the Young Farmers' Scheme and for new entrants and young farmers to receive an award from the Regional Reserve. The requirement for an educational qualification will, among other things, assist in the development of a well skilled and professional industry.

[25] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

3.2.2 Pillar II/NIRDP

The Department provides training, advice and support to help improve efficiency under Pillar II. The main vehicle for this is the Rural Development Programme 2014-2020.

The Rural Development Programme for 2014-2020[26], approved by the European Commission on 25 August 2015, outlines the need to improve the competitiveness of the agri-food industry through improving the skills and knowledge and stimulating innovation, which is needed for business continuity and growth. This objective was identified as a priority for support and therefore the RDP includes, among other things, a skills and knowledge measure designed to support knowledge transfer and innovation through actions which enhance the application of results of agri-food research and to improve the exchange of information between researchers and agri-food actors and between Member States.

Support is prioritised to increase the industry's awareness of research and development, and improve access to and the uptake of new technologies. An important element is the direct engagement of farmers with researchers to identify and solve problems specific to the industry. The vocational training ensures that farmers and farm family members not only benefit from the transfer of new innovative technologies but also gain new skills and adapt to the changing needs of the industry. The training provided is tailored to industry needs; workshops, training courses, coaching, demonstration activities, farm and forest exchange schemes are provided.
Under the skills and knowledge measure the Department supports schemes/actions concerning:-

- *Business Development Groups*
  The transfer of knowledge and new technologies takes place through farmer participation in Business Development Groups (BDG). Each BDG is comprised of 15 – 20 like-minded farmers who meet up to eight times a year to focus on the topics agreed by the group. Farmers participating in the scheme benchmark their

[26] https://www.daera-ni.gov.uk/publications/2014-2020-rural-development-programme-version-2

business to identify areas that have the potential to be improved. A business development plan identifies the actions to be taken to improve the technical efficiency of the business and improve the sustainability of the farm.

All group members record either financial or physical benchmarking data to help formulate the areas for group development and discussion. Each farmer is encouraged to host a visit for the group during which members discuss technical performance and progress towards meeting efficiency targets. Participants have the opportunity to gain a Level 3 qualification[27]. The groups are facilitated by a CAFRE Development Adviser who is trained to assist and encourage participants to develop themselves and their businesses through peer learning. Activities include on-farm meetings, demonstrations and skills training.

- *Farm Family Key Skills*

  This knowledge transfer scheme provides short, topic based, training courses linked to improving farm practices for farmers, farm family members and workers in the farm business, helping them to adapt to the changing needs of the industry.

  Training specified for the Farm Family Key Skills is related to;
  - Delivering cross cutting themes such as improved animal and plant health;
  - Assisting beneficiaries to meet the eligibility requirements of schemes such as the Business Investment Scheme;
  - Assisting in the delivery of the Department's key aims and objectives; and
  - Responding to key industry challenges during the period of the Programme.

  The target audience of the scheme is farmers, their workers and farm families. The group training courses are delivered using a variety of training methods including; classroom based training, workshops, e-learning and mentoring and can include a variety of topics, for example: animal health and welfare and disease reduction; completion of biosecurity plans; plant health; leadership training; managing farm succession and generational renewal; whole farm needs assessments; business plan development; health and safety awareness; and ICT training related to achieving the Department's business objectives.

[27] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

It is also the Department's intention to support schemes/actions concerning;

- *General Training for Implementation of Agri-Environment Agreements*
  This Scheme will provide specific training for participants in the agri-environment scheme to assist with the implementation and compliance of the scheme. The training will provide scheme participants with the knowledge and information required to understand the environmental commitments undertaken and the actions required for successful implementation of the measures.

- *Innovation Technology Evaluation Demonstration Scheme*
  Research has identified that there is a low awareness of recent and ongoing research activity across all sectors in Northern Ireland and that there are many barriers to the uptake of new technology and participation in knowledge transfer activity. The Innovation Technology Evaluation Demonstration scheme (ITEDS) will try to address these needs by raising awareness of technologies and techniques which are already operational and available, are innovative and not in commercial use in the Northern Ireland agri-food industry. The demonstration activity can take place on a farm or in other places such as research centres, exhibition buildings, etc. The demonstration activity may include; Climate change mitigation and adaptation; soil and water quality; resources efficiency including energy storage and green house gas and ammonia emission reduction; disease control and animal health and welfare; plant health; new technologies and techniques to reduce the direct costs of production; production horticulture; and food development and processing.

  The ITEDS will primarily but not exclusively aim to support the knowledge transfer and innovation actions which may evolve from support elsewhere in the programme e.g. Business Development Groups, Farm Exchange visits.

- *Environmental Advisory Support Scheme*
  The Scheme will provide support for specially trained environmental advisors to provide specialist conservation advice to farmers and land managers on the management of environmentally designated sites, priority habitats and priority

species, river catchments and water quality. The provision of the advice which will be tailored to specific needs will support an integrated approach to environment and agriculture related issues and will be in line with the Natura 2000 Prioritised Action Framework.

Advice for Forest holders will be on an individual and group basis and will be tailored to address a particular set of needs and will include improving resilience (including climate change mitigation and adaption), competitiveness, economic and environmental performance, supporting farm modernisation and specific advice for land owners establishing new woodland.

- *Farm Exchange Visits*

  The Scheme will focus on two types of activity:

  (i) Short-term farm and forest management exchanges to allow farmers to stay on another farm within the EU in order to learn personally and practically from another farmer. The purpose is to enhance exchange of knowledge and good practices and discover alternative ways of doing things; and

  (ii) Farm and forest visits which are visits to a farm on mainland UK in order to learn about a specific issue or a way of doing things (e.g. learn how to use a specific machine, conversion to organic farming, etc.).

  The duration of the visits for both will be no longer than two weeks. The visits should have a focus, in particular, on innovation, sustainable farming and farming forestry methods and/or technologies, farm diversification, farms participating in short supply chains, the development of new business opportunities and new technologies and improvement of forest resilience. Participants will be required to write a report on their visit and disseminate what they have leant to their peers and the industry.

3.2.3 Farm Advisory System (FAS) - Post 2015

Member States are required to establish a FAS operated by designated public bodies and/or private bodies as set out in Regulation (EU) No. 1306/2013.

The FAS must cover the following:

a) Obligations at farm level derived from the statutory management requirements and the standards for good agricultural and environmental condition of land as laid out in the cross compliance regulations;

b) The agricultural practices beneficial for the climate and the environment as laid out in the greening regulations and the maintenance of the agricultural area as described in the regulations for the Basic Payment Scheme, i.e. maintaining the agricultural area in a state which makes it suitable for grazing or cultivation without any preparatory action going beyond usual agricultural methods and machineries;

c) Measures at farm level provided for in the rural development programmes aiming at farm modernization, competitiveness building, sectoral integration, innovation, market orientation and the promotion of entrepreneurship;

d) Measures to assist farmers meet their obligations under the Water Framework Directive – 2000/60/EC;

e) The requirements in relation to the use of plant protection products under the EC Regulation concerning the placing of plant protection products on the market and in particular compliance with the general principles of integrated pest management under the EC Directive on establishing a framework for Community action to achieve the sustainable use of pesticides.

The then DARD Minister decided that there would be no extension of FAS beyond the mandatory requirements set out in EU legislation as detailed in points (a) – (e) above.

The FAS is led by CAFRE, with complementary support provided from other business areas as required. A FAS Project Board, with membership drawn from across the Department, is responsible for identifying and prioritising FAS activities with respect to:

- Any further guidance and legislation from the EU on FAS;
- Any further guidance and legislation on Cross-Compliance and related matters;

- The results of Cross-Compliance inspections, which will help to identify key areas to focus FAS support to assist industry compliance and;
- Include the communication of the EU policies and objectives for sustainable agriculture.

FAS continues to deliver the following under a distinct FAS branding:

- Industry training;
- Online discussion support programs and web based communication;
- The ‘FAS newsletter’ which is published biannually and sent to all recipients of basic payment scheme;
- Press articles & publications on topics related to SMRs and GAEC and other FAS topics; and,
- Direct contact with the industry through CAFRE and Countryside Management Unit Advisers.

Access to clear, up to date information on Cross-Compliance and the other topics included in FAS help Departmental customers increase their understanding of the requirements of EU legislation and help them to reduce the number of Cross-Compliance breaches and the subsequent loss of direct payments to farm businesses; and thereby enable improvements to the future sustainability and business competitiveness of farm businesses.

3.3 Cross –Departmental policies

In addition to the main Departmental policy drivers outlined above there are a number of cross-departmental instruments which have a significant bearing on this strategy:-

3.3.1 Programme for Government (PfG)

In May 2016 a public consultation was launched on a Draft Programme for Government Framework 2016-21[28]. Key indicators in the draft Framework include;

- Improve the skills profile of the population
- Increase the competitiveness of the economy
- Increase innovation in our economy

3.3.2 Northern Ireland Economic Strategy

The overarching goal of the Northern Ireland Economic Strategy[29] was to improve the economic competitiveness of the Northern Ireland economy. Within that Strategy, the economic vision for 2030 was outlined as '*An economy characterised by a sustainable and growing private sector, where a greater number of firms compete in global markets and there is growing employment and prosperity for all'*.

In order to deliver the longer term priority of the Executive, five strategic rebalancing themes were developed. These themes were:

- Stimulating innovation, R&D and creativity;
- Improving employability and the level, relevance and use of skills;
- Competing in the global economy;
- Encouraging business growth; and
- Developing our economic infrastructure.

The Strategy recognised agri-food as one of the areas in Northern Ireland which has the greatest potential for growth. It highlighted the need to develop a world class education and skills system which is critical for economic growth, and indicated that improving the skills and employability of the entire workforce would allow people to progress up the skills ladder, thereby delivering higher productivity and increased

[28] https://www.northernireland.gov.uk/consultations/draft-programme-government-framework-2016-21-and-questionnaire
[29] https://www.northernireland.gov.uk/topics/work-executive/economic-strategy

social inclusion. The associated Comprehensive Action Plan[30] recognised the Department's investment in education and training provision in the land based, food and rural sectors as helping to achieve the objective of improving productivity by increasing the skill levels of the workforce.

3.3.3 Economy 2030 – Industrial Strategy for Northern Ireland

A public consultation launched in January 2017 on 'Economy 2030 - A Draft Industrial Strategy for Northern Ireland'[31].

Education, skills and employability feature prominently in the draft Strategy and the role and importance of the CAFRE is recognised in the draft Strategy.

Innovation is cited as a key driver of future economic prosperity and the Agri Food and Biosciences Institute is identified as a strategic player, in collaboration with universities and the private sector.

3.3.4 Innovation Strategy for Northern Ireland 2014 – 2025

The Innovation Strategy for Northern Ireland 2014-2025[32] reflects the Northern Ireland Executive's desire to place innovation at the core of its drive to rebalance the economy, suggesting that to transform our economy into one of the UK's leading high-growth regions we need better educated and a more highly skilled workforce (it notes that if firms invest in skills, leadership, design, branding, training or marketing they are investing in innovation).

Key actions that are necessary to support Northern Ireland companies becoming more innovative have been indentified under four themes (Cultural Change, Knowledge Generation, Knowledge Exchange and Knowledge Exploitation).

The Strategy outlines that skills, design and collaboration (between sectors and internationally) are essential for innovation. It is envisaged that Northern Ireland's Universities and Further Education colleges will have vital roles in supporting

[30] https://www.northernireland.gov.uk/topics/work-executive/economic-strategy
[31] https://www.economy-ni.gov.uk/consultations/industrial-strategy
[32] https://www.economy-ni.gov.uk/articles/northern-ireland-innovation-strategy

business to access new ideas and knowledge; this will be further enhanced through the development of Knowledge Transfer Partnerships and Specialist Provision for Industry using College Expertise (SPICE) Centres.

3.3.5 Investment Strategy for Northern Ireland 2011 – 2021

Reflecting the priorities in the Programme for Government, the *Investment Strategy for Northern Ireland 2011-21*[33] outlines the investment achievements to date, ongoing projects and proposed future projects for 7 key sectors in Northern Ireland (networks; skills; health; social; environment; productive; and justice). In terms of skills, the Strategy reaffirms the necessity to have a schools / college system that will produce a well educated workforce as this will be essential in encouraging investment, and in helping local businesses to grow and compete in an increasingly global marketplace. The Strategy notes that investment in the Further and Higher Education estates will also help to ensure that the infrastructure exists to deliver high quality courses to create a skill-pool and the research capabilities that are essential to support the expansion of home-grown businesses and also to attract inward investment.

3.3.6 Science, Technology, Engineering and Mathematics (STEM)

In 2007, a review panel was asked by the Department of Employment and Learning and the Department of Education to examine the issues related to Science, Technology, Engineering and Mathematics (STEM) and make recommendations to ensure the future success of STEM education in Northern Ireland. The principal directive for the Review was to produce recommendations which would promote sustained economic growth.

The Report of the STEM Review[34], published in October 2009, reported reducing enrolments in courses in those STEM subjects which were perceived as critical to future economic growth resulting in a reducing flow of those who were qualified in STEM subjects at all levels into our workforce. Some 20 STEM recommendations were made to address the supply of suitably qualified STEM students.

[33] http://isni.gov.uk/PDFs/Investment%20Strategy.pdf
[34] https://www.education-ni.gov.uk/publications/report-stem-review

Government's response to the STEM Review was published in 2011. The STEM Strategy[35], known as 'Success Through STEM', brings together a number of departments across Government, along with representatives from Business, working together to help equip Northern Ireland's workforce with the skills in STEM that are necessary to support the needs of business. The Success through Stem One Year On Report [36] published in March 2012 noted that there had been an increasing level of collaboration between industry and Government aimed at encouraging more people to study STEM subjects and choose careers in these important sectors of the economy. To date excellent progress has been made with numerous activities involving Government, schools, colleges, universities, local businesses and other key delivery agents being taken forward.

3.3.7 MATRIX

An on-going sponsored initiative, known as MATRIX[37], identifies key areas of science, technology and innovation in which Northern Ireland has a lead over it competitors. MATRIX states that the 'single most important underpinning fundamental for a knowledge economy is the quality of its skills and training provision'. MATRIX is supported by the HORIZON Programme - a focused and time-bound horizon scanning/technology and market foresight initiative carried out by Horizon Panels. The Agri-food Horizon Panel produced a report in 2008[38] highlighting key aspects of the sector that Northern Ireland should be focusing on for the future.

These overarching strategies are key policy drivers in the development of DAERA's Knowledge Framework and the Department will take the necessary steps to ensure a complementary approach for the land-based, food and rural sectors in Northern Ireland.

3.3.8 Sector Skills Councils

Sector Skills Councils (SSCs) are employer-led organisations that cover specific industries in the United Kingdom. They have five key goals:

- to understand the future skills needs of their industry

[35] https://www.education-ni.gov.uk/articles/stem-strategy
[36] https://www.education-ni.gov.uk/articles/stem-strategy
[37] http://www.matrix-ni.org/
[38] http://matrixni.org/reports/2008-agri-food-report/

- to support Employers in developing and managing Apprenticeship Standards
- to reduce skills gaps and shortages and improve productivity
- to boost the skills of their sector workforces
- to improve learning supply.

The relevant SSCs for the agri-food sector are Lantra[39] and Improve[40]. Locally, Improve is also partnered by the Food & Drink Industry Training Council. Both SSCs champion the local skills agenda through a Sectoral Skills Agreement which sets out how the skills challenges will be addressed locally.

3.3.9 Northern Ireland Employment and Skills Adviser

A Northern Ireland Employment and Skills Adviser[41]was appointed in 2008 to provide independent advice to the then Minister for Employment and Learning on a wide range of employment and skills issues. The adviser also promotes the benefits of skills investment and best practice to employers; in particular, to the small business sector. He is supported in his role by the Northern Ireland Employment and Skills Advisory Group.

3.3.10 Reform of Vocational Qualifications

Within a UK wide setting, work has been ongoing to reform and rationalise the current range of vocational qualifications and place them in a simple and accessible Framework for Achievement which will be unitised, credit rated and will eventually replace the present National Qualifications Framework.

The main objectives of the programme are:

- To revise national occupational standards to ensure that they develop the workforce and inform qualification systems;
- To produce flexible, responsive and fit-for-purpose qualifications within an agreed framework structure supported by responsive regulation and that meet user need and sector requirements;
- To devise appropriate funding systems; and

[39] LANTRA is the Sector Skills Council for the land-based sector which covers 17 industries grouped into 3 broad clusters: land management and production, animal health and welfare and environmental industries.
[40] IMPROVE is the Sector Skills Council for the Food and Drink Manufacturing Industry
[41] http://www.niaes.co.uk/

- To develop an effective communications and marketing strategy to promote the outcomes of the project to all stakeholders.

3.4 Specific Departments' policies

Skills development for the land-based, environmental, food, fishing and forestry industries has to date been the responsibility of DAERA. However DAERA's education provision needs to be compatible with wider Northern Ireland Government policy on education and skills development. In delivering education DAERA must consider the impact of key policies that are the responsibility of other Government Departments.

3.4.1 Department for Economy (DfE)

DE (formerly Department for Employment and Learning – DEL) has lead responsibility for further and higher education and skills policy in Northern Ireland.

DfE Further Education

DfE is responsible for the policy, strategic development and financing of the statutory Further Education Sector in Northern Ireland. It also provides support to a small number of non-statutory further education providers. The Department is responsible for curriculum and qualifications below degree level, with a key focus on the development of adult literacy.

The Northern Ireland Strategy for Further Education

The 'Further Education Means Success: The Northern Ireland Strategy for Further Education'[42] launched in January 2016.

The Strategy sets out the future direction of further education in Northern Ireland and aims to ensure that colleges continue to fulfil the important dual role of helping to develop a strong and vibrant economy, and supporting social inclusion.

The future direction of FE will be built around 4 key objectives;

- Ensuring high quality provision for learner education and training;
- Developing the talents of those already in work and those seeking to enter employment in order to provide a pipeline of suitably skilled and qualified individuals at all levels to meet employers' needs, including indigenous companies and inward investment projects;

[42] https://www.economy-ni.gov.uk/further-education-means-success

- Supporting employers to become more innovative and competitive, and to source new markets; and
- Encouraging and supporting the economic participation of those who have barriers to learning and who are furthest from the labour market, to the benefit of individuals, the economy and wider society.

The Strategy outlines that increasingly, colleges should work collaboratively together, and in partnership with other organisations in the public, private, and voluntary and community sectors, to deliver their services to learners, employers and communities to maximum effect. Colleges, with key partners, will also be major deliverers of the new apprenticeships and youth training systems, and will have a prominent role in the Strategic Advisory Forum and the Sectoral Partnerships that have been established to identify skills demand and to ensure that professional and technical qualifications meet the needs of employers and the economy.

The Strategy consists of 21 policy commitments across nine themes, namely; Economic Development; Social Inclusion; Curriculum Delivery; Excellence; International Dimension ; Governance; College partnerships; Funding Model and College Sustainability; and Promoting the Further Education Sector.

The policy commitments seek to ensure that; colleges will play a key role in identifying and meeting the skills and qualification needs of employers through a more economically focused curriculum, by up-skilling employees, and by supporting employers to be more competitive, to innovate and to source new markets; Further education colleges will also have a particular focus on further developing provision at Level 3[43]; Colleges will operate in flexible ways in terms of where, when, and over what period of time up-skilling activities are provided; there will be increasing use of technology to engage learners and enhance the teaching and learning experience; and collaboration and sharing of best practice will be pursued.

The Further Education Strategy complements the recent systems introduced by the then DEL in relation to apprenticeships at Level 3[44] and above and youth training at

[43] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[44] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

Level 2[45]. As previously mentioned there is an increasing need in Northern Ireland for higher level skills and a reducing demand for lower level skills. Evidence regarding the importance of training and educating to level 3 and above has been demonstrated in 'Securing our success – the NI Strategy for apprenticeships'[46]. In particular the then DEL's recent skills barometer report 'Skills in demand'[47] estimated that the most acute skills gap is likely to emerge in the mid tier skills at Level 3 ('A'-Level equivalent) and Levels 4 and 5 (Foundation Degree/ HNC/ HND equivalent)[48].

Although there will be an emphasis on attaining Level 3[49] qualifications the Strategy indicates that there will continue to be high quality provision at Level 2[50] and below with a clear pathway/progression routes to Level 3[51] and above or into employment.

Higher Education Strategy for Northern Ireland

Higher Education Strategy 'Graduating to Success'[52], published in 2012, established a framework for the strategic development of higher education in Northern Ireland through to 2020. The Strategy sets out a long term vision for the higher education sector and detailed the direction for higher education policy in Northern Ireland. The vision for higher education is '*vibrant and of international calibre; which pursues excellence in teaching and research; which plays a pivotal role in the development of a modern, sustainable knowledge- based economy; which supports a confident, shared society; and which recognises and values diversity'*. The Strategy's four guiding principles are responsiveness, quality, accessibility and flexibility**.**

Sitting alongside and complementing 'Graduating to Success' is the first regional strategy for widening participation in higher education in Northern Ireland - 'Access to Success'[53] which was published in September 2012. 'Access to Success' supports the aim that any qualified individual in Northern Ireland should be able to access higher education irrespective of their personal or social background. The

[45] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[46] https://www.economy-ni.gov.uk/publications/securing-our-success-northern-ireland-strategy-apprenticeships
[47] https://www.economy-ni.gov.uk/publications/ni-skills-barometer
[48] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[49] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[50] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[51] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[52] https://www.economy-ni.gov.uk/articles/higher-education-strategies-northern-ireland
[53] https://www.economy-ni.gov.uk/articles/higher-education-strategies-northern-ireland

focus of the Strategy is on individual students with the aim of helping higher education providers to work to common definitions and measures for widening participation, while developing their own unique approaches within a common framework.

Higher Education Big Conversation

From September to October 2015 the then Department for Employment and Learning (DEL) undertook the 'Higher Education Big Conversation' initiative which focused on the future sustainability of higher education in Northern Ireland.

The initiative recognised the value that higher education has in expanding the skills base in Northern Ireland. There is widespread consensus that improving the skills base of the Northern Ireland economy has the potential to boost productivity, the employment rate and ultimately international competitiveness.

All of the skills forecasts indicate a clear and growing demand for higher level skills, not only through universities but also apprenticeships. By 2020, it is estimated that over half of the local workforce will require higher level skills, and shortages will be particularly acute in the Science, Technology, Engineering and Maths (STEM) disciplines[54].

In the context of significant public spending constraints the sustainability of Northern Ireland's higher education system has come under serious pressure in recent years. Overall investment in higher education in Northern Ireland has been declining and tuition fees have been frozen for most students since 2006 - these factors could potentially undermine the ability of the higher education system to properly support Northern Ireland's skills needs and economic growth[55].

DE is clear that the status quo is no longer sustainable. Northern Ireland must identify and develop its own unique solution to address the challenges that face higher education.

[54] https://www.economy-ni.gov.uk/publications/success-through-skills-transforming-futures-0
[55] https://www.economy-ni.gov.uk/consultations/higher-education-big-conversation

DE used the evidence base obtained during the 'Big Conversation' to formulate an options paper on the way forward for higher education in Northern Ireland.

Securing a Sustainable Solution for Higher Education in Northern Ireland: An Options paper

In March 2016 an options paper[56] was published that identified the nature and scale of the funding deficits facing Northern Ireland's higher education system and outlined the various potential models available to fund higher education in the future. The paper highlighted the significant funding gap that exists between universities in Northern Ireland and their counterparts in England in Scotland.

The responses received during the course of the 'Big Conversation' engagement process helped to inform the development of the options, and the feedback received during the 'Big Conversation' and the findings of the Northern Ireland Skills Barometer have made it clear that in the long term there is a clear strategic need to rebalance the subject offerings at local universities; and encourage more diverse forms of delivery beyond traditional full-time university based routes.

The Options paper stated that the existing model of higher education funding in Northern Ireland is not sustainable. Under the existing model universities in Northern Ireland are heavily reliant on funding from the NI Block Grant[57]. However the Block Grant has not been sustained in recent years at the level required to protect current levels of provision, and does not take into consideration the expansion that will be required to prepare for a lower corporation tax environment.

Three broad options to fund higher education in the future in Northern Ireland are outlined in the paper;

[56] https://www.economy-ni.gov.uk/sites/default/files/consultations/del/HE%20options%20paper.pdf

[57] The block grant is received from the Government in Westminster. The block grant is given to the Executive annually and is allocated after the Treasury works out how much Northern Ireland should get from the UK's overall income. The sum is worked out using the Barnett formula, and it is also used to determine budget allocations to Scotland and Wales. Named after the former chief secretary to the Treasury, Lord Barnett, the mathematical formula was originally intended to be based upon relative population rather than on need. It has resulted in higher spending per capita in the devolved nations than in England.

(i) Option 1 – Increased Public Investment

This broad option entails a re-commitment to publically funded higher education through an injection of additional funding from the NI Block Grant. The extent of the re-commitment has been scaled under several sub-options. If any of these options are taken forward it would be preferable to allocate some additional monies on a strategic basis, rather than in their entirety directly through the core grant allocation to the higher education institutions in Northern Ireland. It would for example be possible to make the funding available through a strategic skills pot, similar to Scotland, which universities would bid into outlining how they would use the resources to meet the skills needs as informed by the Skills Barometer.

(ii) Option 2 – Increased Student Contribution

This broad option entails an increase in contributions made by students to the costs of their higher education, scaled under several sub-options. The level of the fee increase is underpinned by financial need. It should be noted that any changes in student support arrangements entail significant lead-in times for both legislative and administrative reasons, and so it may not be possible to introduce any of these options until 2018/19. In the interim any reinvestment in higher education would need to be met through public sources.

Under Option 2 it is noted that while tuition fees are paid by most full-time undergraduate students through heavily subsidised loans, these costs would not impact the NI Block. Both the up-front cost of providing the loans and the subsidy which emerges from the generous repayment terms are covered centrally by Her Majesty's Treasury. The savings in grant funding could be reinvested in other areas of higher education funding, such as research funding or student support, or other targeted interventions.

(iii) Option 3 – Increased Public Investment and Student Contributions

This broad option entails an increase in the contributions made by both government and students to the costs of higher education, with the level of that increase scaled under several sub-options and on the proviso that the additional costs would be met equally by both sources.

The Options paper did not advocate a particular model, but was intended to aid consideration of these issues by the new Executive after the 2016 Assembly election, and to inform a decision on the preferred way forward.

Skills Strategy for Northern Ireland

An updated and revised Skills Strategy for Northern Ireland - Success through Skills – Transforming Futures[58]' was published in 2011. The Strategy looked at the current skills base and examined the skills needed in future to grow the Northern Ireland economy and highlighted areas for action. The Strategy clearly demonstrates that the Northern Ireland economy will increasingly rely on higher level skills, with a decreasing demand for low skills at entry and Level 1[59]. The Strategy therefore sets out the long term direction of travel by highlighting four strategic goals, to

- increase the proportion of those people in employment with Level 2[60] skills and above to 84-90% by 2020, from a baseline of 71.2% in 2008;
- increase the proportion of those people in employment with Level 3[61] skills and above to 68-76% by 2020, from a baseline of 55.6% in 2008;
- increase the proportion of those people in employment with Level 4-8[62] skills and above the 44-52% by 2020, from a baseline of 33.2% in 2008; and
- increase the proportion of those qualifying from Northern Ireland Higher Education Institutions with graduate and post graduate level courses in STEM subjects (with an emphasis on physical and biological sciences, mathematical and computer science, engineering and technology) by 25-30% in 2020 from a baseline of 18% in 2008.

Success through Skills – Transforming Futures Employer Engagement Plan[63] was published in 2013. It set out how the Department would engage with businesses to help deliver aspects of the Skills Strategy.

[58] https://www.economy-ni.gov.uk/publications/success-through-skills-transforming-futures-0
[59] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[60] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[61] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[62] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[63] http://dera.ioe.ac.uk/13998/1/success-through-skills-employer-engagement-plan.pdf

The Northern Ireland Skills Barometer

The Northern Ireland Skills Barometer[64], which launched in November 2015, provides a detailed understanding of the skill requirements for the Northern Ireland economy up to 2025 with the aim of ensuring that any skills gaps are identified and addressed. The research analyses where the skills gaps are currently, where they are emerging and where they are likely to emerge over time. The research was undertaken by the Ulster University Economic Policy Centre.

The Barometer states that for the Northern Ireland economy to grow faster there is a strong need for higher level skills in STEM and for people with intermediate and graduate level skills in STEM related subjects. There will be growth opportunities for all skills levels across a range of sectors; however the focus will be predominantly on higher level skills.

The results of the research indicate that skills will be undersupplied in the economy as a whole, however the Barometer indicates that skills gaps will specifically emerge with; marginal under-supply at higher level skills (Level 6[65]); an acute shortage in mid-level skills (Levels 3 – 5[66]) and; an over –supply of low and no skills – this latter group must be encouraged into training and tertiary level education. At both higher level and mid-level the largest supply gaps are forecast in the STEM related subject areas. These potential skills shortages identified in the Barometer could constrain economic growth in Northern Ireland if the issue is not addressed.

It is anticipated that the Barometer will help to shape policy across all areas of skill provision as it will allow Government to allocate its funding in a more efficient manner to meet business needs and provide the evidence for more flexible responses to future skills needs. It is also hoped that the Barometer will act as a driver for the further development of careers education, information, advice and guidance as it will provide students and their parents with information on the current and future labour market opportunities as well as employment prospects by level of education and by course.

[64] https://www.economy-ni.gov.uk/publications/ni-skills-barometer
[65] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[66] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

Apprenticeships

Securing our Success: The Northern Ireland Strategy on Apprenticeships[67] was published in June 2014 providing the future direction of apprenticeships in Northern Ireland and setting out, at a high level, new policy commitments and an implementation plan to ensure their delivery. This Strategy is viewed as central to transforming the skills landscape to secure the economic success of Northern Ireland. It offers a blueprint for Northern Ireland's future apprenticeship programme: a model which is driven by strategic partnership; puts employers at its heart; matches better supply with demand; affords opportunities in a wider range of occupations; and offers a flexible progression pathway across professional education and training.

The Strategy followed a Review of Apprenticeships[68] which identified a clear economic and social imperative for providing apprenticeships, not only for the growth and realignment of the economy but also for the significant returns they offer both employers and apprentices directly. In delivering these benefits, apprenticeships will assist in rebalancing and rebuilding the economy.

The final policy position for apprenticeships is summarised under four themes, namely

- *The components of an apprenticeship*; - the policy commitments under this theme will establish apprenticeships as a system of employment and learning that is adaptive to the particular needs of employers across a wider range of sectors and at higher levels. It includes a number of underpinning elements to support this expansion;
- *Increasing participation* - this theme focuses on ensuring that apprenticeships will play a fundamental role in meeting the future skills needs of the economy by increasing the participation of employers and apprentices;
- *Partnership – the roles of the key players* - The sustained engagement of the key stakeholders is a core feature in successful apprenticeship systems. This theme sets out how this will be facilitated in the future apprenticeship model, including the roles and responsibilities of the different partners.; and

[67] https://www.economy-ni.gov.uk/publications/securing-our-success-northern-ireland-strategy-apprenticeships
[68] https://www.economy-ni.gov.uk/consultations/review-apprenticeships-northern-ireland-consultation

- *Ensuring Quality* - The future apprenticeship programme will have a greater focus on quality from the perspective of the employer, the apprentice and government. This theme establishes how the future model will ensure high quality apprenticeships.

The themes and proposals, which have been drawn from international best practice in professional and technical education and training systems, have been consolidated into 20 policy commitments.

The implementation of the Strategy is establishing apprenticeships as the key mechanism through which individuals can gain knowledge and skills while in work. As outlined in the Strategy, DE is seeking to commence apprenticeships from Level 3[69] upwards, with a major commitment to higher level apprenticeships. Apprenticeships will also be extended to a wider range of occupational areas, and will provide pathways into further and higher education. A complementary reformed system of youth training will also create fresh progression routes into apprenticeships.

Review of Youth Training

'Generating our Success – the Northern Ireland Strategy for Youth training'[70] was published on 30 June 2015. The Strategy outlines the future direction for youth training in Northern Ireland and sets out the new policy commitments and an implementation plan to ensure their delivery. The strategy complements the 'Securing our Success: The Northern Ireland Strategy on Apprenticeships', and also builds on the interim report of the review of youth training that was published in November 2014.

As outlined in the Strategy the new youth training system will form a key part of the wider education and skills landscape, and it will better match the needs of young people, employers and the wider economy. Youth training will provide a high quality parallel route to the traditional academic pathway, with opportunities for professional education and training that will facilitate progression to sustained employment, an

[69] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[70] https://www.economy-ni.gov.uk/publications/generating-our-success-northern-ireland-strategy-youth-training

apprenticeship or further education. It will be centred on the career aspirations and needs of young people, offering an innovative and engaging curriculum, and will be a conduit to support their ongoing career development.

The new system will deliver structured work-based learning for all participants, including those already in employment, together with qualifications valued by employers through a new baccalaureate-style professional and technical award at Level 2[71] (equating to a minimum of five GCSEs at grade A* -C, including English and Mathematics).

Employers will actively engage in the system, through designing its content and delivery, to support the development of well-qualified and skilled workforce that can facilitate business and economic growth.

The Strategy for youth training will be progressed through the delivery of 22 policy commitments, summarised under four themes namely: core features of the Youth Training System; Supporting Young People; Delivery and Employer Engagement Structures; and, Ensuring Quality.

[71] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

3.4.2 Department of Education (DE)

The Department of Education's primary statutory duty is to promote the education of the people of Northern Ireland and to ensure the effective implementation of education policy. The Department's main statutory areas of responsibility are early years education and learning provision; primary, post-primary and special education; and the youth service.

The Corporate Plan for Education 2012-2015[72] identified five corporate goals – comprising two overarching and three enabling goals - that support the vision for education in Northern Ireland and the wider vision for economic and community growth that is captured in the Programme for Government.

The two overarching goals are:

(i) Raising standards for all - through high quality teaching and learning, ensuring that all young people enjoy and do well in their education and that their progress is assessed and their attainment recognised, including through qualifications.

(ii) Closing the performance gap, increasing access and equality - addressing the underachievement that exists in our education system; ensuring that young people who face barriers or are at risk of social exclusion are supported to achieve to their full potential; and ensuring that our education service is planned effectively on an area basis to provide pupils with full access to the curriculum and Entitlement Framework.

The three enabling goals reflect the three priority areas through which DE will work to achieve the overarching goals. They are:

(i) Developing the education workforce - recognising the particular professional role of teachers and school leaders in delivering an effective curriculum and raising standards and also the important role of other education professionals and those who support them.

(ii) Improving the learning environment - making sure that strategic investment supports the delivery of the area plans; that the premises in which young people learn are safe, fit for purpose and conducive to learning; and that the

[72] https://www.education-ni.gov.uk/publications/corporate-plan-education-2012-2015

environment provides opportunities for sharing and for building a more cohesive society.

(iii) Transforming the governance and management of education- ensuring that the arrangements for governing and managing

The Northern Ireland education system has many strengths but international evidence indicates that our post-primary education system has room to improve[73]. DE has publicly recognised that a solid foundation in literacy and numeracy is absolutely essential to ensure that when young people leave school that can contribute effectively to the economy and society and live fulfilling lives. In light of this in March 2011 DE introduced a *Count Read: Succeed – A Strategy to Improve Outcomes in Literacy and Numeracy*[74] that brought a renewed focus to the importance of literacy and numeracy and to the centrality of teachers. The aims of the strategy were to:

(a) support teachers and school leaders in their work to raise overall levels of attainment in literacy and numeracy among young people; and

(b) narrow the current gaps in educational outcomes between the highest and lowest performing pupils, those most and least disadvantaged, girls and boys, and schools themselves.

Regional Youth Development Plan

In October 2013, the Department of Education launched a new policy for youth services entitled 'Priorities for Youth – Improving Young People's Lives through Youth Work'. This policy mandated the establishment of a Youth Service Regional Advisory Group (YSRAG) and the development of a 3 year Regional Youth Development Plan (RYDP) for Northern Ireland. Representation from young people, voluntary organisations and other government departments assisted the statutory partners (Education and Library Boards and Youth Council for Northern Ireland) in the construction of this plan and formed the representation for the RAG.

[73] http://skills.oecd.org/OECD_Skills_Outlook_2013.pdf

[74] https://www.education-ni.gov.uk/publications/count-read-succeed-strategy-improve-outcomes-literacy-and-numeracy

The main aim of the RYDP is to ensure '*that a range of positive, creative, sustainable activities and opportunities are available to support the delivery of youth work within communities ... to help them engage as partners in developing their skills and knowledge'*. The RYDP will support the delivery of youth services in line with the 'Priorities for Youth[75]' policy and will outline a strategic overview of the Department of Education funded regional and local youth service provision across Northern Ireland.

The first meeting of the RAG was in June 2014 and since then key actions have been developed and approved in the form of a one year transitional framework and action plan for 2015/16[76]. Now the Education Authority[77] has been established it will be the responsibility of both the Authority and the Youth Council for Northern Ireland to ensure the implementation of the plan for 2015-16.

[75] https://www.education-ni.gov.uk/publications/priorities-youth
[76] http://www.eani.org.uk/about-us/latest-news/regional-advisory-group-for-youth-publishes-first-action-plan/
[77] The Education Authority (EA) was established in April 2015 and replaced the five Education and Library Boards and the Staff Commission for Education and Library Boards. The EA has responsibility for education, youth and library services throughout Northern Ireland with a headquarters and five regional offices. www.nidirect.gov.uk/education-authority

3.5 Summary of key points from Section 3 – Policy context

- The overarching context for the preparation of the Knowledge Framework was the then Department of Agriculture and Rural Development's Strategic Plan 2012 -2020 which set out the Department's long term strategic direction over a period where the agri-food industry would be facing a period on considerable opportunity and change.
- CAP reform, which concluded in 2014, recognised that EU agriculture needed to attain higher levels of production of safe and quality food, while preserving the natural resources that agricultural productivity depends upon. This can only be achieved by a competitive and viable agricultural sector operating within a properly functioning supply chain and which contributes to the maintenance of a thriving rural economy.
- A new system of Pillar I Direct Payments was introduced on 1 January 2015 – the Single Farm Payment scheme was replaced by the Basic Payment Scheme, a Greening Payment and a Young Farmers' Payment. A Level 2[78] qualification in agriculture was introduced in 2015 as a requirement in order to qualify for a payment under the Young Farmers' Scheme and for new entrants and young farmers to receive an award from the regional reserve.
- Under Pillar II of CAP the main vehicle for the provision of training, advice and support to help improve efficiency is the Rural Development Programme 2014-2020. As part of the Programme there is a measure designed to support knowledge transfer and innovation through actions which enhance the application of results of agri-food research and to improve the exchange of information between researchers and agri-food actors and between Member States.
- The Farm Advisory System (FAS) established under CAP Reform has a responsibility to deliver industry training and will provide clear up to date support to improve business performance.
- DAERA's education provision needs to be compatible with wider Northern Ireland Government policy on education and skills development. In delivering education DAERA must consider the impact of key DfE and DE led policies. In particular DfE has responsibility for further and higher

[78] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

education and skills policy in Northern Ireland and there are a number of DfE strategies that may impact on DAERA, for example;

- The Northern Ireland Strategy for Further Education,
- The Higher Education Strategy for Northern Ireland,
- The Northern Ireland Skills Barometer.

- A point of interest is that, on the further education front, DfE is setting its sights on higher level skills (at Level 3[79] and above), and this therefore might be the ideal opportunity to signal DAERA's intention that it wishes to encourage those in the agri-food industry to move towards this level of sectoral skills/qualifications.

[79] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

SECTION 4 EVIDENCE BASE

4.1 DAERA commissioned research

A comprehensive research evidence base has been collated to inform development of the Department's future education policy interventions. This evidence includes information on the future demand for, and some of the benefits arising from, education, skills and lifelong learning within the land based, food and rural sectors; and barriers to young farmers entering the farming industry in Northern Ireland.

4.1.1 Skills attainment

The analysis and results outlined in the 'Skills, education and training; Results from the AFBI farm household survey'[80] Report draw on two farm level surveys - the 2008 Farm Household Survey and the 2012 Farm Household Survey. The surveys collected detailed information on respondent's education and qualifications, off-farm wages, time allocation and general well-being. Although the farm household sample is not statistically representative of the overall farming population in Northern Ireland, the results provide a useful insight into some of the choices which farm operators have made in relation to their education and training alongside their decision to work off-farm.

A stratified random sample of businesses by farm type (focused on dairying, cattle and sheep) and farm size provided representation of both full-time and part-time farm operators.

In summary the results showed:

- On average, farm operators were working longer hours on farm in 2012 compared with their working hours reported in 2008.

- In 2012, a third of farm operators surveyed reported either having some form of off-farm employment or self employment. Operators of beef and sheep farms were more likely to have full-time off-farm employment compared to dairy farm operators. Proportionally, younger farm operators were more likely to be working off-farm.

[80] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/skills-education-and-training-results-from-the-afbi-farm-household-survey-2014.pdf

- In 2012 nearly 54% of farm operators surveyed had no formal education, nearly 21% had a Level 2[81] qualification, 12% had a Level 3[82] qualification, and only 5% had a degree level qualification[83] or equivalent. Achievement at tertiary level or equivalent still remains relatively low for farm operators compared to the wider population.

- There was a slightly higher proportion of operators in those areas classed 'mainly Severely Disadvantaged Areas (SDA)' having no formal education. Farm operators from 'mainly SDA' farms have the highest rates of 'no formal education' and lowest proportions reporting qualifications at all the levels outlined. Farm operators from 'mainly Disadvantaged Areas (DA)' are relatively more educated and those farm operators from 'mainly lowland' farms have the lowest proportions reporting no formal education and the highest proportions at each individual qualification level outlined. This may reflect that those who live geographically closer to an urban centre were educational and training opportunities are more likely to be offered and accessing courses/training may be easier.

- Educational attainment levels did not appear to vary much in terms of the main farm enterprise type and in terms of farm size - there is a marginally greater proportion of farm operators from medium and large farms reporting some level of qualification compared with those from small and very small farms.

- A greater proportion of farm operators with either off-farm employment or self employment reported having qualifications at all levels, compared with those farm operators with no off farm work.

- When analysed by age and farm type, those in the younger age categories (under 40) are more likely to have an agricultural based qualification at certificate level or above compared to the older age groups. In addition, there

[81] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[82] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[83] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

are a higher proportion of dairy farmers in comparison to beef and sheep farmers with agricultural specific qualifications at certificate level and above.

- Non-participation in schooling beyond the age of 16 years particularly impacts on males and also farm based males, and there is a need to encourage at a parental level, a more positive attitude towards qualifications and training.

- Having at least a minimum level of education has a positive and significant impact on the off-farm wage and total household wage.

- Investment in education by individuals is worthwhile. At a minimum qualification level, gaining at least a Level 2[84] qualification or equivalent brings a positive return to education in the labour market.

- The generally low level of educational attainment and training amongst farm based males presents a concern for policymakers in the context of both sector growth and farm adjustment.

- Agricultural production is increasingly being required to become more productive in terms of managing inputs and resources, while still responding to issues around the impact of climate change, green house gas emissions, food quality (including safety) and farm biosecurity. Scientific, technological and regulatory developments are all requiring farm operators to upskill in a wide range of areas.

- Current education levels amongst farm operators are likely to constrain their off-farm employment participation, as off-farm labour markets are increasingly demanding more skilled workers.

4.1.2 Returns to education

Further research[85] has estimated the on-farm and off-farm (labour market) returns to education and qualifications for a sample of farm operators in Northern Ireland. The

[84] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[85] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/returns-to-education-report.pdf

modelling analysis examined 'years of schooling' to estimate the marginal gain in earnings (on-farm and off-farm) associated with additional schooling. Furthermore, recognising that qualifications obtained are often more important than years of education, the analysis also explored the returns to specific qualifications (e.g. degree level, agricultural qualification, etc). The final part of the analysis extended the model by taking account of the joint nature of education and labour supply decisions.

The results in relation to off-farm earnings were emphatic – investment in education pays substantial dividends in terms of higher wage rates. Moreover, in the context of a weak and uncertain economic climate, the emphasis on education is elevated as the opportunities for less skilled employment diminish.

In contrast when looking at on-farm earnings, with the exception of an agricultural qualification, no wage premium associated with post-secondary qualifications was found. An agricultural qualification[86] was found to generate an on-farm wage premium relative to an unqualified farmer. However, this on-farm earnings premium associated with agricultural training should be interpreted with caution because of the likely endogeneity of agricultural qualifications. Specifically, successors of larger and more profitable farm businesses are probably more likely to acquire agricultural qualifications and this would generate upward bias in the estimated farm return to such qualifications. Despite this, for those planning to farm full-time, the results suggest that a solid secondary education plus agricultural training is a very sound investment.

4.1.3 Demand for skills

In 2009/10 Lantra was funded by the Department to develop an evidence base related to the business demand for skills across the environmental and land based sector. The data are based on analysis of a telephone survey of 991 Northern Ireland businesses, conducted between November 2009 and January 2010. Contact details for a representative stratified random sample of 640 farm businesses were provided by the Department.

[86] Within the context of the analysis the definition of an agricultural qualification was defined as - 'the completion of an agricultural qualification involving the equivalent of at least one full-time year of study'.

The Lantra survey[87] showed that:

- The educational attainment of the farming sector was low, with 62% of working owners and 40% of employees not holding any formal recognised qualifications;
- A wide range of skills gaps were identified;
- Demand existed for generic business skills such as record keeping, basic computing or IT, accounts, planning and organising, and communication skills;
- Businesses needed training in complying with legislation, and technical and practical skills training was also needed;
- For those planning to diversify the need to learn new skills, particularly marketing and sales, accounts and communication skills was identified; and
- Focus groups reinforced the need for technical skills, particularly in farm businesses.
- When asked about skills gaps, farm business responded that generic business skills such as communication skills, planning and organising, accounts and basic computing/information technology skills were seen as most lacking.
- When considering skills and qualifications level likely to be required in the next five years farm businesses highlighted record keeping, basic computing or IT skills, accounts, complying with legislation, planning and organising and technical and practical skills as important. However, around 70% of the farm businesses surveyed did not know what level of qualification would be required in five years time.
- A significant majority of respondents emphasised that qualifications were not needed within the farm business and that experience and/or general knowledge was more helpful.
- Those businesses involved in the diversification process identified the need to learn new skills, particularly marketing and sales, accounts and communication skills.
- Of those businesses looking to diversify within the 5 years from the survey date, 44% reported that those involved would need re-skilling.
- Only 9% of the farms surveyed had a written business plan.

[87] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/skills-assessment-for-the-environmental-land-based-sector-in-northern-ireland.pdf

- In over half of the farm businesses surveyed no-one in the business had undertaken training. Only in 17 % of farm businesses had someone in the business undertaken training within the previous 2 years. The underlying data showed that pig and poultry farms and cereal farms followed by dairy farms were more likely to undertake training than beef and sheep farms.

The survey also asked respondents to identify barriers to training. A range of answers were obtained on barriers with the financial cost, time lost through training and all staff are fully proficient identified as the main ones. A specific need for a detailed understanding of the demand for skills within the food and drink industry was identified.

During 2011, AFBI developed and undertook a face-to-face survey of the largest employers covering all the sub sectors of the food and drink sector in Northern Ireland to quantify the demand for education and skills over the next five years. The survey had a particular focus on supervisor, manager and specialist/technical levels to identify skills needs and current gaps in training provision.

Results of the survey[88] show that relevant work experience was deemed to be the critical factor when recruiting new employees – intermediate [89]education was regarded as the maximum required for supervisory level position in the food industry and degree level the minimum for specialist managerial levels. Skills shortages were identified in production and production management.

Information had been collated on the supply of courses (education, skills and lifelong learning) available and on the actual supply of qualified people entering and achieving employment in the agri-food industry each year. The research examined enrolment trends by campuses, educational level, discipline and mode across 12 years of data.

[88] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/training-and-skills-in-the-northern-ireland-food-and-drink-sector.pdf

[89] High: Managers, Professionals , Associate Prof
Intermediate: Administrative etc, Skilled Trades , Personal Service
Low: Sales, Machine Operatives, Elementary

Over the twelve years to 2010/2011 there were over 18,600 enrolments at CAFRE with an average annual enrolment of 1,556. There had been a notable recent upturn in enrolment in the agriculture and food disciplines. DEL (now DfE) also supplied some courses within the disciplines provided by CAFRE, but in most cases, the course content is different. There was no single source bringing together information on education and training supply within the DEL (now DfE) funded and private sectors. Rural and community development supply was primarily provided by the private sector, though much was centred in Belfast.

The Department commissioned AFBI to undertake research to explore issues such as the farm operator and spouse time-use, educational attainment and attitudes to education/training in the household, off farm economic activity, financial matters and aspirations for the farm business. This survey followed on from an earlier Farm Household survey completed in 2008 and it specifically sought to interview all households (engaged in the main pastoral based enterprises of dairying, cattle and sheep) who participated in the earlier survey.

The survey also explored farm business succession planning with farm respondents. Half of the farm operators surveyed indicated that they had identified a successor; the majority of successors were sons. Almost three quarters of the successors were currently working on the farm, providing on average 34 hours of labour per week. Over two-thirds of successors did not have an agricultural qualification

The survey further explored farm operators and their spouses' attitudes and aspirations in relation to their children's educational attainment and future career choices. Findings showed that the vast majority of farm operators and spouses would like their children to go to college or university. Farm operators and spouses indicated that their daughters were more likely to go to on to college or university compared to their sons. Overall, respondents felt that this was because their sons were either more interested in farming or pursuing an apprenticeship.

The survey findings demonstrated that in general, mothers within the farm household appeared to be more likely to advise their children on subject choices and qualifications and were more involved in advising and supporting their children in

making choices relevant to their education and career. Farm operators, compared with their spouses, were relatively more in favour of one of their children taking over the farm. Furthermore, comparing this to responses in the 2008 survey, both farm operators and their spouses in 2012 were more in favour of their children taking over the farm. Spouses with higher educational attainment appeared to be relatively less inclined to encourage their children to take over and operate the farm, compared with those with lower level qualifications.

4.1.4 Destination of learners

In 2009 and 2011 the Department undertook research to investigate the destinations of learners at CAFRE to ascertain the influence/impact of the qualification on the student's future employment, earnings, current and future study plans and to obtain the students views on the value of the qualification to their current situation.

The information for the research was collected in two separate telephone surveys. The first in 2009, arranged by Lantra (the Sector Skills Council for Land-based and Environmental Industries), surveyed a one-year cohort of land-based learners from CAFRE. The data from this study was provided to the Department for analysis. The second survey, which was undertaken directly by the Department in 2011, surveyed three separate yearly cohorts of food learners from CAFRE.

The surveys found that approximately three quarters of learners achieved employment within 3 months of leaving their course, with the majority working in permanent jobs in Northern Ireland (the public sector was identified as a significant employer for Department students) – this would suggest that CAFRE is educating students primarily for the local economy. The surveys found a disparity in the number of learners progressing onto further study, with food learners twice as likely as land-based learners to continue on. A significant majority of respondents to both surveys found the skills gained from their qualification relevant in their workplace. This included individuals who were working in an entirely unrelated field from the area of their qualification, suggesting that there were likely to be generic elements within the specific qualification /education provision that were transferrable/ applicable across different work areas.

4.1.5 CAFRE Destination Surveys

Some six months after students graduate from the College, CAFRE conducts a survey to obtain information on their work/study activities. This annual '*Destination Survey'* is completed on a voluntary basis and is used by CAFRE to evaluate and develop its course provision.

In the three years ending June 2013, June 2014 and June 2015, some 2,055 students completed a full-time or part-time higher education qualification at CAFRE and were subsequently invited to complete the survey. The average survey response rate across the three years was 73%.

We considered data obtained from those full-time and part-time students who completed a higher education qualification (i.e. Level 4[90] or higher) across the three year period, and found a strong correlation across years in relation to the five possible destinations of employment/unemployment, further study, voluntary work or gap year.

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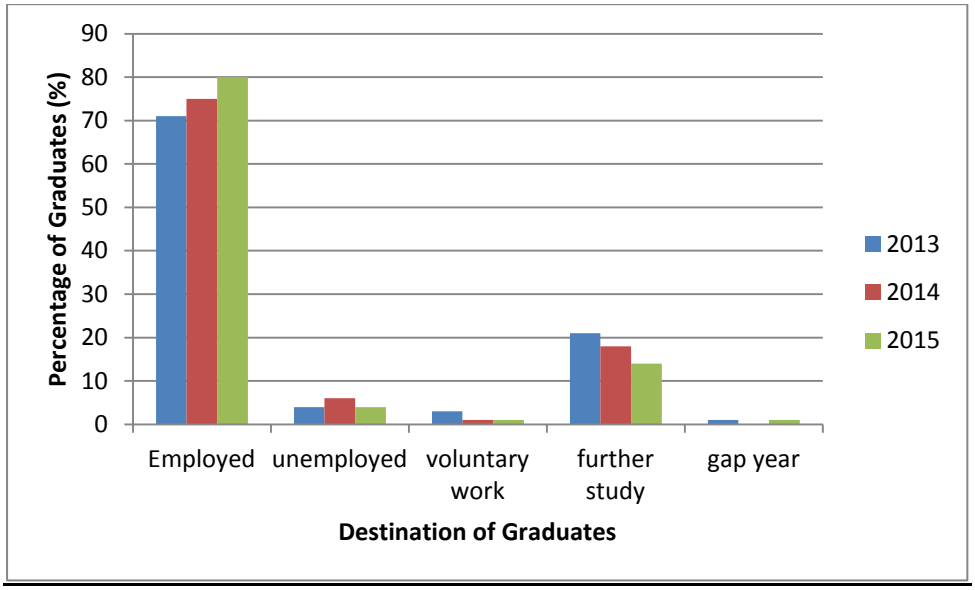
Figure 3 shows that a significant majority of students, approximately 75%, were in employment after graduating, and, of the remainder, an average of 18% went on to further study.

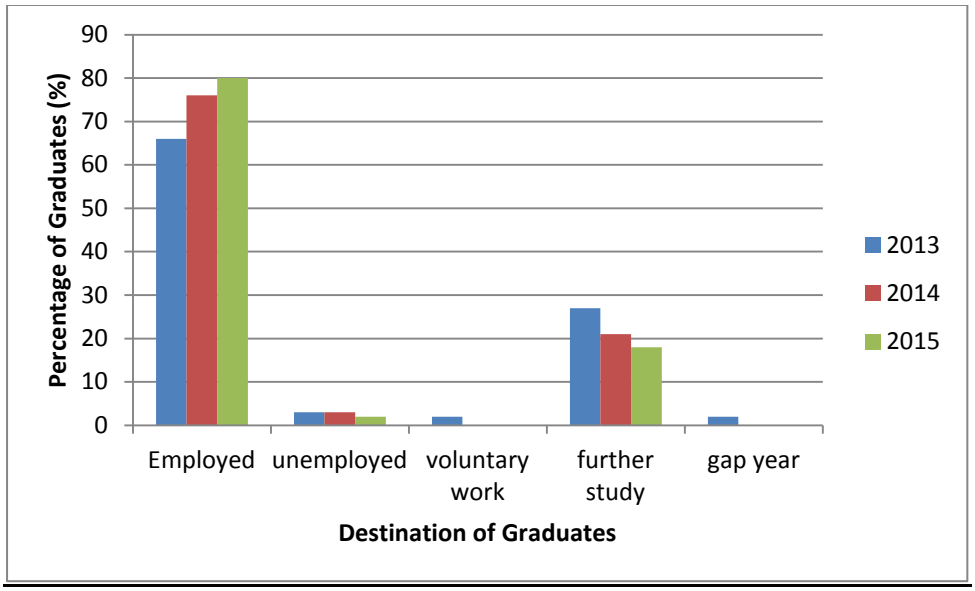
Figure 3 Destination of CAFRE Students 2013-2015



A closer examination of the survey responses from students in the Agriculture, Horticulture, Food, Communications and Equine disciplines over the three years is given below. (Note that all respondents to the surveys were asked for information on their level of earnings however the general response rate to this question was poor and did not yield sufficient information to allow for any meaningful analysis).

Figure 4 provides a breakdown of the destinations of CAFRE Higher Education Agriculture Graduates from 2013 to 2015.

Figure 4 Destination of Agriculture Graduates 2013-2015

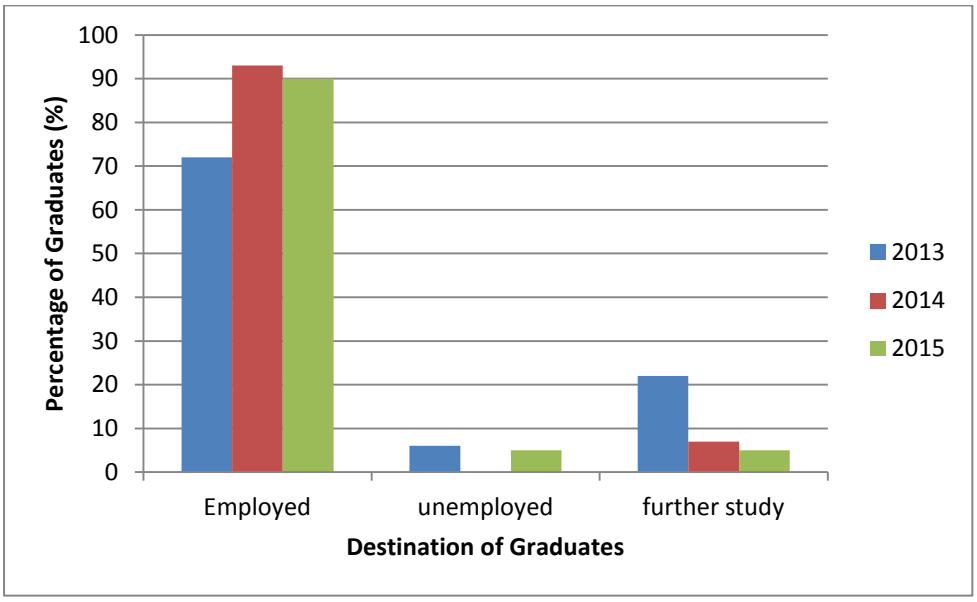


Over the three survey years, an average of 74% of agriculture graduates were in employment, 22% went onto further study, and 3% were unemployed. Of those that were employed, 87% were in employment that directly related to the discipline they had studied at CAFRE, with an average of 59% in graduate level employment. On average 38% of respondents indicated that they worked in the family business.

On average 85% of those in employment were based in Northern Ireland, 8% were employed in the Republic of Ireland, 2% in Britain, and 5% outside of the UK.

Figure 5 provides a breakdown of the destinations of full-time CAFRE Higher Education Horticulture Graduates from 2013 to 2015.

Figure 5 - Destination of Horticulture Graduates 2013-2015

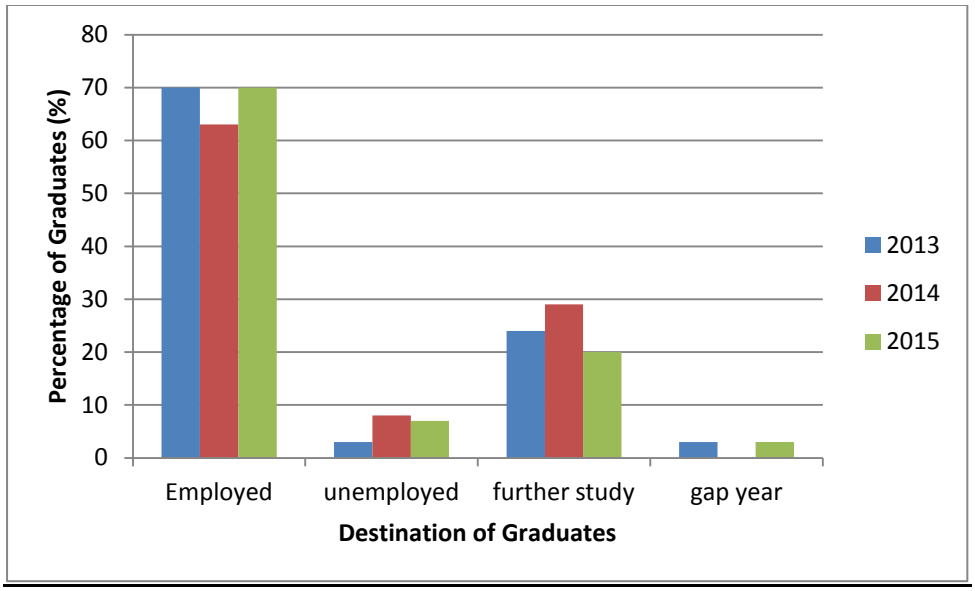


Over the 3 years, on average 85% of horticulture graduates were in employment, with 82% of that figure being in employment that was directly related to the discipline they studied at CAFRE. An average of 11% of graduates went onto further study and 4% were unemployed.

On average 76% of the horticulture graduates in employment were employed in Northern Ireland, 11% in the Republic of Ireland, 6% were working in Britain and 7% were employed outside of the UK.

Figure 6 provides a breakdown of the destinations of full-time CAFRE Higher Education Food Graduates from 2013 to 2015.

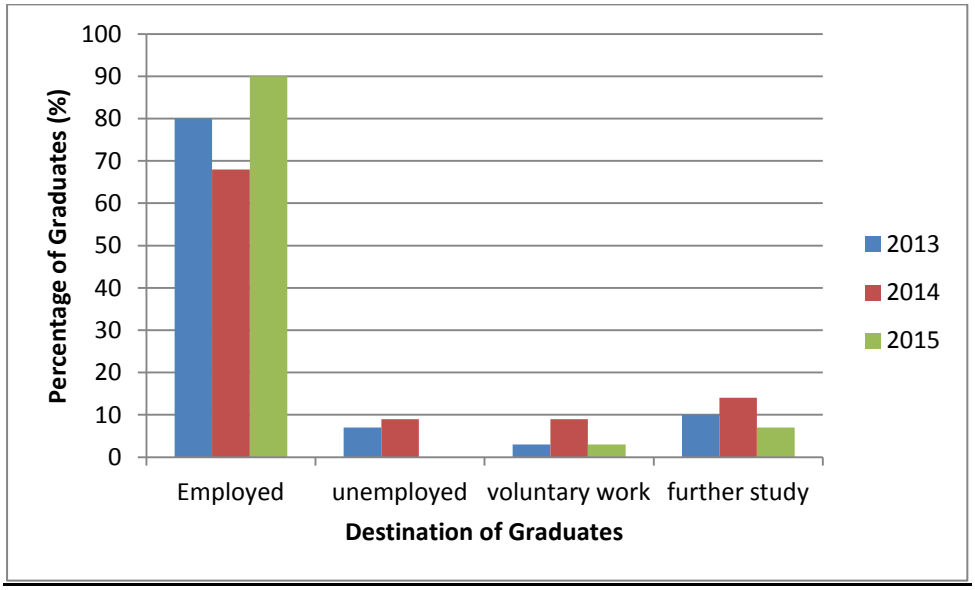
Figure 6 Destination of Food Graduates 2013-2015



On average 68% of food graduates were in employment, while 24% went onto further study, and 6% were unemployed. Of those that were employed, 78% were in employment that directly related to the discipline they had studied at CAFRE, with an average of 75% in graduate level employment. Of those that were employed, 95% remained in Northern Ireland, 2% were working in the Republic of Ireland, 2% were working in GB, and 1% were working outside of the UK.

Figure 7 provides a breakdown of the destinations of full-time CAFRE Higher Education Equine Graduates from 2013 to 2015.

Figure 7 Destination of Equine Graduates 2013-2015

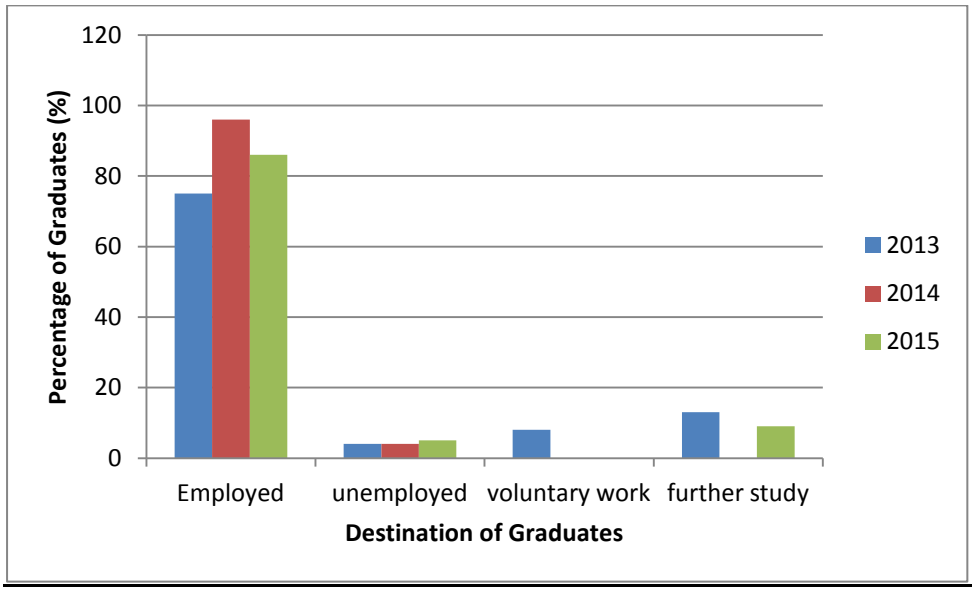


Over the 3 years, on average 79% of the equine graduates were in employment, 10% went onto further study, and 5% were unemployed. Of those that were employed 80% were in employment that directly related to the discipline they had studied at CAFRE, with an average of 54% in graduate level employment..

Graduates from the equine discipline were more likely to be working outside of Northern Ireland with, on average, 35% working in the Republic of Ireland (note this may also be linked to the fact that on average over half of the students undertaking higher education equine courses at CAFRE were from the Republic of Ireland), 7% in Britain and a further 15% outside of the United Kingdom. Only 43% of equine graduates were working in Northern Ireland.

Figure 8 provides a breakdown of the destinations of full-time CAFRE Higher Education Business Graduates from 2013 to 2015.

Figure 8 Destination of Business Graduates 2013-2015



On average 86% of the Business graduates were in employment, 4% were unemployed and 7% went onto further study. Of those that were employed 73% were in employment that related to the discipline they had studied at CAFRE, with an average of 72% in graduate level employment. The vast majority of graduates, 91%, were working in Northern Ireland, 5% were working in the Republic of Ireland, 3% in Britain and 1% were working outside of the UK.

When considering the data from the destination surveys in the round we note that after graduating, a very significant proportion of CAFRE higher education students were either successful in gaining employment or were going onto further study. When analysed on a discipline basis , the surveys found that the majority of CAFRE's higher education graduates in agriculture, horticulture, food and communications were working in Northern Ireland so, for these disciplines, the Department has been educating students primarily for the local economy. The exception is the equine students, where a significant proportion of graduates were employed outside of Northern Ireland.

4.1.6 Knowledge transfer

In 2011/2012 AFBI undertook a study of attitudes to knowledge and technology exchange and adoption in the Northern Ireland agri-food sector and to help identify best practice for communicating information to enable improved uptake and adoption of new policies and technologies to improve performance in the marketplace. An in-depth literature review was also conducted to examine and summarise existing knowledge on knowledge exchange methods and factors affecting technology adoption.

The survey found the most commonly utilised means of communicating new research findings and best practice guidelines was through the farming press with the percentage of producers having attended discussion groups, farm walks, open days and focus farms being relatively low. Information technology had been embraced to some extent with 9 out of 10 farmers owning mobile phones and household computers with 97% of these computers connected to the internet. External and Departmental advisers were commonly used on dairy, pig, poultry, horticulture and crop farms however few beef and sheep farms employed their expertise. This lack of uptake may result from the relatively low adviser to producer number ratio for these extensive sectors, but could also reflect the part-time basis under which these enterprises are often operated.

The survey highlighted a wide range of knowledge exchange models currently used by farmers in Northern Ireland and the literature review identified best practice in a diverse range of examples of knowledge exchange programmes.

The study noted that better engagement with all stakeholders within the agri-food industry through more integrated technology exchange systems may be one means of raising technology adoption rates and thus the competitiveness of the agri-food industry. Although already in place in Northern Ireland, increased encouragement may be required to utilise demonstration farms, the use of on-farm research and discussion groups. The encouragement may be through financial incentives to learn or adopt new findings, facilitated discussion groups and innovative technology exchange models such as technology tokens which allow farmers to commission research using tokens or attend/receive training/advice.

In both the literature review and the survey, a wide range of sources were regularly used and considered important by farmers. Therefore an integrated approach to knowledge exchange is desirable, ensuring that all stakeholders are engaged and given correct information so that consistent messages can be passed on to farmers. The main factor affecting adoption decisions in the survey and the literature review was financial considerations, hence a focus on the financial implications of adoption is likely to be important when trying to maximise the adoption of any innovation.

4.1.7 Barriers to new entrants to farming in Northern Ireland

The AFBI Report on *Barriers to New Entrants to Farming in Northern Ireland*[91], April 2016, provided an overview of some of the universal barriers facing new entrants to farming, for example access to and cost of land, role of the wider economic environment, exit and transfer issues and family barriers. The Report highlighted the trend across all EU countries of farm operators staying in the business longer and also a reduced number of young farmers entering the sector. In the medium term this aging farming population has implications for the productivity and innovation within the farming sector. Farming is increasingly becoming a sector driven by innovation and new technologies and farm operators are required to adopt these new innovations in order to maintain profitability and ensure farm business sustainability. As a result future farm successors will need to have a higher degree of motivation, be skilled in technical and business matters, and capable of anticipating change and planning appropriate responses.

The Report showed that across the EU younger farmers had higher levels of training compared to their older counterparts and on average performed better in terms of economic returns to the business unit. Younger farmers, on average, produced more economic output and managed more hectares of land per full-time equivalent worker compared to older famers. This was because younger farmers were deemed to be more innovative, better educated, and more open to adopting new technologies and innovations on the farm resulting, at an overall aggregate level, in improved competiveness and productivity within the sector.

[91] https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Barriers%20to%20New%20Entrants%20to%20Farming%20in%20Northern%20Ireland.pdf

The Report not only highlighted the universal barriers to new entrants to farming but also looked specifically at the Northern Ireland context. As part of the research a survey of new and potential new entrants to farming in Northern Ireland was undertaken in order to profile potential new entrants to the sector and identify the real and perceived barriers to entering the sector. The timing of this study coincided with CAFRE undertaking a Level 2[92] course in agriculture intended to support the provision of the new 'young farmers scheme'. An online survey was administered to just over two thousand CAFRE Level 2[93] Agriculture students in mid-February 2015 and aimed to explore the experience of young farmers/ new entrants of farming to date, their levels of education and training, whether they were currently farming full-time or part-time, what other employment they were engaged in (if any) and also attitudinal responses to farming as a career and the barriers and issues around establishing a sustainable farm enterprise/business.

The majority of those who completed the survey grew up on a family farm (90 per cent) and almost all (98 per cent) were currently engaged in farming to some extent. In summary the results showed:

- Eighty eight per cent of the respondents were males and 12 per cent were female and the average age of respondents was thirty five (with an age range within the group of between 16 and 63).
- The majority of the farms were owned by the respondent's family with some 55 per cent of the farms being within a family for more than sixty years. This very much highlighted the characteristic family and intergenerational nature of farming in Northern Ireland.
- In terms of educational attainment the cohort had an on average higher level of educational attainment compared to the wider farming population in Northern Ireland. The highest level of qualification for 17 per cent of those surveyed was a professional qualification (for example, doctor, dentist, teaching, nursing, accountancy) while a further 23 per cent of those surveyed a degree level qualification.

[92] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN
[93] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

- When respondents were asked to identify the skills which they considered to be most important for someone going into farming; practical farming skills were most frequently cited as ‘very important’ followed by financial management skills and business management skills and technical farming knowledge. Considering the skills ranked ‘important’, ‘IT skills’ were the most frequent response.
- In relation to building up knowledge and farming experience, gaining farming experience on the family farm was viewed as very important, although 34 per cent of respondents considered that getting five good GCSEs or equivalent was also very important. Of those ranked ‘important’ gaining experience in a business environment (other than farming) was ranked most frequently.
- When respondents were asked to consider what qualifications they considered to be useful to someone planning to go into farming as a career, the results reflect a strong preference amongst respondents for agriculture related/relevant training.
- When respondents were asked about the areas which they considered important to them in terms of future training and also their preference for the method of training or how it should be delivered. Training in management and business skills was the area ‘ranked 1’ most frequently followed by training in animal health and welfare; there was also strong support (combining rank 1 and 2) for training in areas of more ‘technical agriculture’. Overall in general, for the cohort group surveyed, after ‘on-the-job’ training, the preferred methods of learning were through demonstration farms and classroom learning.
- Respondents indicated that although it had always been hard to get into farming in your own right as a young person, the perception was that it was now much harder for young people to get into farming compared to previous generations and, in reality, inheriting a farm was the main way that a young person would get into farming.

Findings from this study provide an evidence-based assessment of the views, attitudes and perceived barriers to entering farming from the perspective of a particular cohort group of students. The results reflect the strong interaction which exists between ‘family’ and ‘business’ within the Northern Ireland farm sector and an

appreciation of the difficulties which can be encountered in family farming, particularly in relation to the sustainability and viability of the farm as it moves from one generation to the next. There were a number of issues which impact and influence successful farm succession planning. These issues included the profitability of the farm business, household factors such as the number of potential successors, the age at which a farmer identified a successor, the stage in the household lifecycle when a successor was identified, the dynamics of the family household and the role of the wider rural economy.

4.2 OTHER EVIDENCE

4.2.1 All Island Skills Study

A Comprehensive Study on the All-Island Economy commissioned by the British-Irish Intergovernmental Conference was published as the *All Island Skills Study*[94] in 2008. The Study recognised that a skilled workforce will be a key resource for a globally competitive all-island economy. The report highlighted the continuing move from traditional agriculture/manufacturing to higher value manufacturing and services across the Island economy and the challenge in responding to a change in the range and mix of skills needed.

4.2.2 Rural Community Network/Rural Development Council review of education, training and skills needs

The Department funded a review of education, training and skills needs for the rural and community sector in 2008/2009. This work was undertaken by Rural Community Network/Rural Development Council. Whilst the initial focus of the report was to inform the Department of immediate and mid-term rural education and skills needs to assist in the delivery of and participation in the Rural Development Programme, the report also provided some evidence on the needs of the rural community sector for the development of an Education Strategy.

The report recommended that the Department should work in close partnership with both the then Department of Social Development (DSD) and DEL (now DfE) to develop a long term strategy supporting the provision of education, training and skills

[94] https://www.economy-ni.gov.uk/publications/all-island-skills-study-full-report

development for the rural community and voluntary sector. Programme promoters were urged to put in place mechanisms that ensured greater coordination and clear signposting of the range of training/support available so that rural community and voluntary sector organisations could easily avail of the services that best suited their needs at that time.

Learning and Support providers were urged to increase accessible accredited training provision in rural areas. A number of key areas were identified in terms of skills development that providers need to make provision for example; Research, Financial Management, Project Planning, Understanding Statutory and Legal Requirements, Project Management, Sustainability (generating an income and keeping committees motivated), Communication Skills, Monitoring and Evaluation.

The report concluded that skills development for community and voluntary groups was vitally important in order to develop resilience in rural communities given that skills development opportunities are less available to groups in rural areas.

4.2.3 Forecasting Future Skill Needs in Northern Ireland

DEL (now DfE) in conjunction with Oxford Economics published *Forecasting Future Skill Needs in Northern Ireland*[95] in April 2009. The report, which forecasted skills needs up to 2020, states that '*Higher skills are associated with higher productivity, higher wage levels and higher employment rates*'. The report noted an under-representation of graduates in Northern Ireland relative to UK averages with a particular under-representation in a number of sectors, including agriculture (there was a suggestion that this could perhaps be more a demand rather than a supply problem). It also noted the sectoral shift in the economy away from more traditional lower skilled (in formal qualification terms) activities such as agriculture and textile manufacturing towards more skilled activities in the service sector and higher value added elements of manufacturing.

[95] https://www.economy-ni.gov.uk/publications/forecasting-future-skills-needs-northern-ireland-1

4.2.4 Development of the food and drinks processing sector in Northern Ireland

In a 2012 paper entitled "the Development of the Food and Drinks Processing Sector in Northern Ireland (Literature Review and Preliminary recommendations)"[96] it was stated that compared to Scotland and the UK, Northern Ireland had a lower proportion of the population with qualifications at all levels. The difference may be in part due to access and uptake of education, or, due to a higher rate of migration in segments of the population with more qualifications. There was also an increasing gap in the percentage of employees receiving job-related training compared to Scotland and the UK.

The available evidence suggested that skills gaps may be an issue for Northern Ireland Food and Drinks Processing Sector (NIFDS) companies. One potential explanation is that the attractiveness of the NIFDS is lower than for other competing sectors. From the employer perspective, poor confidence in specialist food science, food technology, and engineering qualifications is an issue. There were also reports of the existence of high level hard to fill job vacancies at senior management and technical level in NIFDS. This is a typical vicious circle in the development process whereby low labour productivity reduces value added, which in turn restricts firms from employing a highly skilled workforce,

Government has a role in helping to break the cycle by creating an effective system of education and training to supply the agri-food system in Northern Ireland. The experience of other countries may help to design a solution to the problem. For example, the Republic of Ireland strategy has taken the approach of linking industry interests and expertise with education at the secondary and tertiary levels. Improved qualification uptake has been combined with apprenticeships to address management and marketing skills, and industry-led R&D has been focussed at universities and research institutes to build up research capabilities including post graduate research training in relevant topics.

[96] Wu, Z.; Minihan, E. & Finney, G. (2012). The Development of the Food and Drink Processing Sector in Northern Ireland: Literature review and preliminary recommendations, Agricultural and Food Economics, Agri-Food and Biosciences Institute (AFBI), Belfast.

As is the case for other economic sectors, the NIFDS is facing many long-term global and local challenges, such as food security, safety, changing consumption patterns, market segmentation, climate change and energy dependence. An effective strategy will need to mitigate such challenges and approach them as opportunities to provide leadership at the industry and national level. Government support, in dealing with these emerging, as well as current, issues, needs to reflect the strategic importance of the NIFDS in regional economic development and stabilisation.

In several areas, including innovation, scale, human capital and market development, government intervention can support NIFDS firms pursuing differentiation and cost leadership strategies. The prominence of small and medium-sized enterprises (SMEs) in the NIFDS means that a primary objective of public support will be to facilitate the pursuit of common interests. The main common interests identified in this review include bolstering the supply of productive and qualified labour. The report continued, "(3) A priority is to clarify the human capital needs in the NIFDS and adjust the local educational and training systems to meet the current and long term demand, thus contributing to a breaking of the deadlock of low value added and low productivity.

- In general, the private-public partnership model and the labour market should pay a more central role in reforming our educational and training systems
- Effectiveness of publicly supported training and education in meeting employer needs should be monitored and evaluated
- Management-level training should cover
    - Issues related to a large, low skilled workforce
    - Global business, brand management and marketing"

A report published in October 2012 on the UK Commission's Employer Skills Survey: Northern Ireland National Report[97] reported that the incidence of training had declined in recent years and was currently below 2005 levels but the majority of employers did invest in the training and further development of their workforce. However, training was unevenly distributed among workers. In particular, it was

[97] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/303453/evidence-report-60-executive-summary.pdf

those in low skilled occupations, those employed in small businesses and those who worked in specific sectors, such as agriculture and construction who received least training. For small businesses in particular this trend of low training levels was persistent through time.

Outside private services, graduate concentrations in agriculture, manufacturing, construction, retail and hotels and restaurants lagged between 10 and 60 per cent behind the UK average[98]. Additionally in order to produce internationally competitive products and services, a higher skills base will be required.

4.2.5 Ireland's Agri-Tax Review[99]

The Agri-Tax Review in Ireland, announced by the Minister for Finance in 2013, was a joint initiative by the Minister for Finance and the Minister for Agriculture, Food and the Marine. The purpose of the Agri-Tax review was to assess the costs and benefits of the various agricultural tax expenditures with a view to ensuring that the maximum benefit to the sector and the wider economy was being obtained. The overall objective of the review was **not** to change the level of Exchequer support to the sector through the tax system but rather to maximise the benefits to the economy for the existing level of State support.

The review represents a roadmap for the future policy direction of the agricultural sector, subject to changing circumstances. The outcome of the 'Agri-tax' review was published as part of Ireland's Budget 2015 and 12 tax measures in respect of the agri-sector were introduced. These measures in particular were selected as the ones most likely to help younger and qualified farmers, improve land usage and give farmers greater flexibility to allow them to smooth out their tax exposures arising from variability in farm incomes. In Ireland's Budget 2016, it was announced that four existing tax measures on stock relief and stamp duty relief had been renewed for three years

One of the key findings from the analysis undertaken during the Review and relevant to the DAERA Knowledge Framework evidence base, was that trained farmers have 12% higher levels of output compared with untrained farmers.

[98] https://www.economy-ni.gov.uk/publications/forecasting-future-skills-needs-northern-ireland-1
[99] http://www.finance.gov.ie/sites/default/files/AgriTaxReviewITIArticle.pdf

4.2.6 Innovation in the Irish Agri-food Sector

The University College Dublin and Teagasc[100] undertook a study[101] to investigate the performance of the Agri-food Innovation Systems (AIS) within Ireland by means of qualitative and quantitative analysis. The June 2014 report highlighted that much of the science and the efforts to encourage innovation are supply pushed rather than demand pulled. Furthermore companies were experiencing difficulties in accessing knowledge and the majority of engagement with universities was ad hoc in nature. The evidence indicated that finance, structural issues in agriculture, and challenges such as age profile, farm size, and fragmentation were key constraints to innovation at farm level.

Advisory services and agricultural education were identified as potential facilitators of innovation, however there needed to a cultural change whereby the agri-food sector should be more open to accepting the benefits of co-operation, collaboration and partnerships for innovation.

The June 2014 report made eight recommendations to help drive innovation in the agri-food sector in Ireland, for example greater incentives for companies to engage with R&D, strengthening engagement between universities and industry, and alternative funding arrangements. One of the report recommendations suggested that there was a need to rethink Ireland's education and advisory structures to ensure that they were fit for purpose in driving innovation through the agri-food chain. In terms of education there should be greater cross fertilisation between courses e.g. combining business and enterprise with science skills or a realigning of the agricultural colleges to create centres of excellence in particular aspects of agriculture (dairy, beef, tillage, horticulture); and in terms of advisory services there should also be a move away from a system driven by the bureaucratic requirements of the Common Agricultural Policy to one that drives innovation.

[100] **Teagasc** is the agriculture and food development authority in Ireland. Its mission is to support science-based innovation in the agri-food sector and the broader bioeconomy that will underpin profitability, competitiveness and sustainability.
[101] http://www.ucd.ie/t4cms/BOI_Innovation_report.pdf

4.2.7 The Economic Returns to Formal Agricultural Education in Ireland

This September 2014 study[102] reports that the benefits of formal agricultural education are clear - agricultural education improves a farmer's technical efficiency (the more efficient use of a given amount of resources) and allocative efficiency (choice of better inputs and outputs, leading to a more efficient allocation of resources). There are three main reasons why formal agricultural education improves technical and allocative efficiency.

1) Education, by helping farmers make better use of information and find solutions to problems, makes them better managers allocating their resources more efficiently.
2) Not only does education help farmers use existing information more competently but they also have better access to required information.
3) Educated farmers are more likely to adopt new technologies or products early because of their access to information and their ability to better distinguish between promising and unpromising innovations.

Findings

The main data source used in this study was the Teagasc National Farm Survey (NFS) for the years 2001-2011[103]. The study showed that over that period;

- The Certificate of Agriculture (FETAC Level 5[104]) is now considered the key foundation qualification.

- The percentage of farmers with a formal agricultural education increased from 24% to 44%, with a greater increase in the proportion of farmers achieving an agricultural certificate, going to agricultural college or attending short courses compared to those achieving university level agricultural training.

102 https://www.teagasc.ie/media/website/publications/2014/Teagasc_Impact_of_Education_Report.pdf

103 The NFS surveys a sample of approximately 1,100 farms each year. In the NFS, the principal measure of the income arising from the year's farming activities is Family Farm Income per farm (FFI). Most farms in Ireland contain multiple enterprises (beef cattle, sheep, dairy cows, cereals etc.) and so the NFS classifies a farm by the dominant enterprise. The dominant enterprise is defined as the system with the highest share of gross margin

104 https://qhelp.qqi.ie/learners/qualifications-recognition-advice/comparing-qualifications-in-the-uk-and-ireland/Qualifications_Can_Cross_Boundaries.pdf

- In the dairy, arable and mixed livestock systems, the proportion of farmers with a formal agricultural qualification exceeded the average, whereas for the cattle rearing and cattle other systems, it was below average.

- Family farm income was highest in those households where the farmer had either an agricultural certificate or had gone to agricultural college – being consistently between 2 and 3 times higher than those with no formal agricultural education qualification.

- Farmers with some formal agricultural education had larger farms. Over the period, the size of farm for those with agricultural college, certificate, university qualification or short courses had increased and were consistently between 1.6 and 1.9 times larger than those farmers without formal agricultural education.

- Farmers with agricultural college, certificate or university education had an income per hectare greater than the average; those with short course education had an income per hectare slightly below the average.

- While farm income per hectare had fallen over the period for those with no agricultural education and those with short courses by 1.8% and 10% respectively, for those with agricultural college, certificate and university education, it had grown by 14%, 19% and 17% respectively.

- Formally educated farmers had higher average gross margins per hectare: typically, average gross margins per hectare were between 1.3 and 1.7 times higher than for those farmers who had no formal agricultural education.

- The results confirmed a high private return[105] to investment in agricultural education (8.8%). In addition, there was a high social return to investment in

[105] The Internal Rate of Return (IRR) is the discount rate that equates the present value of benefits from an agricultural education to the present value of the costs of gaining that education. The rate of return can be viewed from the perspective of the farmer (private returns) and from society (social returns). For a student or their family, they will focus on costs and benefits that apply to the student in terms of foregone earnings, course fees and returns in terms of income. This is known as the private rate of return. From the perspective of the state, the benefits relate to the impact on output and other

agricultural education at farm level (13.4%), which rose to 24.5% when the wider supply chain impact was factored in. The results compare favourably with returns to other types of education.

Factors influencing the participation of farmers in formal agricultural education

There are several existing or recently concluded policy instruments in Ireland aimed at incentivising the restructuring and modernisation of the agricultural sector, which require a minimum level (FETAC Level 6[106]) of formal agricultural education as part of their mandatory qualifying criteria e.g. Stamp Duty Exemption, Stock Relief, New Entrant in a Milk Production Partnership, Allocation of Milk Quota to New Entrants (this initiative ended in 2013).

Factors influencing the choice of formal agricultural education

In terms of attending an agricultural college the following factors were found to have influenced farmers' choices;

- Farm scale factors (total livestock units, forage area, size of farm) all positively influenced attendance as did higher land values;
- Distance to college and age had a negative influence on the probability of attending agricultural college; and
- Farmers with good or medium quality soils were less likely to attend agricultural college, perhaps a reflection that more productive farmers might decide not to pursue a formal agricultural education.

Returns to Yield and Intensity from Formal Agricultural education

Analysis confirmed that yield and intensity were positively and significantly impacted by formal agricultural education. More specifically:

- Within dairying both yields and intensity were positively influenced by attending agricultural college and achieving an agricultural certificate;
- Within the cattle farming sector both yields and intensity were positively influenced by attending agricultural college, achieving an agricultural certificate and attending short courses;

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income streams relative to the total cost of providing the education. This is known as the social rate of return.

[106] https://qhelp.qqi.ie/learners/qualifications-recognition-advice/comparing-qualifications-in-the-uk-and-ireland/Qualifications_Can_Cross_Boundaries.pdf

- Within the sheep sector intensity was positively influenced by attending agricultural college, achieving an agricultural certificate and attending short courses; and
- Within the cereals sector, due to small respondent numbers, the analysis did not reveal any significant relationships between any of the education variables and yield. However, all the education variables, except for university course, had the expected positive influence to cereal yields.

4.2.8 Food Wise 2025 – A 10 year vision for the Irish agri-food industry

The industry Food Wise 2025[107] strategy, developed by the Agri-Food Strategy Committee for the Department for Agriculture, Food and Marine, was published in July 2015 and sets out a cohesive and strategic plan for the development of the agri-food industry in Ireland up to 2025. The long term vision set out the Report is of 'Local Roots Global Reach' based on the continued development of the sector where efficient and environmentally-friendly production delivers sustainable export growth on global markets.

The following growth projections are outlined in the Report and the Agri-Food Strategy Committee believe that they are achievable by 2025:

- Increasing the value of agri-food exports by 85% to €19 billion.
- Increasing value added in the agri-food, fisheries and wood products sector by 70% to in excess of €13 billion.
- Increasing the value of Primary Production by 65% to almost €10 billion
- The creation of an additional 23,000 direct jobs in the agri-food sector all along the supply chain from primary production to high valued added product development

To achieve the projections set out above, Food Wise 2025 identified over 350 recommendations to achieve sustainable growth that would require a concerted and coordinated approach by primary producers, industry, Departments and State agencies[108].

[107] https://www.agriculture.gov.ie/media/migration/foodindustrydevelopmenttrademarkets/agri-foodandtheeconomy/foodwise2025/report/FoodWise2025.pdf
[108] https://www.agriculture.gov.ie/foodwise2025/

The Report highlighted the fact that there were skills gaps in the sector, and as the agri-food sector becomes more knowledge intensive, education and skills development would be critical for future success, and there needed to be an emphasis on upskilling and training to help drive the future development of the sector.

At producer level, the strategy supports the development of ongoing and lifelong education, training and knowledge transfer programmes to give farmers, fishermen and forest owners the tools and skills to develop their business enterprises, maximise their profitability and utilise their resources in the most productive sustainable manner by enabling them to integrate the latest technologies and processes into their day to day operations. Specific examples of training detailed in the Report include; financial and business development management skills, knowledge transfer and management training.

At processing level the focus of the strategy is on allowing Irish agri-food companies to develop to their maximum potential by helping them to attract and access the human capital they need to grow their companies through product or process innovation, increased capacity to absorb new technologies and product research, develop leadership and corporate governance expertise, financial planning and business expansion acumen and through enhanced marketing capability to develop new markets for their products[109].

4.2.9 Northern Ireland Employer Skills Survey

The Employer Skills Survey[110] is managed by the UK Commission for Employment and Skills (UKCES) and provides robust intelligence from UK employers on skills issues and workforce development activities. Over 4,000 interviews were conducted with businesses in Northern Ireland during the course of the survey in 2015.

The survey showed that[111];

[109] https://www.agriculture.gov.ie/media/migration/foodindustrydevelopmenttrademarkets/agri-foodandtheeconomy/foodwise2025/report/FoodWise2025.pdf
[110] https://www.economy-ni.gov.uk/publications/ukces-employer-skills-survey-2015-northern-ireland-toolkit
[111] http://www.4ni.c o.uk/northern-ireland-news/211106/employer-skills-survey-results-published

- There was a steep rise in vacancy levels among employers reflecting a high demand for labour;
- There was substantial growth across Northern Ireland in the number of employers actively recruiting in 2015 compared with 2013;
- There is demand for improved people and personal skills with time management and prioritisation of tasks commonly lacking across the workforce;
- The complexity of job roles is growing, across all occupations, requiring individuals to juggle multiple strands of work and responsibility. Encouragingly employers are responding through training, with increased use of e-learning, but there is clear demand for employers to do more training geared specifically to the requirements of an evolving workplace;
- Vacancies in Northern Ireland were 'easier-to-fill' compared with England, Scotland and Wales. Hard to fill vacancies were lower as a proportion of total vacancies in Northern Ireland when compared to the rest of the UK (22 per cent compared to 33 per cent);
- The percentage of total vacancies that were skills shortage vacancies[112] fell in Northern Ireland from 2011 (whereas the percentage rose in the rest of the UK);
- The most common type of action taken by Northern Ireland establishments to fill skills shortage vacancies included increasing advertising/recruitment spend; using new recruitment methods; and redefining existing jobs;
- Employers in Northern Ireland were the least likely to report a lack of proficiency in their staff. Just nine per cent of employers cited skills gaps[113] within their establishment here (down from 14% in 2013). Skills gaps were more prominent for establishments in Belfast, those employing 100-249 employees and the Hotel & Restaurant, Wholesale & Retail and Manufacturing sectors;
- Close to one in five employers in Northern Ireland reporting a skills gap indicated that this had a major impact on their business (similar to the

[112] A skills shortage vacancy is a type of vacancy caused by a shortage of skills or experience the employer looks for

[113] Skills gap is the proportion of establishments with at least one employee deemed by their employer to be not fully proficient in their role

proportion in the rest of the UK) and the main action taken by business to address skills gaps was to increase training;

- Establishments in Northern Ireland were least likely to have difficulties with retaining staff (7%) and establishments in Scotland most likely to report them (10%);
- Across the UK, nearly two in five establishments (39%) reported having employees with qualifications more advanced than required for their current job role. Employers in Northern Ireland and England were marginally less likely than those in Wales and Scotland to report under-utilisation[114] (28% and 30% compared to 34% and 32%, respectively);
- There were also increases in the proportion of the workforce trained in Northern Ireland (56% in 2011, 59% in 2013 and 64% in 2015). In Northern Ireland, larger employers were more likely to train as well as the public sector.

The survey highlights that Northern Ireland is performing well on a number of measures but further investment in skills training is required to meet the needs of the Northern Ireland economy and to build skills for the future.

4.2.10 Teagasc Technology Foresight: 2035

The Teagasc Foresight: 2035 Report[115] was published in March 2016 and presents a vision for Irish farming, food processing and the rural economy. The focus of the Report is on the identification of emerging technologies that will drive the competitiveness and sustainable growth of the Irish agri-food industry and bioeconomy sector over the next 20 years, and its goal is to identify new areas of technology in which Ireland needs to invest.

The Report states that the adoption of new technology and management systems by Irish farmers has traditionally been low, but new technologies and farming systems will only contribute to a globally sustainable Irish agri-food and bioeconomy sector if adoption rates are improved. This therefore calls for increased emphasis on education and extension of services to help increase the skills and knowledge base

[114] Under-utilisation is the proportion of establishments with at least one employee with skills and qualifications more advanced than required in their current job role

[115] https://www.teagasc.ie/media/website/publications/2016/Teagasc-Technology-Foresight-Report-2035.pdf

of farmers and food producers. An increasingly technology driven industry will require practical multi-skilled farmers and workers, trained using practice-based applied education, combined with an apprenticeship model (mentoring). To make the best use of the new technologies e.g. robotics, GPS technology, environmental controls etc. it is essential to educate farmers and farm managers in their use.

4.3 Summary of key points from Section 4 – Evidence Base

Research findings have shown that:

- The educational attainment of the farming sector in Northern Ireland is low. Farm operators of working age in Northern Ireland, (between 25 and 65), in general, have lower levels of educational attainment compared with males in the wider population.
- In Northern Ireland farm operators running larger farm businesses were more likely to have an agricultural based qualification at certificate level or above compared with older farmers and those running smaller farms.
- Investment in education pays substantial dividends in terms of higher wage rates.
- A solid secondary education plus agricultural training is a very sound investment.
- An agricultural qualification was found to generate an on-farm wage premium relative to an unqualified farmer.
- There is a wide range of skills gaps in the farming sector in Northern Ireland and demand exists for generic business skills such as record keeping, basic computing or IT, accounts, planning and organising, and communication skills. Businesses need training in complying with legislation, and also technical and practical skills training was also needed.
- Intermediate education was regarded as the maximum required for supervisory level position in the food industry and degree level the minimum for specialist managerial levels.
- Over two-thirds of identified farm business successors do not have an agricultural qualification.
- Food learners were twice as likely as land-based learners to continue on to further study.
- After graduating, a very significant proportion of CAFRE higher education students were either successful in gaining employment or were going onto further study. When analysed on a discipline basis , the surveys found that the majority of CAFRE's higher education graduates in agriculture and horticulture, food and communications were working in Northern Ireland so, for these disciplines, the Department has been educating

students primarily for the local economy. The exception is the equine students, where the majority of graduates were employed outside of Northern Ireland. It is worth noting that although Horticulture has a Foundation Degree in place it is yet to have an Honours Degree and this may be impacting Higher Education recruitment in this area.

- Better engagement with stakeholders in the agri-food industry through more integrated technical exchange systems may be a means of raising technology adaptation rates and thus the competitiveness of the agri-food industry in Northern Ireland.
- Research has shown an under-representation of graduates in Northern Ireland relative to UK averages with a particular under-representation in a number of sectors, including agriculture.
- Government has a role in helping to break the cycle by creating an effective system of education and training to supply the agri-food system in Northern Ireland. Research has suggested that a priority should be to clarify the human capital needs in the Northern Ireland Food and Drink Processing Sector and adjust the local educational and training systems to meet the current and long term demand, thus contributing to a breaking of the deadlock of low value added and low productivity. In general, the private-public partnership model and the labour market should pay a more central role in reforming our educational and training systems.
- In Ireland trained farmers have 12% higher levels of output compared with untrained farmers, and agricultural education has a significant positive impact on family farm income (on family farms with agricultural qualifications income was consistently between 2 to 3 times higher than those with no formal agricultural education qualification).
- In order to produce internationally competitive products and services a higher skills base in Northern Ireland will be required.

SECTION 5 DAERA INVOLVEMENT WITH EDUCATION

5.1 Origins of Current Departmental Education Provision

The Department has been involved with the provision of education since its foundation, as the Ministry of Agriculture, in 1921. The Department's education policy has developed organically since that time. The Department's statutory authority for involvement in education and training comes from the Agriculture Act (Northern Ireland) 1949[116] as amended by the Agriculture (Northern Ireland) Order 2004[117]. Section 5 (1) of the 1949 Act states that the Department *may provide, equip and maintain colleges and other institutions for the purpose of instructing persons in agriculture and related subjects* and Section 5 (2) states that the Department *may provide, or arrange for others to provide, education in agriculture and related subjects*.

In 1985, the Department developed a Policy on Education & Training for Agricultural Production and Food Processing. This policy appears to have been very broad, stating that the Department's educational and training objectives should be: '*to foster an efficient agricultural and food industry by providing or ensuring the provision of cost effective courses meeting the needs of industry*' (i.e. a demand-led approach). It was supplemented in 1986, when a working party recommendation to include horticultural education and training was accepted.

A major review of the Education and Training Policy in Agriculture, Horticulture and Food Technology was completed in 1991. This recommended that the Department's future policy should be based firmly on existing policy modified and refined as appropriate to reflect the changing needs of industry and the community. In particular, Departmental policy and practice was to be compatible with the policy and practice of the then Department of Education for Northern Ireland and the Department of Economic Development as implemented through the Education and Library Boards and the Training & Employment Agency. The policy stated that the then Departmental Colleges should be directly involved in providing vocational courses for people who are aged over 16 years. Courses delivered were to be based on a clear identification of need, that is, demand led.

[116] http://www.legislation.gov.uk/apni/1949/2
[117] http://www.legislation.gov.uk/nisi/2004/3327/contents

A subsequent development was *Education & Training –Towards the Year 2000,* a paper which essentially endorsed the 1985/1991 policy position.

In 2001, the then DARD Minister Bríd Rodgers commissioned a major review of agri-food education and research in Northern Ireland. The review panel was led by Dr Daniel O'Hare. Insofar as education is concerned the O'Hare Review of Agri-food Education and Research and Development [118] found that "*the current education and R&D activities of DARD supply a number of needs. The Higher Education provision... is designed to ensure the supply of high calibre agriculture and food science graduates to industry in Northern Ireland as well as to government*. *The Further Education activity at DARD Colleges is intended to provide suitably trained people for the agri-food industry as well as retraining on a lifelong learning basis to equip people to respond to technical advances or changes in market demand*." That objective remains the case today.

The O'Hare Review recommended that the three Departmental Colleges (Greenmount, Loughry and Enniskillen) should be integrated with neighbouring Further Education Colleges and the development and technology transfer work should transfer along with other scientific services to a new Non-Departmental Public Body (NDPB).

The Department rejected that particular recommendation and instead formed the College of Agriculture, Food and Rural Enterprise (CAFRE) in April 2004 by combining the three Colleges into a single College, with three campuses at Enniskillen, Greenmount and Loughry.

To provide an internal customer/contractor relationship, it was decided that CAFRE would have a separate business plan, targets and budgets and produce separate management accounts. It continues its advisory, teaching and lifelong learning provision. A College Advisory Group (CAG) was appointed, with external representation, to advise on operational matters. The College Advisory Group:

- Makes recommendations regarding the development of the College Business Plan to meet the needs of industry, participants and the community

[118] http://webarchive.nationalarchives.gov.uk/20040726025157/dardni.gov.uk/core/dard0430.htm

in line with the Strategic Plan and its policies on education and technology transfer;

- Monitors the programmes delivered by the College and makes recommendations regarding their relevance to the Strategic Plan and their effectiveness in meeting the needs of industry, participants and the community;
- Monitors the delivery of the College Business Plan, including achievement of physical and financial targets, and value for money and makes recommendations on how performance could be improved; and
- Advises the College on the marketing and promotion of programmes to secure optimum industry and community involvement in the development, delivery and uptake of programmes.

In addition CAFRE has overall responsibility for the delivery of knowledge and technology transfer and adoption, and liaises closely with AFBI (see below), universities, research institutes and other providers to ensure cohesive and comprehensive delivery.

The Agri-Food and Biosciences Institute (AFBI) was established under the powers of the Agriculture (Northern Ireland) Order 2004 with its main role being to carry out scientific work in support of Departmental policies and responsibilities. This work includes statutory, diagnostic and analytical testing, as well as research and development. This is set out in an annually agreed work programme for which AFBI receives a grant-in-aid from DAERA. Diagnostic, analytical and research services were transferred from CAFRE to AFBI. Knowledge and technology transfer functions were retained within CAFRE with close links to AFBI. The School of Agriculture and Food Science was transferred from CAFRE to The Queen's University of Belfast.

5.2 DAERA's Current Role in Education

DAERA's current role in education sees activity extend across a wide area including:

a. Formal and non-formal education programmes through CAFRE;
b. Measures within the Rural Development Programme 2014-2020;
c. Postgraduate Studentships;

d. Support for the Young Farmers' Clubs of Ulster (YFCU);
e. Working with partners to deliver educational courses at CAFRE; and
f. Miscellaneous – for example commitments in the Rural White Paper Action Plan, and use of Forest and CAFRE Estates to educate the wider public etc.

5.2.1 CAFRE

CAFRE remains the Department's main conduit for the development of people who are entering or already working in the agri-food industry. Formal education for the agri-food industry is delivered through CAFRE on three campuses. Each campus is specialised: land based/environmental (agricultural and horticultural related provision) is delivered at Greenmount; food technology , packaging and business for agri-food and rural enterprise provision is delivered at Loughry and equine related provision is delivered at Enniskillen. The further (FE) and higher (HE) education provision is targeted at new entrants and existing workers in the agri-food industry. Courses lead to nationally recognised qualifications and clear progression routes enable students to move easily through the various levels.

In 2014/2015, CAFRE's total operating costs were £20.37million. Education activities comprising further and higher education programmes accounted for 44% of total costs while development activities accounted for 47% of total costs. The remaining 9% of costs were incurred providing technical support to the Department and other Government Departments, managing the New Entrants Scheme, facilitating community education and providing accommodation for other Departmental users of the CAFRE estate. The total number of students enrolled on further and higher education programmes in 2014/2015 was 1,818 (1,147 FTSEs) and the average total cost of delivering these programmes was £7,789 per full-time student equivalent.

CAFRE delivers high quality applied education and training programmes, relevant to the needs of students and employers and compliant with the requirements of awarding bodies. Each year all of the further and higher education programmes are reviewed by the relevant teaching teams and the teaching and learning committees. In addition they are audited by an internal quality management team and verified/moderated by external verifiers from the Awarding Bodies such as Pearson,

City and Guilds, Institute of Leadership and Management, The Queen's University of Belfast and the Ulster University.

The quality of education provided is further evidenced by the retention and success rates of students on the various programmes. For the 2014/2015 year the retention rate across all further and higher education programmes was 89% i.e. the number of students who completed their course. CAFRE's success rate (i.e. the number of students who achieved their target qualification) of 80% percent was considerably higher than the equivalent figure for the DEL (now DfE) colleges (74%).

CAFRE offers a wide range of bespoke and accredited short training courses at various levels for those working within the agri-food industry. Practical courses aim to develop the skills of operatives, while technical and business management courses are targeted at managers to improve enterprise efficiency, business management and product quality. In 2014/2015, industry training (Challenges and Short Courses) was delivered to 12,543 participants (311FTSEs) at an average total cost per FTSE of £14,843. The majority of industry training expenditure was spent on the agriculture sector at 90%, with food, equine and horticulture sectors accounting for 5%, 3% and 2% of spend respectively.

The demonstration of new technologies and systems to the industry is achieved mainly through technology projects. These projects aim to equip those in the industry with the knowledge, skills and experience to adopt the appropriate technologies and systems within their businesses. Depending on the project, economic, environmental, health and safety and animal welfare benefits will accrue to the agri-food industry. In 2014/2015 through the Knowledge and Technology Transfer Programme, 1,369 new technologies were adopted.

CAFRE has also developed a range of benchmarking tools for farmers and growers. These provide participants with a standard method of recording and analysing enterprise and business performance data using on-line databases. Participants can then compare their performance with similar businesses and set and monitor realities targets for the development of their businesses. During the 2014/15 year 1,324 farm businesses were benchmarked. Development planning helps farmers and growers

clarify their business objectives and identify their development needs and specify the type of support required. In 2014/2015, 2,124 business development plans were drawn up.

The following CAFRE targets were included in the Departmental Annual Business Plan for 2015/16:

- Deliver a suite of industry training programmes to 12,000 people with 4,025 people achieving nationally validated qualifications at Level 2[119] and above.
- Deliver a programme of Knowledge and Technology Transfer leading to the adoption of 1,500 technologies by agri-food businesses.

The numbers involved indicate a significant engagement with those working in the agri-food industry.

Structures have been partly established to ensure cohesive and comprehensive delivery of the knowledge and technology transfer/adoption programme.

5.2.2 Further and Higher Education Programmes at CAFRE

During the 2015/16 academic year there were 1,795 full and part-time students enrolled on CAFRE's HE and FE programmes (an increase in total enrolments of nearly 10% over the past 10 years) and demand for places is very strong. Details of enrolments in CAFRE courses are provided in Figures 9-19.

Figure 9**9** shows total course enrolments at CAFRE over the past 10 years across both further and higher education in the agriculture, horticulture, equine, food and communication disciplines. Agriculture students make up the greatest percentage of student enrolments at 43% over the past 10 years. There has been a steady rise in enrolments in this discipline and annual enrolments are now over one third higher than they were 10 years ago.

Horticulture students account for some 19% of enrolments, food students for 20%, equine students for 12% and communications students for 6% over the 10-year period.

[119] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

Figure 9 Total Enrolments on Further and Higher Education courses at CAFRE 2006/07-2015/16

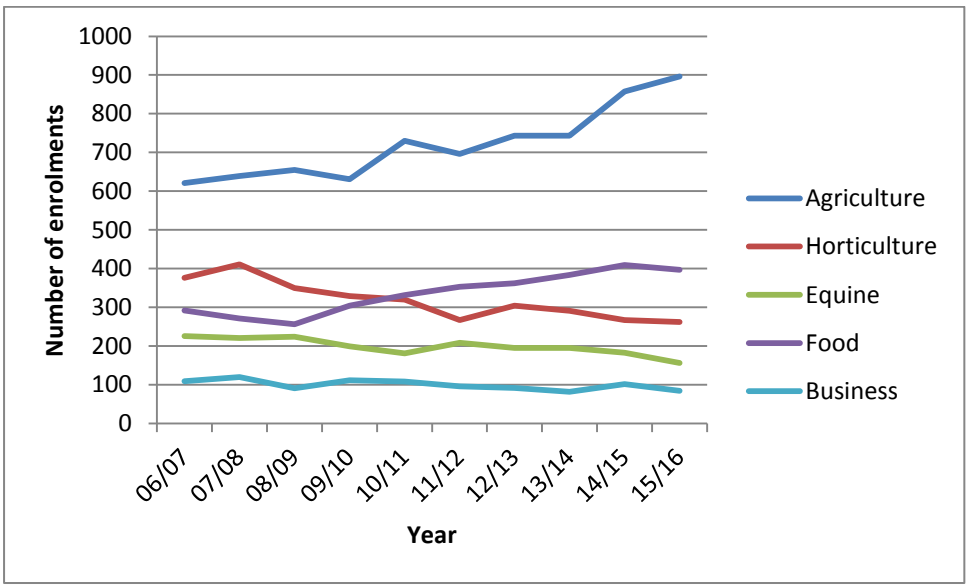


Figure 10**10** shows the total course enrolments of part-time and full-time students in both further and higher education programmes at CAFRE over the ten year period. This clearly shows a steady increase over the period in the number of full time students and overall a decline in the number of part time students.

Figure 10 Total Full time v Part time enrolments on Further and Higher Education courses at CAFRE 2006/07-2015/16

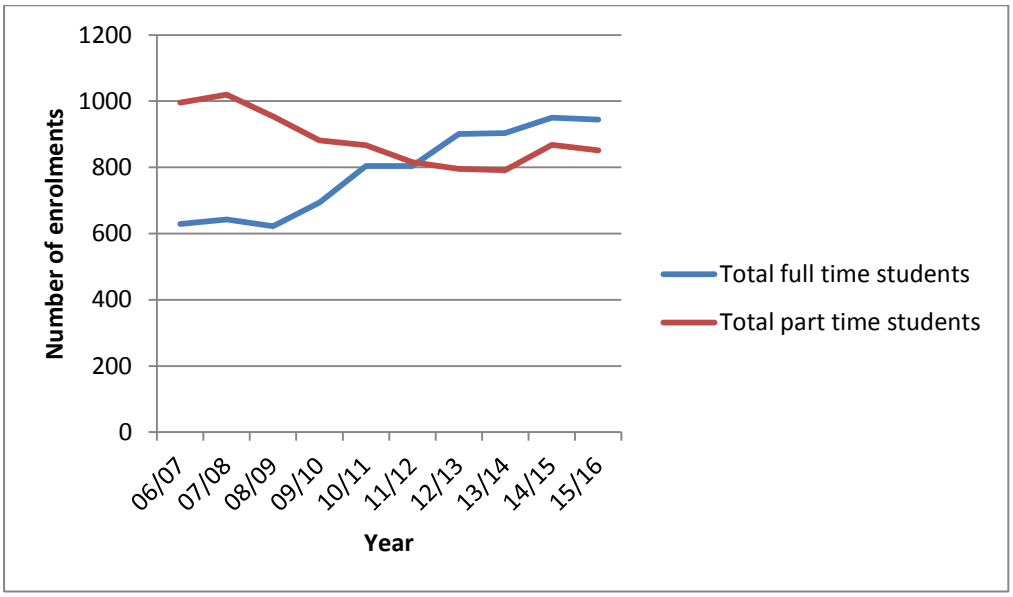


Figure 111 shows enrolments on full-time further education courses over the last 10 years. There has been a substantial increase in the number of full-time enrolments of students undertaking FE Agriculture courses since 2006/07. This is perhaps a partial reflection of the downturn experienced by the construction industry during this time. Prior to this many young people considering a career in agriculture would also have undertaken a vocational qualification in a 'trade'. Enrolments in Horticulture and Equine courses have remained fairly static over the 10 year period, whilst there has been a steady increase in the number of enrolments in the food discipline.

Figure 11 Number of enrolments of full time FE students by discipline at CAFRE 2006/07-2015/16

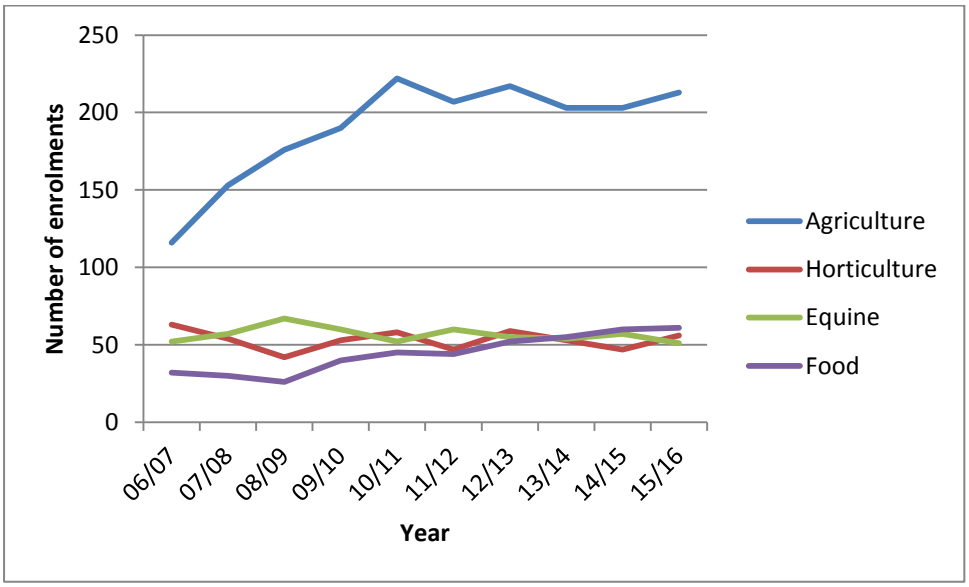


Figure 12**12** shows the number of enrolments of part time FE students by discipline at CAFRE over the last 10 years. Over the ten year period, there has been a general downward trend in the number of part time student enrolments in horticulture and equine disciplines. Some of this trend is due to stricter entry criteria now being applied to ensure only those likely to make an impact on the industry secure places especially on horticulture programmes. Since 2011/12 there has been a marked upward trend in the number of part time student enrolments onto agriculture courses, with the number of part time students in this discipline the highest it has been in 10 years. The number of part-timepart-time FE student enrolments in Food courses has remained fairly consistent.

Figure 12 Number of enrolments of part time FE students by discipline at CAFRE 2006/07-2015/16

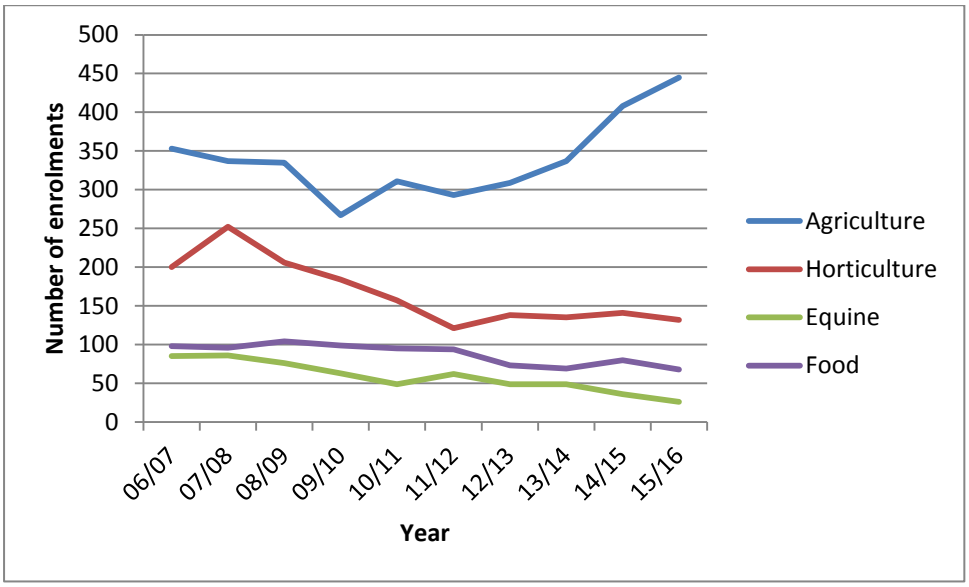


Figure 133 shows number of enrolments of full-time HE students at CAFRE over the last 10 years. Since 2008/09 there has been a notable increase in the number of enrolments of full-time students undertaking HE agriculture and food courses, with enrolments more than doubling in both disciplines over the ten year period. Enrolments in the remaining three disciplines have remained fairly static.

Figure 13 Number of enrolments of full time HE students by discipline at CAFRE 2006/07-2015/16

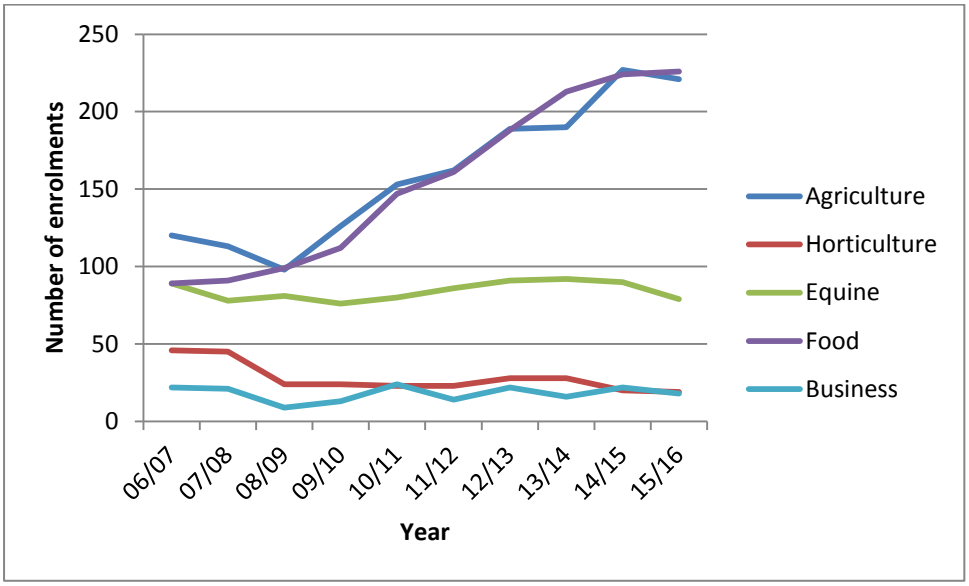
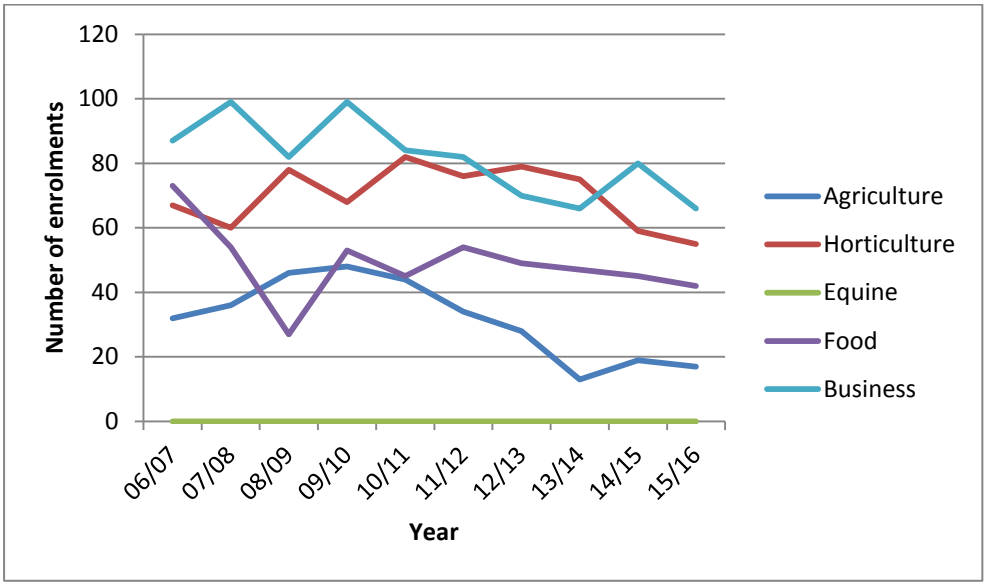


Figure14 shows the number of enrolments of part time HE students by discipline at CAFRE over the last 10 years. There has been an overall downward trend in number of enrolments of part time HE students across all disciplines over the past 10 years. There has been a fall in the number of HE students on part time agriculture courses and a significant decline in the number of students enrolling in part time food courses. Enrolments in part time business courses have likewise seen a steady decline in enrolments. Enrolment in part time horticulture courses has experienced peaks and troughs however in general the number of enrolments has remained fairly consistent. CAFRE does not offer part time Equine courses at HE level.

Figure 14 Number of enrolments of part time HE students by discipline at CAFRE 2005/06-2014/15

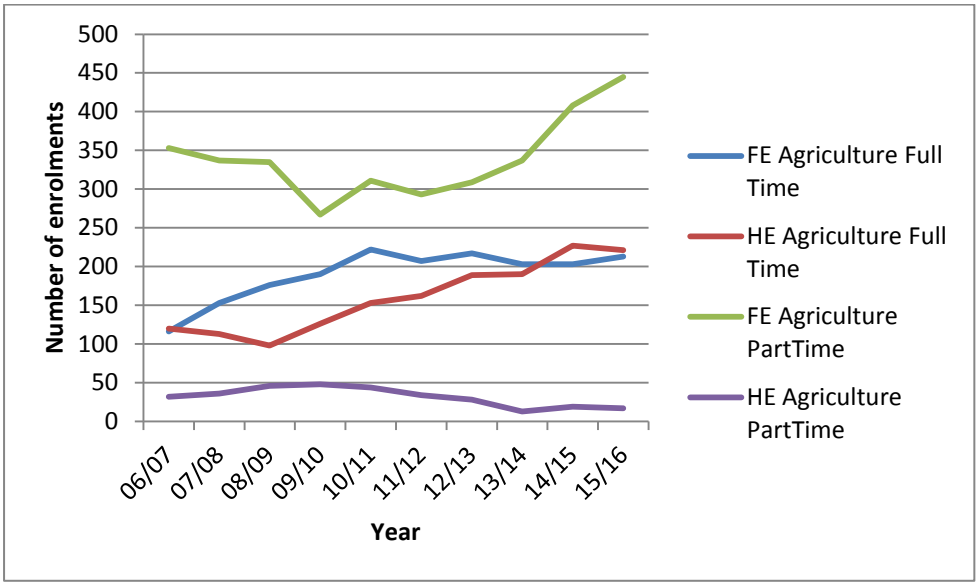


Figures 15-19 show the number of enrolments, part time and full time, onto FE and HE courses at CAFRE in the five disciplines (agriculture, horticulture, equine, food and communications) over the ten year period from 2006/07-2015/16,

Agriculture course enrolments

Figure 15 shows enrolments for full time and part time FE and HE agriculture courses over the past 10 years. This shows that the highest number of student enrolments has been in part time FE courses. The enrolments onto full time HE and FE agriculture courses have almost doubled over the 10 year period. Enrolments for the part time HE agriculture courses have remained fairly static.

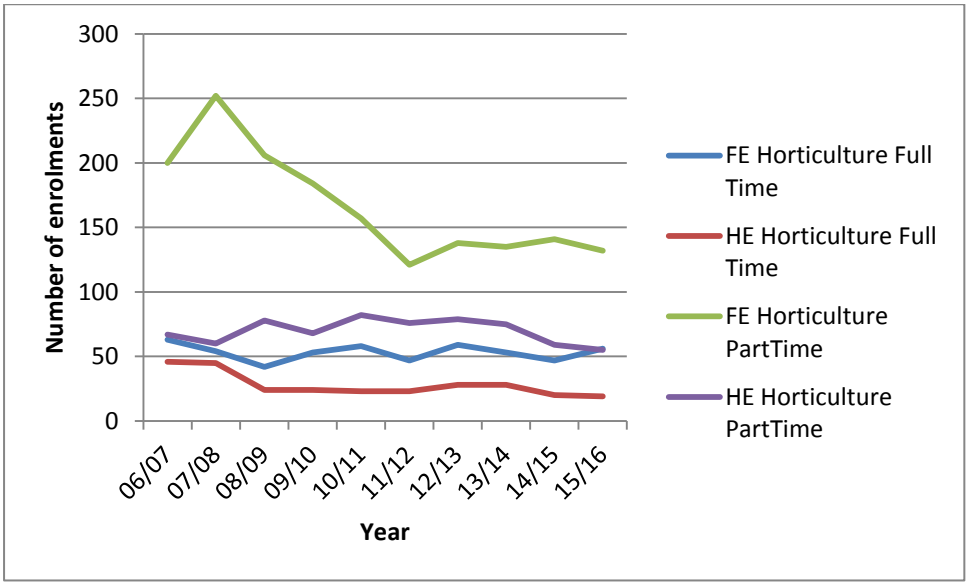
Figure 15 Enrolments on FE and HE agriculture courses at CAFRE 2006/07-2015/16



Horticulture course enrolments

Figure 16 shows the number of enrolments on full time and part time FE and HE horticulture courses over the past 10 years. This shows that the highest number of student enrolments has been in part time FE horticulture courses. The overall trend in enrolments in all of these courses is downwards most likely reflecting a new approach to recruitment focusing on applicant willingness and ability to complete entire course programmes and the general economic downturn.

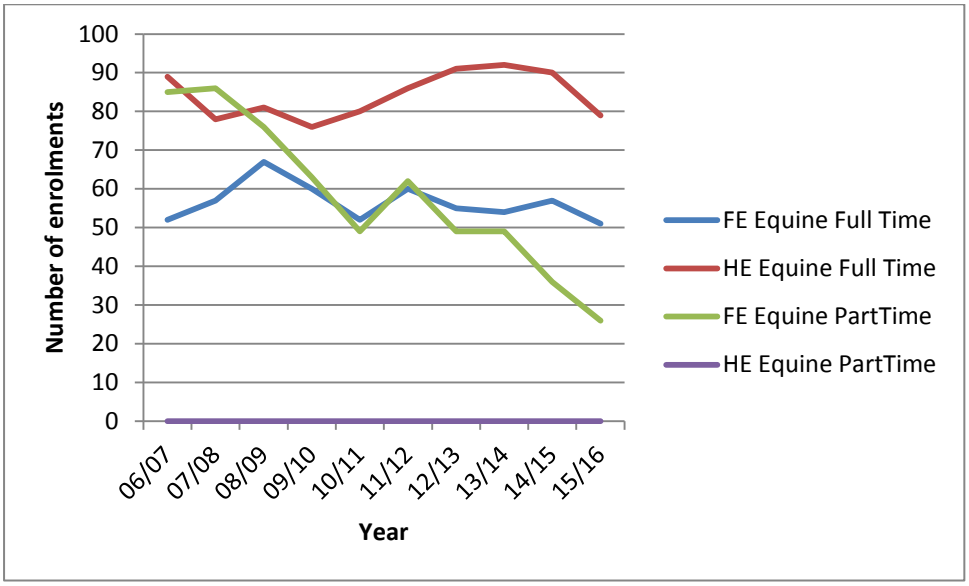
Figure 16 Enrolments on FE and HE horticulture courses at CAFRE 2006/07-2015/16



Equine course enrolments

Figure 17 shows the number of enrolments on FE and HE equine courses at CAFRE over the past 10 years. This shows the highest number of student enrolments has been in full time HE courses. Although originally enjoying higher enrolments than the FE full time courses, the trend in enrolments in part time FE courses has substantially declined over the years, whilst the trend in enrolments for the FE full time courses has remained fairly consistent.

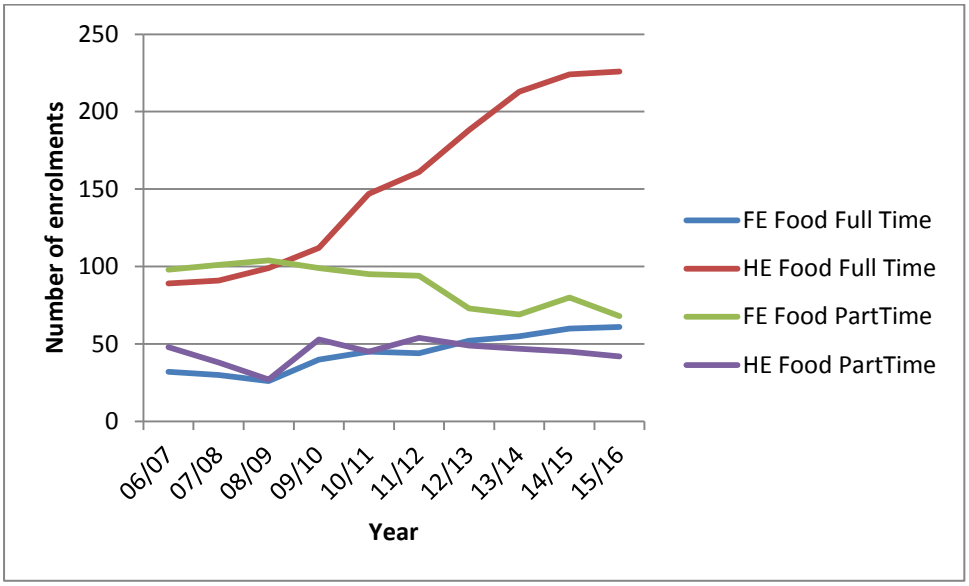
Figure 17 Enrolments on FE and HE Equine course at CAFRE 2006/07-2015/16



Food course enrolments

Figure 18 shows the number of enrolments on FE and HE food courses at CAFRE over the past 10 years. This shows the highest number of student enrolments has been in full time HE courses and that enrolments in this area have risen steadily and substantially since 2006/7. HE part time enrolments have experienced an overall decline. FE part time enrolments have remained consistent over the 10 year period, whilst FE full time enrolments have steadily increased.

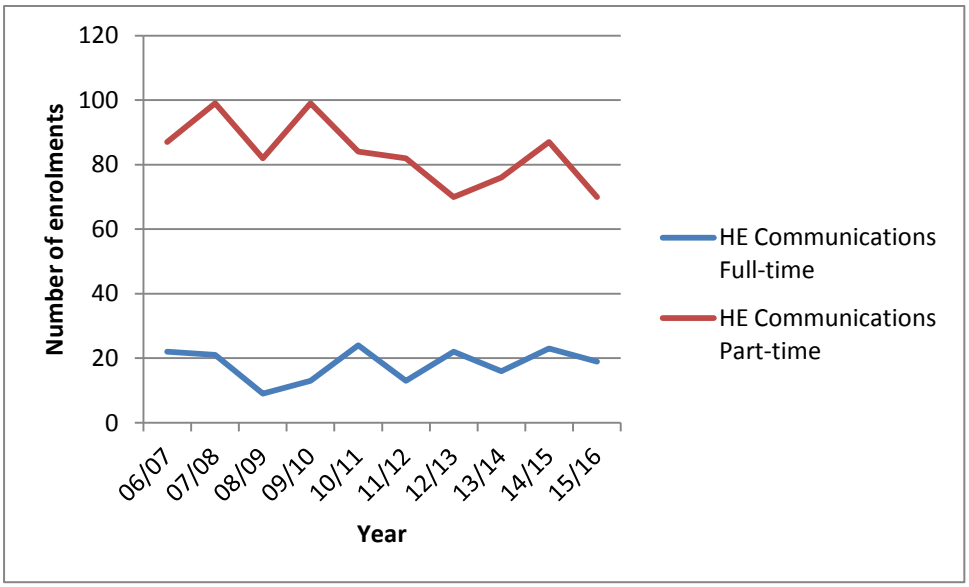
Figure 18 Enrolments on FE and HE Food courses at CAFRE 2006/07-2015/16



Business course enrolments

Figure 19 shows the number of enrolments on full time and part time HE business courses over the past 10 years (CAFRE does not offer business courses at FE level). The figure shows that although enrolments on part time courses experienced peaks and troughs they have been steadily declining over the past 10 years.

Figure 19 Communications enrolments 2006/07-2015/16



5.2.3 CAFRE Industry programmes

Within CAFRE the Development Service is responsible for the delivery of people development programmes to those working in the agri-food industry to enable owners, managers and workers to develop appropriate skills and competences to enable the competitive and sustainable development of their businesses.
CAFRE has gradually altered the emphasis from supporting farmers by providing reactive advice to developing farmers through competency development programmes.

CAFRE Development Service comprises 5 Branches:

- Dairy, Pigs and Poultry Development Branch
- Beef and Sheep Development Branch
- Crops and Horticulture Sustainability Development Branch
- Food Technology Development Branch
- Rural Training Development Branch

Development Service staff are located in 11 local DARD offices throughout Northern Ireland and at Greenmount, Loughry and Enniskillen Campuses.

CAFRE Development Service targets

The following CAFRE targets were included in the DARD Corporate plan for 2014/16:

- Achieve and maintain a positive differential of at least 6% in the performance of Departmental assisted farm businesses when compared with regional averages based on agreed performance indicators.
- Deliver a suite of industry training programmes to **12,000** people with **4,025** people achieving nationally validated qualifications at Level 2[120] and above.
- Deliver a programme of Knowledge and Technology Transfer leading to the adoption of **1,500** technologies by agri-food businesses.

Currently the Development Service offers four main products to its client base, namely:

[120] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

- **A Development Plan** is used to address the differing needs of people and businesses to ensure that Development Service understands and responds appropriately. It results in a tailored Development Plan for the business in which business objectives are clarified, development needs identified and the appropriate support agreed. The largest area of growth has been within the dairy sector, with significant gains also taken place with the Beef/Sheep and Food sectors.

- **Benchmarking** of the business to assist business development. Development Service has developed a range of benchmarking tools for farmers and growers. These provide participants with a standardised way of entering performance data on powerful online databases. This enables participants to compare their performance with other similar businesses, and with the support of the Development Service to set and monitor realistic targets for the growth of their business.

- **Industry training** to develop the skills and competences of people working in the industry to enable them to develop sustainable businesses. It is delivered through various tools including:

    - *Short courses* – these typically last from a half to ten days, with delivery co-ordinated primarily from Greenmount Campus and Enniskillen Campuses. Practical courses aim to develop the skills of workers. Areas of growth in the past number of years have been in Health and Safety related training and training courses related to compliance with legislative, quality assurance and environmental standards. It is worth noting that many students on formal education programmes undertake short course qualifications as part of their study at CAFRE so equipping them better for employment.
    - *Technical and Business management courses* aim to improve business management and product quality. These are designed to improve the profitability of farm businesses by encouraging participants to focus on those aspects of their business which impact directly on profit. There

are currently a wide range of courses available to farmers and growers in Northern Ireland. Each course is designed to enable participants to make better management decisions by equipping them with the best tools to analyse their businesses. It gives them the skills to identify and target areas that require improvement and it develops their confidence in dealing with a range of issues in a group setting.

- **Technology transfer/adoption** through a diverse range of projects encourages the industry to adopt world-class, leading edge technology. In particular Development Service Technologists and Development Advisers assist those within the industry to deal with specific issues of adopting these technologies within their own business environment. Depending on the specific technology, economic, environmental, health and safety or animal welfare benefits will accrue to the agri-food industry. Again it is worth noting that Technology work also contributes to the effectiveness and currency of CAFRE education especially at Higher education level.

5.3 Northern Ireland Rural Development Programme 2007-2013

The Skills Training Element under Axis 1 of the Northern Ireland Rural Development Programme (NIRDP) 2007-2013[121] aimed to improve the competitiveness of farm and horticulture businesses in Northern Ireland through the provision of a range of innovative and focussed training and information actions. The measure comprised four schemes delivering training and information actions: the benchmarking scheme provided assistance and support to innovative benchmark learning programmes; focus farms scheme assisted in the development of selected farm businesses as focus farms to communicate to visiting farmers a range of new and emerging technologies and to provide a coaching/mentoring facility; the family farm options scheme assisted farmers and family farm members to analyse their present position and determine their options for the future and supply chain partnerships were encouraged through training to develop a collaborative approach to marketing of agricultural and horticultural products. The focus on education under this

[121] https://www.daera-ni.gov.uk/topics/rural-development/rural-development-programme/rural-development-programme-2007-2013

Programme has been carried into the Rural Development Programme for 2014-20 (See Section 3).

5.4 Postgraduate Studentships

Each year, the Department offers a limited number of Postgraduate Studentships for a period of research normally leading to PhD qualification at a University in Ireland or Britain. Funding is provided for full time students only. Support is available to provide approved fees and maintenance grants to students being trained in methods of research. The number of Studentships offered is determined on Departmental priorities and available budget. The Studentships are an important mechanism for securing evidence needed in support of Departmental policies and services, and to promote innovation. Postgraduate research themes are linked to Priority Research Areas, identified annually by the Department, which align with the Evidence and Innovation Strategy.

Provision of education to the agri-food sector is also delivered at higher education level through the University of Ulster and The Queen's University of Belfast, and at further education level through DfE funded Further Education Colleges. The private sector is also involved in the provision of skills/training. Given the range of different providers there is a need to ensure that any overlap/duplication is avoided at all education and training levels and particularly in relation to any generic skills. DAERA's sectoral provision therefore cannot be considered in isolation but in the context of the wider educational environment to avoid duplication and to ensure there are no gaps.

5.5 Support for the Young Farmers' Clubs of Ulster (YFCU)

The Department has supported the YFCU through an annual grant since 1934 based on the fact that the YFCU's activities include agricultural education / training and promotion of rural development.

The YFCU is open to all young people between the ages of 12 and 30 years who have a keen interest in rural life. There are currently some 60 clubs across Northern Ireland, involving almost 3,000 members. Governance is by means of an Executive Committee and Council, elected by and from the membership, approximately 50% of

whom are female.

Central to the overall YFCU programme of events and activities is a core group of internally and externally accredited training options founded on the philosophy of 'learning by doing'. Programmes are generally related to one of the three key themes (a) better citizens, (b) better countrymen and (c) better farmers.

5.6 Rural White Paper Action Plan

The Northern Ireland Executive approved proposals for the development of a Rural White Paper in July 2009. In June 2012, following considerable consultation with stakeholders and other Departments, the Department launched the Rural White Paper Action Plan (RWPAP)[122]. The aim of the RWPAP was to identify and seek to address the key rural issues and challenges facing rural communities, both now and in the future. The Action Plan contains commitments by all government Departments and covers a wide range of rural issues across five distinct themes: urban-rural linkages; access to services; rural communities; rural economies; and the countryside.

The RWPAP contained a commitment by the Department to implement a package of measures to tackle rural poverty and social and economic isolation. As part of this commitment the Department operates the Youth Employability (BOOST) and Rural Youth Entrepreneurship (RYE) Programmes in conjunction with DEL (now DfE) and the Rural Development Council. Both Programmes are supported by the Department to help reduce economic inactivity among vulnerable young people in rural areas by addressing barriers to employment and business creation.

The BOOST youth employability programme works to reduce economic inactivity among unemployed rural young people by helping them to gain the core skills needed for employment and by addressing barriers to employment. BOOST is currently the only employability programme in Northern Ireland to specifically target 16-24 year olds living in rural areas, offering a tailored package of intensive support to help them in today's competitive job market.

[122] https://www.daera-ni.gov.uk/articles/rural-white-paper-action-plan

RYE is an entrepreneurship awareness raising and developmental programme for young people aged between 16 and 30 years in rural areas. The focus of RYE is on undertaking outreach activities to engage young people in disadvantaged rural areas to consider the potential of enterprise development and self-employment through a series of workshops and networking events. The RYE programme creates the foundations for the development of future rural businesses through upskilling, networking, mentoring and sharing of ideas to stimulate business creation. The Department provides support to the RYE programme through the Tackling Rural Poverty and Social Isolation Programme (TRPSI)[123].

DEL (now DfE) has also committed to a number of long-term targets in the RWPAP, which include identifying the skill needs within the land-based, food and rural sectors and ensuring that a flexible skills delivery infrastructure is in place to meet the skill needs of those in rural areas; and, ensuring closer working between the Higher and Further Education sectors and the Agri-Food and Biosciences Institute and CAFRE to meet the knowledge transfer needs of our agri-food and biotechnology industry.

The RWPAP Annual Progress Report 2015[124] indicated that the aforementioned commitments were on target to be successfully achieved.

5.7 Working with and through others/working with partners

The Department works closely with other organisations in the delivery of educational courses at CAFRE. For example, CAFRE is currently contracted by DfE to deliver Apprenticeships in Agriculture, Horticulture, Equine, Food Manufacture and Veterinary Nursing at Levels 2 and 3[125].

In addition to the direct delivery of education via CAFRE, the Department provides indirect support for education through its relationships with other government departments and local organisations.

[123] http://www.rdc.org.uk/our-work/RYE-Connect/News-and-Upcoming-Events/Celebrating-the-best-of-RYE
[124] https://www.daera-ni.gov.uk/sites/default/files/publications/dard/Annual%20Progress%20Report%202015%20final(2).PDF
[125] ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN

As previously mentioned, as part of its RWPAP commitments, the Department operates the Youth Employability (BOOST) and Rural Youth Entrepreneurship (RYE) Programmes in conjunction with DfE and the Rural Development Council.

DAERA also has had limited involvement with DfE in its 'Connected' programme. 'Connected' is the first and only Knowledge Transfer programme in the UK to be delivered across both the Higher and Further Education sectors. Funded by DfE, 'Connected' is delivered by Queen's University, the University of Ulster and the six further education colleges. It helps businesses improve their performance by providing one-stop shop access to a broad portfolio of knowledge and technology support services, from problem definition through to solution identification and implementation[126]. The 'Connected 3' programme was formally launched by the DEL (now DfE) Minister on 15 October 2014. The new programme, which will run until 31 March 2018, will continue to build upon its existing links with both the Agri-Food & Biosciences Institute and with the CAFRE to meet the knowledge transfer needs of the agri-food and biotechnology industry.

As previously mentioned the Department has also supported the Young Farmers' Clubs of Ulster (YFCU) through an annual grant since 1934 based on the fact that the YFCU's activities include agricultural education / training and promotion of rural development.

[126] http://www.anic.ac.uk/Colleges-NI-News-Item.aspx?id=177

5.8 Summary of key points from Section 5 – DAERA involvement with education

- Further and higher education provision is targeted at new entrants and existing workers in the agri-food industry.
- CAFRE delivers full time and part time further and higher education programmes in agriculture, horticulture, food, equine and communications. The College remains DAERA's main conduit for the development of people who are entering or already working in the agri-food industry.
- Agriculture students make up the greatest percentage of student enrolments at 43% over the past 10 years. There has been a steady rise in enrolments in this discipline, with annual enrolments now over one third higher than they were 10 years ago.
- CAFRE is also responsible for the delivery of people development programmes to those working in the agri-food industry to enable owners, managers and workers to develop appropriate skills and competences to enable the competitive and sustainable development of their businesses. Within its Development Service CAFRE has gradually altered the emphasis from supporting farmers by providing reactive advice to developing farmers through competency development programmes.
- In 2014/2015, the majority of CAFRE's industry training expenditure was spent on the agriculture sector at 90%, with food, equine and horticulture accounting for 5%, 3% and 2% respectively.
- In addition to the direct delivery of education via CAFRE, the Department also offers a limited number of post graduate studentships each year and provides indirect support for education through its relationships with other organisation such as YFCU, DfE and the Rural Development Council.

SECTION 6 NEXT STEPS

The Department aims to ensure that individuals, organisations, and businesses within the agri-food industry have access to credible, relevant, evidence-based education, knowledge and technology transfer services to assist with their productivity, profitability, environmental performance and sustainability.

This body of background evidence has been collated to provide the context and underpinning evidence base to inform the development of a Departmental Knowledge Framework (Education Strategy).

The development of the Knowledge Framework will also be influenced by the strategic goals of the new Department of Agriculture, Environment and Rural Affairs (DAERA). The new Department came into existence on 8 May 2016.

The strategy will be a succinct, high level framework that will set out the rationale for the Department's involvement in education and knowledge, what it seeks to achieve and the nature of its interventions.

It is intended that the Framework will act as the point of reference against which all of the Department's future interventions can be tested and anchored. It is this latter aspect (i.e. the testing of what we do against the Framework) that will both drive change and guide the nature of future interventions.

ANNEX 1 - GLOSSARY

AFBI	Agri-Food and Biosciences Institute
AFSB	Agri-Food Strategy Board
AHDB	Agriculture & Horticlture Development Board
AIS	Agri-food Innovation Systems
BDG	Business Development Group
BOOST	Youth Employment Initiative
CAFRE	College of Agriculture, Food and Rural Enterprise
CAP	Common Agricultural Policy
CMU	Countryside Management Unit
DA	Disadvantaged Areas
DAERA	Department of Agriculture, Environment and Rural Affairs
DARD	Department of Agriculture and Rural Development
DE	Dept of Education
DEL	Department of Employment & Learning
DfE	Department for the Economy
EU	European Union
FAS	Farm Advisory System
FE	Further Education
FETAC	Further Education and Training Awards Council (Irish Education Certificate)
FTE	Full Time Employed
FTSE	Full Time Student Equivalent
GAECs	Good Agricultural and Environmental Conditions
GCSE	General Certificate of Secondary Education
GDP	Gross Domestic Product
GPS	Global Positioning System
GVA	Gross value added
ha	Hectare
HIP	Horticulture Innovation Partnership
HNC	Higher National Certificate
HND	Higher National Diploma

HTA	Horticulture Trades Association
ICT	Information and Communications Technology
ITEDS	Innovation Technology Evaluation Demonstration Scheme
LANTRA	National Training Organization for the Land Based Industries
NDBP	Non-Departmental Public Body
NFS	National Farm Survey
NFU	National Farmer's Union
NICS	Northern Ireland Civil Service
NIFDS	Northern Ireland Food & Drinks Sector
NIRDP	Northern Ireland Rural Development Programme
PfG	Programme for Government
PhD	Doctor of Philosophy' sometimes referred to as a 'doctorate'. The highest level of degree that a student can achieve.
R&D	Research & Development
RAG	Regional Advisory Group
RDP	Rural Development Programme
RHS	Royal Horticultural Society
RWPAP	Rural White Paper Action Plan
RYDP	Regional Youth Development Plan
RYE	Rural Youth Entrepreneurship
SDA	Severely Disadvantaged Areas
SMEs	Small Medium Enterprises
SMRs	Cross Compliance Guides
SPICE	Specialist Provision for Industry using College Expertise
SSCs	Sector Skills Councils
STEM	Science, Technology, Engineering and Mathematics
TEAGASC	Technology
TRPSI	Tackling Rural Poverty and Social Isolation Programme
UKCE's	UK Commission for Employment and Skills
UW	Ulster Wildlife
YFCU	Young Farmers' Clubs of Ulster
YSRAG	Youth Service Regional Advisory Group

ANNEX 2 - WHAT QUALIFICATION LEVELS MEAN[127]

There are 9 qualification levels.

Entry level

Each entry level qualification is available at three sub-levels - 1, 2 and 3. Entry level 3 is the most difficult.

Entry level qualifications are:

- entry level award
- entry level certificate (ELC)
- entry level diploma
- entry level English for speakers of other languages (ESOL)
- entry level essential skills
- entry level functional skills
- Skills for Life

Level 1 qualifications are:

- first certificate
- GCSE - grade D, E, F or G
- level 1 award
- level 1 certificate
- level 1 diploma
- level 1 ESOL
- level 1 essential skills
- level 1 functional skills
- level 1 national vocational qualification (NVQ)
- music grades 1, 2 and 3

Level 2 qualifications are:

- CSE - grade 1
- GCSE - grade A*, A, B or C
- intermediate apprenticeship

[127] https://www.gov.uk/what-different-qualification-levels-mean/list-of-qualification-levels

- level 2 award
- level 2 certificate
- level 2 diploma
- level 2 ESOL
- level 2 essential skills
- level 2 functional skills
- level 2 national certificate
- level 2 national diploma
- level 2 NVQ
- music grades 4 and 5
- O level - grade A, B or C

Level 3 qualifications are:

- A level - grade A, B, C, D or E
- access to higher education diploma
- advanced apprenticeship
- applied general
- AS level
- international Baccalaureate diploma
- level 3 award
- level 3 certificate
- level 3 diploma
- level 3 ESOL
- level 3 national certificate
- level 3 national diploma
- level 3 NVQ
- music grades 6, 7 and 8
- tech level

Level 4 qualifications are:

- certificate of higher education (CertHE)
- higher apprenticeship
- higher national certificate (HNC)

- level 4 award
- level 4 certificate
- level 4 diploma
- level 4 NVQ

Level 5 qualifications are:

- diploma of higher education (DipHE)
- foundation degree
- higher national diploma (HND)
- level 5 award
- level 5 certificate
- level 5 diploma
- level 5 NVQ

Level 6 qualifications are:

- degree apprenticeship
- degree with honours - for example bachelor of the arts (BA) hons, bachelor of science (BSc) hons
- graduate certificate
- graduate diploma
- level 6 award
- level 6 certificate
- level 6 diploma
- level 6 NVQ
- ordinary degree without honours

Level 7 qualifications are:

- integrated master's degree, for example master of engineering (MEng)
- level 7 award
- level 7 certificate
- level 7 diploma
- level 7 NVQ
- master's degree, for example master of arts (MA), master of science (MSc)

- postgraduate certificate
- postgraduate certificate in education (PGCE)
- postgraduate diploma

Level 8 qualifications are:

- doctorate, for example doctor of philosophy (PhD or DPhil)
- level 8 award
- level 8 certificate
- level 8 diploma