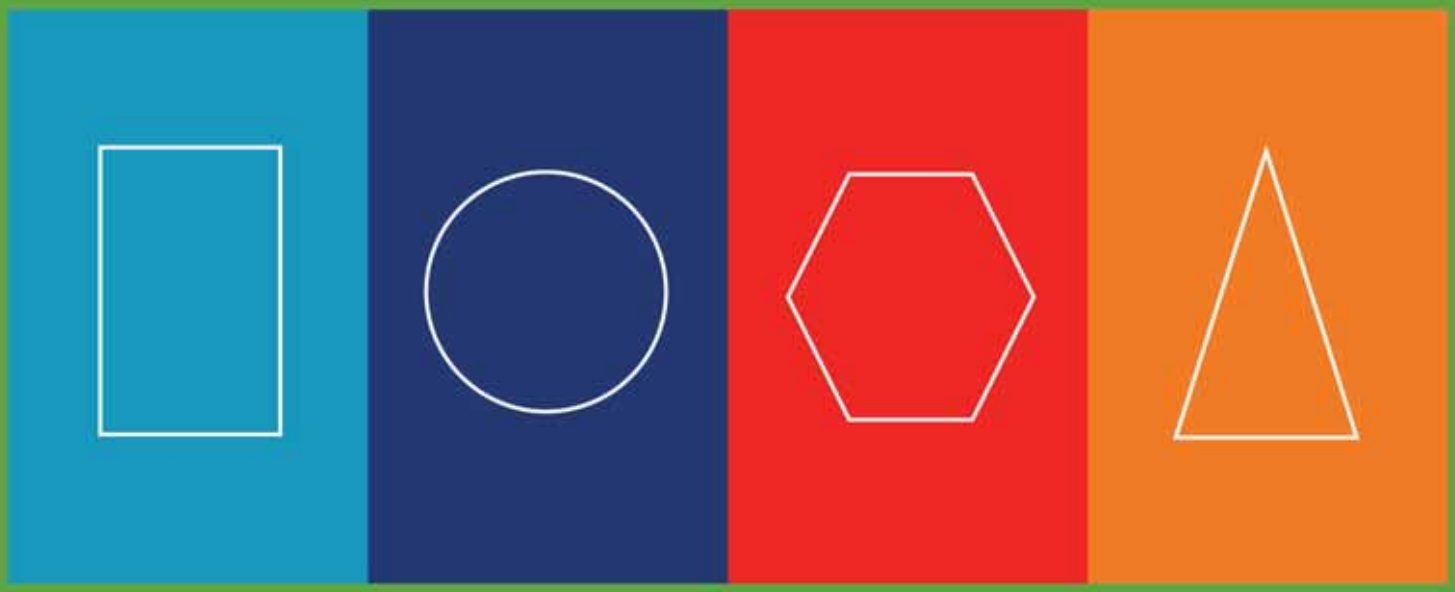


Future Skills Requirements of the Food and Beverage Sector

November 2009

Expert Group on
Future Skills Needs

Acknowledgments

This report is substantially based on research carried out by PricewaterhouseCoopers on behalf of the Expert Group on Future Skills Needs and Forfás. Forfás would like to fully acknowledge the quality of their work.

Forfás would like to thank the many industry executives, academics, staff at State Agencies and expert organisations who gave their valuable time for interviews. Thanks are also due to the Skills and Labour Market Research Unit at FÁS for providing the data on the employment and education profile of the sector.

Forfás would also like to record its appreciation to the members of the Steering Group responsible for overseeing the work of the report for their commitment and contribution.

Foreword

On behalf of the Expert Group on Future Skills Needs, I am pleased to introduce this report on future skills requirements for the food and beverage processing industry.

The food and beverage sector is Ireland's largest indigenous sector, accounting for eight percent of GDP and over 18 percent of GVA in manufacturing. In 2008, the industry employed 50,000 people directly, with a further 60,000 indirect employees and some 120,000 farmers. This report re-emphasises the importance of the industry in providing sustainable employment, while recognising the competitive pressures that the industry currently faces.

The Expert Group on Future Skills Needs first analysed the demand and supply of skills in the food processing sector in 2003. This report provides an updated analysis of skills in the industry, examines the change drivers that are affecting its current and future performance, and identifies action required to deliver skills requirements that will underpin the industry's future growth. While there has been significant advancement since 2003, our analysis also identifies skills challenges in a number of areas including international trade, upskilling operatives, supply chain management, innovation, lean operations, commercial acumen and leadership. I am confident that the report's recommendations address those challenges, and if implemented will support the industry in meeting market-place requirements.

The EGFSN research highlights the importance of skills development for the lower-skilled in the sector. Some 30,000 of those employed in the food and beverage industry have low or no level of formal second level education and are considered a vulnerable group, particularly in the current economic climate. This report recommends an accredited upskilling programme for operatives that will enhance career opportunities through the provision of transferable skills, and recognition of skills and competencies gained through on-the-job experience.

I would like to thank all those who contributed to the production of this report. In particular, I would like to thank those who participated in meetings, workshops and consultations, which were invaluable in producing this report. I would especially like to express my appreciation to the members of the Expert Group and the Steering Group who contributed their time and expertise, and the team in Forfás for leading this project to a successful conclusion. Finally, I would encourage the prompt implementation of the recommendations the report makes, to ensure that the food and beverage processing sector is in the best possible position to succeed in the future.

Una Halligan

Una Halligan
Chairperson, Expert Group on Future Skills Needs

Executive Summary – Key Findings, Conclusions and Recommendations

Chapter 1 Introduction

In 2007, the Expert Group on Future Skills Needs (EGFSN) report *Tomorrow's Skills: Towards a National Skills Strategy* highlighted the need to up-skill the Irish workforce by 2020 to ensure the continuing economic growth and prosperity of the country. In relation to the food processing sector, the report highlighted the need to ensure the continued employability of the approximately 30,000 workers who have second-level or lower educational attainment as well as meeting the sector's high-skilled requirements.

The EGFSN had already published a report on the food and beverage sector undertaken in 2003, and decided that it was timely to review current and future skills demand and supply for the food and beverage sector. This report provides an updated analysis of skills in the sector.

The subsequent paragraphs provide a summary of the study's key findings including: an economic profile of the sector and its current and future drivers-of-change; a profile of those employed within the sector; a review of education and training in leading agri-food countries and potential learnings for Ireland; the future education and skills needs of the sector and key gaps in current education and training provision; and proposed recommendations to bridge these skill gaps.

Study Objectives

The main objectives of the study were to:

- Describe the current sector overall in terms of its position within the Irish economy and the change drivers that are affecting its current and future performance;
- Identify any particular changes, either to the sector overall or within specific sub-sectors (including the seafood and beverage sub-sectors), since publication of the 2003 report and in particular their effect on skills requirements;
- Profile the current composition of those employed across the food and beverage sectors, including details of educational attainment, age, gender and nationality;
- Capture the progress made on issues and the recommendations for action and change in the 2003 report;
- Review and update the education and training provider data from the 2003 report and identify any consequences arising for skills supply; and
- Identify further action required since the 2003 report and outline a series of recommendations to achieve this, assigning responsibility for action to specific bodies.

Project Scope

The 2003 report covered the following food sub-sectors: dairy; meat; fruit and vegetable processing; grains and starches processing; bread, biscuits, sugar, chocolate and sugar confectionary; bread; food ingredients; and prepared consumer foods. It excluded the seafood and beverage sectors. The scope of this report is broader and covers all sectors referred to under NACE Code 15, which includes the following sub-codes:

- 15.1: Production, processing and preserving of meat and meat products;
- 15.2: Processing and preserving of fish and fish products;
- 15.3: Processing and preserving of fruit and vegetables;
- 15.4: Manufacture of vegetable and animal oils and fats;
- 15.5: Manufacture of dairy products;
- 15.6: Manufacture of grain mill products, starches and starch products;
- 15.7: Manufacture of prepared animal feeds;
- 15.8: Manufacture of other food products;
- 15.9: Manufacture of beverages.

Throughout the remainder of the report, the above sub-sectors will collectively be referred to as the 'food and beverage sector'.

Methodology

The methodology for this report included three main phases, namely:

- Phase 1 Secondary Research and identification of Drivers-of-change;
- Phase 2 Primary Research and Consultations; and
- Phase 3 Conclusions, Recommendations and Reporting.

Phase 1 comprised outlining the economic profile of the sector and identifying the current and future key drivers of change. Phase 2 involved a large-scale programme of desk research and consultation with agency representatives, industry and academic institutions to uncover the skills required for the sector and the gaps that exist in the current provision of education and training. Employment in the sector was also addressed in this phase of work along with a review of the education and training provision in leading food countries (Australia, New Zealand, UK, Denmark and Finland) to identify any potential learning for Ireland. Once this work was completed the final phase tested emerging proposals with state agencies and industry before developing a set of recommendations in response to the skill gaps identified in the research.

Chapter 2 Economic Profile of the Sector & Drivers-of-Change

The key findings of this chapter are presented under the headings of: value of the sector, employment, exports and drivers-of-change.

Value of the sector

- The GVA for the food and beverage processing sector in 2007 was estimated at €6.9 billion – 4% of total national GVA. Beverages account for 25% of the sector's GVA, the meat sector 10% and dairy a further 8%.
- The food and beverage processing sector accounts for 18% of manufacturing GVA – the third largest sub-sector after the manufacture of electrical & optical equipment and chemicals.
- Overall Gross Value Add (GVA) for the sector increased by under 1% between 2006 and 2007 with the meat and dairy sub-sectors experiencing steady growth, whereas beverages contracted by 9% between 2006 and 2007.
- In 2006 the food and beverage sector consisted of 586 enterprises, 93% of which were Irish owned. The 7% of foreign owned enterprises accounted for 25% of employment in the sector (*Census of industrial enterprises 2006, CSO*).

Employment

- In 2008, there were 50,000 people employed directly in the food and beverage processing sector. There are an estimated further 60,000 indirect employees and also some 120,000 farmers, hence total employment impact attributed to the agri-food sector is in the region of 230,000. However, recent CSO Quarterly National Household Survey figures shows that the number of employees working in the Food & Beverage sector fell by 2,180 employees from Q1 2008 to 47,176 in Q1 2009, a decline of 4% over this period. Those occupations most affected by this decline appear to be at operative, sales and technician level.
- The meat sector employs over 14,000 people – the largest area of employment within the food and beverage processing sector, followed by consumer foods (12,800), dairy (4,500) and beverages (4,300 employees).

Exports

- The value of exports in the food and beverage sector in 2008 was €8.2bn[1], an increase of €1.2bn since 2003. This is predicted by Bord Bia to grow to €9.5bn by 2011.
- Beef exports have increased by 7.5% from 2007 to 2008 whereas dairy, beverages, prepared foods, poultry, pig and sheep meat sectors have all experienced a decline over the same time[2]. Seafood exports have remained static.
- The UK remains the single most important market in terms of Irish food and beverage exports accounting for 43% of all exports. This is followed by the remaining EU member states which collectively account for a further 31%.

[1] This figure includes live animals and processed products **but** excludes animal feed.
[2] These decreases are not driven by volume but rather by effect of global price decreases in dairy and the exchange rate impact.

Sector Prospects

- The growing global population will result in a greater demand on food production. This will have an impact on Ireland's food and beverage exports, with Bord Bia predicting an increase in exports from €8.2 billion to €9.5 billion between 2009 and 2011 – an increase of 16%.
- In the short-term, the sector remains exposed to currency fluctuations, being dependent on the UK market for over 40% of exports. Sub-sectors such as meat where margins are low will be under pressure to remain competitive. Allied to this, the sector is under pressure from the , weakness of sterling – particularly prepared convenience foods. Both of these factors may have a negative impact on employment.
- In the medium-term, the sector will seek to diversify into continental European markets and thereby mitigate currency risks going forward. This will help stabilise employment prospects over the medium term.
- Currently some sub-sectors, notably meat and fish, are labour intensive and lag the other sub-sectors in terms of Gross Output per employee. Over the long-term the focus will be on raising productivity levels through new technology and skills development. The impact of which may be increased output levels per employee but reduced numbers employed.
- The sub-sectors with the most positive long term employment prospects are dairy and beverages, all showing strong demand growth prospects. Ireland, given its low cost grass based production system, is well positioned to avail of growth opportunity post the abolition of milk quotas in 2015. This will require an investment in additional processing capacity and employment. In the drinks sector, whiskey output is projected to double between 2008 and 2015. This projection will be accompanied by process capacity expansion.
- Meat is a sub-sector with weak prospects, at primary producer level the numbers of livestock are projected to decline. As a consequence the processing sector is likely to go through a period of consolidation. However, in a European context, Ireland is expected to remain a significant domestic EU supplier of beef and sheep. Ireland's position as a preferred supply base for meat products may benefit from increased awareness and concern regarding sustainability. Ireland's meat sector has an opportunity to set out its sustainability credentials. Sustainability will grow in importance, already many governments such as Saudi Arabia, South Korea and Japan are looking at long term food security strategies. Water scarcity is becoming a major issue for many countries and the long-term scenario will see food production converge in regions with secure water resources.
- In summary, given Ireland's natural advantage and heritage in food, the food industry should be recognised as one of the key platforms for growth and supported accordingly. Our view on a sub-sectoral basis is summarised in the following table, with further details in Section 2.2.7.

Sub-Sectors		Sub-Sectors	
Dairy	↑	Meats:	
Beverages	↑	Poultry	↓
Prepared Consumer Foods	↑	Pork	↔
Seafood	↑	Beef	↓
Animal Feed	↑	Sheep	↓
Food Ingredients	↔		

* Note: Table 2.10, Chapter 2, Section 2.2.7

- While there are many factors influencing the development and employment prospects of the different sub-sectors, given the current volatility in the food sector and the wider environment, it is difficult to be accurate. However, broad estimates of likely future employment prospects for the main sub-sectors are outlined below.
- The most recent official breakdown of total employment at a sub-sectoral level is provided in the CSO Census of Industrial Production 2006 which is set-out below. Estimates for employment numbers in 2008 / 2009 and best estimate figures for 2010 are presented in the following table and are based on discussions with the state development agencies and industry bodies.

Sub-Sector	CIP 2006	2008/ early 09 Estimates	2010 Best Estimates
Meat	14,302	14,000	14,000
Fish Processing	2,011	2,870	2,500
Fruit & Veg and animal / Vegetable Fats	1,537	1,960	1,500
Dairy	4,497	4,500	4,500
Grain Mill Products, Starches & Animal Feed	2,481	2,400	2,400
Other Foods	12,841	10,000	11,500
Beverages	4,297	4,000	4,000

- The following points support the estimated figures presented in the table above:
  - Currently, returns for the primary producers in the meat sector are low and this does not auger well for a sustainable sector on economic grounds. However, Ireland has a strong heritage as a producer of beef, pig meat and lamb and we believe the sector would do well to hold the current employment levels. Allied to this, there has been a noticeable uplift of live cattle exports in 2009 with producers seeking better prices for their animals.
  - A strong consumer demand for fish products and the investment in aquaculture as a raw material for the processing sector should generate value in the sector. However, growth in the sector will be on the basis of advanced technology rather than labour input.

- The fruit and vegetable sector is coming under increasing competition from imports, particularly for companies supplying the big supermarkets. Allied to this, Northern Ireland has recently displaced southern producers on a number of food service contracts.
- It is expected that an end to the milk quotas and the estimated increase in the national dairy herd should offer greater opportunity to the sector. As with fish processing, this will have more to do with capital investment in scale, technology and automation rather than through manpower.
- Demand for animal feed will be contingent on livestock numbers, however, key growth will take place in developing regions and will see the sector becoming more global. As a result Irish companies may diversify into new markets however this is unlikely to increase additional employment as any expansion will be due to overseas operations.
- In the short to medium term the prepared consumer foods sector is challenged by exchange rate movements plus economic conditions and will go through a contraction as SMEs find it difficult to weather the storm. However, as economic order returns opportunities will arise and employment levels should return to pre-recession levels.
- The beverage sector has experienced growth over the last number of years largely due to the presence of a number of multi-national drinks companies and artisan producers. However, while volume of beverages produced will increase going forward, this will be achieved by investing in existing human capital and process technology rather than in additional human capital. This means productivity per employee will grow in line with projected demand growth for beverages.
- Given that the structure of the sector comprises a relatively small number of large foreign and indigenous multinational companies and a large number (i.e. >500) of SME and artisan businesses, any significant growth in the sector is likely to be a function of the large companies investing in their Irish base. Whereas, the prospects for growth in SME and artisan companies is expected to be more moderate.

Drivers-of-Change

- This report identifies six key drivers-of-change in the sector: consumer trends; health and wellness; sustainability and ethical concerns; policy; consolidation of retailers; and technology. These drivers-of-change remain largely unchanged since 2003. However, for some the extent of their importance to companies or how they are being addressed has changed. The area of sustainability (i.e. addressing Green House Gas emissions and repositioning products or brands as being environmentally friendly and in keeping with good corporate and social responsibility) is the only additional driver-of-change identified by companies.

Chapter 3 Employment and Skills Profile of the Sector

- 62% (circa 30,000) of workers in the food and beverage sector have low or no level of formal second level education – 11% higher than the national average – primarily in the older age cohorts. However, the percentage of employees with low or no formal qualifications are in decline, while third and fourth level educated employees are on the increase.
- The sector typically attracts a greater proportion of men – and this proportion is increasing.

- A significant proportion of workers in the sector are employed at plant or machine operative level – many of these have low or no levels of formal second level education
- The sector has a strong dependence on non-Irish nationals as a source of labour - almost treble the national average (22% versus 8%). A significant share of both Irish and EU accession employees have little or no formal qualifications, however the data indicates that a greater proportion of the Irish labour force have no formal qualifications or only a secondary education.
- In terms of the occupational mix of people employed within the sector, it is expected that over the next 5-10 years there will be a greater proportion of highly-skilled operatives and supervisors and graduates with specialist skills such as in lean manufacturing and Supply Chain Management (SCM), with a corresponding reduction in the numbers of low-skilled employees.
- There is a requirement for both 'broadly-based' and 'specialist' graduates. Courses nowadays tend to be more focused or specialised. Industry CEOs consulted feel that there is a need for a more broadly based approach in relation to the provision of graduates at 3rd level, as well as a greater recognition of the importance of upskilling and training operatives in order to equip them for their enhanced role within companies.

Chapter 4 Provision of Education, Training & Development

- There are 67 undergraduate, 25 executive education or CPD and 29 postgraduate programmes available at third-level relevant to the sector. The vast majority of programmes (74) are dedicated food & beverage programmes, with the remaining 47 having a broader focus on agriculture, horticulture, human nutrition, etc.
- There are currently 114 programmes and interventions offered by the development agencies and representative bodies interviewed (Teagasc, FÁS, Bord Bia, Skillnets, BIM, Irish Exporters Association and Enterprise Ireland) to the food and beverage sector, with six new programmes in development. EI and Bord Bia have been particularly active in the management and talent development space since 2003.
- Of the undergraduate programmes currently available or in development across the colleges, a huge number are concentrated on one discipline, namely food science & technology. A smaller number of programmes span a number of different disciplines. As a result of industry requests, colleges are beginning to design a selection of new programmes which cover three or more disciplines. One would question the extent to which there is oversupply or overlap of food science and technology type programmes relative to demand, while there remain certain gaps and under-provision in other disciplines.
- There appears to be a greater level of flexibility at postgraduate and executive education and CPD level in terms of delivery mode, with undergraduate programmes primarily conforming to classroom based activity, supplemented with work experience and projects.
- There are approximately 1,000 graduates qualifying with relevant food skills each year and available to enter the food & beverage workforce (almost double that from the 2003 report of 500-600).
- Of the 23,566 total graduates in 2006, only 292 or 1.2% entered the food & drink industries, suggesting that the sector is not particularly attractive to graduates in terms of perceived career progression and opportunities.

Chapter 5 Review of International Training and Education provision

In examining the educational and training provision for the food and beverage sector in Australia, New Zealand, UK, Denmark and Finland, a number of innovative or forward thinking initiatives were identified, namely:

- Accelerated learning programme for future industry leaders in the red meat industry - aimed at managers and senior executives in Denmark. It comprises formal learning, residential periods in renowned Danish and UK universities and an applied project phase.
- Introduction of new websites in Australia to assist employers, and employees to find the best courses and training to meet their needs – a one-stop repository of all courses, programmes and interventions.
- Upskilling initiative in New Zealand for low-skilled employees in the areas of basic numeracy and literacy levels, delivered in-house;
- A series of Government initiatives in Australia to promote continuous upgrading of skills over the course of an individual's working life – funded by government via the provision of 'Skills Vouchers';
- Australian 'Women in Manufacturing Stepping Up Programme' providing learning opportunities for women in areas including SCM, lean, leadership and manufacturing processes. Delivered via a series of workshops and industry representative mentoring;
- Food & Agribusiness Market Experience (FAME) allowing companies to develop their knowledge of supply chain best practice in foreign markets via country or site visits (New Zealand);
- National Skills Academy Programme in the UK which aims to bridge the gap in relation to the provision of operatives, managers or supervisors, craft workers and technical operatives in the future. Training is provided through 'Academy Centres' specialising in a specific sub-sector or area; and
- The 'New Exporter Development Programme' in Australia which assists SMEs seek-out and be ready for export opportunities.

A number of the international initiatives and approaches identified through our research have been taken on board in the development of our suggestions and recommendations for the Irish sector.

Chapter 6 Skills requirements for the sector

Skill gaps for the sector as identified by the companies consulted have been clustered under 7 thematic areas', namely:

- Internationalisation
- Innovation
- Operative and Supervisory cohort
- Lean Operations
- Supply Chain Management
- Leadership
- Financial & Commercial Acumen

Internationalisation

- Since 2003, food and beverage companies have become more aware of the opportunities provided by emerging markets and as such many have been expanding their global reach into new territories. Irish companies are increasingly aware that the development of skills in international trade and logistics will be crucial. Furthermore, CEOs are conscious of the need to build multi-cultural and multi-lingual skills to enable them to operate effectively in overseas markets.
- Allied to this, Irish food companies are supplying international retailers and food service operators with a presence in Ireland and therefore need to be able to conform and deliver upon ever-increasing product, promotions and delivery requirements.
- Specific skill requirements include: customer management and key account management; international trade; and supply management.

Innovation

- Companies have shown a significant improvement in taking market opportunities and achieving high activity levels. However, concerns remain regarding the level of return on investment realised. Furthermore, there is a lot of churn, with few new products actually surviving long-term in the market. The need to strengthen the identification and interpretation of consumer insights and improve New Product Development skills was identified to improve the future success rate of products in the market.
- A considerable level of publicly funded research is taking place in the third level colleges and research institutes. It remains a challenge to develop the R&D absorptive capacity of food companies. There is a responsibility for both the research institutes and the food companies to improve the processes by which knowledge can transfer from research phase into products and innovation in the private sector. Both the research institutes and industry need to engage more proactively during the initial concept phase and selection of research themes. Closer engagement should enable food companies step-up their effort in applying new knowledge and R&D.
- Required skills were identified as: consumer insight generation and interpretation; new product concepts and validation; portfolio management to help further streamline the prioritisation and selection of innovation programmes; packaging technology; and design engineering.

Operative and Supervisory cohort

- The 2003 report found that training of operatives was not considered a priority by companies, and any training provided tended to be task specific. Since then there has been a re-appraisal of the operative role. This is now considered to be a valuable resource with the operative seen as part of the human capital pool. Recruiting of operatives is therefore becoming more formalised and rigorous.
- A further development has been the de-layering and merging of roles among operatives and supervisors. The development of skills among operatives and the move towards 'super-skilled operatives' allows in some instances for a reduction in head count at both operative and supervisory levels. Much has, and continues to be done under lean manufacturing initiatives to

provide the necessary skills to make such a transition, which in turn is aiding their career opportunities.

- Coupled with this is the need to give due recognition for the skills gained to date on-the-job through some form of accreditation. In some sub-sectors the provision of literacy, numeracy, basic IT, team-working, inter-personal skills, communications and language skills is required.

Lean Operations

- A significant advancement from 2003 was the extent to which a number of companies have engaged in lean and world class manufacturing as a basis to improve efficiency, drive down costs and regain competitiveness. The skills associated with this are seen as a major challenge going forward.
- Training on continuous improvement and lean principles is a priority area, with many companies speaking of transitioning towards the "super-skilled" operative. CEOs appreciate the size of the challenge of embracing the lean agenda and the long-term commitment required.
- The skill implications for adopting the lean ways of working include automation and Programmable Logic Control diagnostics. Furthermore, they recognise the need to develop the appropriate lean skills at all levels within the organisation.

Supply Chain Management

- The significance of supply chain management for the sector is relatively new and is widely seen as a huge skills challenge. The standards and customer requirements facing the supply chain are now more exacting and the level of financial performance and control is more sophisticated. There is a focus on reducing inventory levels, managing working capital more effectively and building the skills required to deliver an efficient supply chain.
- Hence, there is a need for supply chain skills to be embedded within the organisation at all levels.

Leadership

- There is now a greater awareness of the need for strong leadership, with CEOs being very much in tune with the need to plan business development strategically. There is heightened awareness about the role of the CEO and the responsibility in providing leadership and moving the organisation forward. There is an appreciation that the leadership style needs to evolve through better engagement with the workforce.
- Furthermore, succession planning and the need to fast-track the development of future leaders to take over in the post-recession era was also identified as a skills issue within the sector.

Financial & Commercial Acumen

- During the industry consultations, CEOs expressed concern regarding the lack of commercial acumen across the functions within the organisation. Companies suffer from the fact that functional groups have a low or poor appreciation of the commercial implications associated with their activities. A significant problem is that functional groups have a tendency to operate in silos and become isolated from the commercial implications of their decisions and actions.

The functions tend to operate separately and there is a failing to bridge the various linkages across the organisation.

- There is a need to develop commercial skills for the non-finance functions across the organisation.

Chapter 7 Recommendations

In response to the skill gaps identified in the report, the EGFSN has 9 recommendations. In addition, 11 potential new initiatives are being suggested, provided primarily by the development agencies, and 11 endorsements for the greater promotion and / or roll- out of a number of programmes and initiatives.

It should be noted that the recommendations are proposed on the basis that they are funded from within existing resources.

A summary of the recommendations is outlined below. Suggestions, endorsements and recommendations are detailed in Chapter 7.

Summary of Recommendations

Recommendation 1 - Establishment of "inter-agency, third level institute and Industry forum" (possibly an Agri-Vision 2015 'Development and Training Sub-Group') to discuss and address the ongoing skills, training and development needs of the industry	
Outcome	Less duplication of education and training provision and better collaboration between agencies, third level and industry in the identification of training and the design and delivery of education and training programmes.
Priority	High
Budgetary implications	Using existing resources
Timeframe	Within 6 months
Principal driver	Department of Agriculture, Forestry and Food. (DAFF)

Recommendation 2a – Develop and roll-out an operative and supervisor accredited upskilling programme.	
Outcome	Enhanced career opportunities for low skilled operatives and supervisors through the provision of transferable skills (i.e. numeracy, literacy, basic IT, communication & interpersonal skills, team-working and English as a foreign language).
Priority	Medium
Budgetary implications	Using existing resources
Timeframe	2010
Principal driver	FÁS (with support from FETAC and NALA)

Recommendation 2b - Develop and roll-out an Operative Technician Accreditation Programme.	
Outcome	A FETAC accredited qualification for operatives recognising on-the-job skills and competencies and experience.
Priority	High
Budgetary implications	Using existing resources
Timeframe	2010
Principal driver	FÁS (with support from FETAC)

Recommendation 3 - Develop recognised and accredited 'Craft Accreditations' for operatives	
Outcome	A series of formal accreditations for specialised craft areas such as: deboning, chocolatiers, cheese-making and other kindred trades.
Priority	High
Budgetary implications	Using existing resources
Timeframe	2010
Principal driver	FÁS (with support from FETAC)

Recommendation 4 - EI SCM initiative to be tailored and promoted to the food sector	
Outcome	More effective supply chain management resulting in improved competiveness.
Priority	High
Budgetary implications	Within existing budgetary provisions[3]
Timeframe	Existing mechanisms allow support.[4]
Principal driver	Enterprise Ireland (EI)

Recommendation 5 - Pilot the development of 'Supply Partner Networks' comprising retailers (with Irish operations), FMCG, Logistics and warehousing companies	
Outcome	Maximise the efficiency of the value-chain through greater collaborative working.
Priority	Medium
Budgetary implications	Within existing budgets
Timeframe	2010
Principal driver	Bord Bia

Recommendation 6 - Development of a pilot 'International Graduate Marketing and Management Programme' for SME's	
Outcome	Fast-track the development of graduates so that they are better positioned to take on 'head of function' roles earlier in their career
Priority	Medium
Budgetary implications	From existing resources
Timeframe	2011
Principal driver	FÁS to explore under the Labour Activation Measure 'Work Experience Scheme'

[3] These are subject to competing demands (i.e. Growth Fund and/or EI invest committee). EI can support SMEs through the SCM programme and Large companies in carrying out activities in the area of supply chain management, where these are part of an overall business plan, with defined business need and incentive effect, and in the context of value for money.
[4] Client proposals can be advanced on a case-by-case basis.

Recommendation 7 - EI's 'Leadership 4 Growth' programme to be tailored and marketed to CEOs and MDs within Irish food companies	
Outcome	Enhance leadership and management competencies of CEOs and MDs – addressing succession issues.
Priority	High
Budgetary implications	Yes[5]
Timeframe	2011
Principal driver	Enterprise Ireland (EI)

Recommendation 8 - More widespread promotion and roll-out of programmes like EI's 'Transform Programme' to middle management in food and beverage sector.	
Outcome	Enhance leadership and management competencies of the management team – addressing succession issues.
Priority	High
Budgetary implications	Yes[6]
Timeframe	TBD EI[7]
Principal driver	Enterprise Ireland (EI)

Recommendation 9 - Develop bespoke modularised interventions to improve commercial acumen of line managers, functional heads (e.g. SCM, NPD and Innovation, trade promotions and key account management) and operatives.	
Outcome	Significantly strengthened commercial acumen focused on driving profitability
Priority	Low
Budgetary implications	Yes[8]
Timeframe	On a needs basis
Principal driver	Enterprise Ireland (EI)/ Bord Bia / Teagasc

5 There are a number of elements of cost – the assessment of feasibility and design of a potential programme coupled with the implementation (company support) cost. Further work would be required to accurately estimate cost basis.
6 Additional capacity on programme could be required.
7 Targeting of client base within EI food division, recruitment of participants for next available programme, within the context of budgetary limitations.
8 Provided on an identified needs basis within existing resources.

Our recommendations demonstrate the need for all the named stakeholders to commit to and drive them forward, namely:

1. Employers and employees need to become more aware of current provision in third level institutions and development agencies to engage with, and participate in, these courses, initiatives and programmes; and
2. Third level institutions and development agencies need to adopt a more readily accessible means of communicating and promoting their current service offerings so that there is greater traction with industry.

Without this commitment, they simply will not happen.

Progress Since the 2003 Report

The points below summarise the progress made since the time of the last report (2003).

- Businesses have become more sophisticated and complex. They have invested in upskilling and are more aware of gaps and the need to address them. There has been a shift from individual to team capacity and capability building - with implications for modes of delivery of education and training provision.
- Development agencies are offering a greater range of relevant programmes and initiatives, general awareness and promotion of these appear to be low across the sector. More needs to be done to promote and build greater awareness or appreciation of these initiatives to company CEOs and senior management.
- In terms of third level provision, there are significant amendments to existing courses and new courses being introduced at all levels. However, the effectiveness of, and student interest in, these programmes remains to be seen. There are significant overlaps in food science and technology related programmes at third level and significant gaps still prevail in other areas.
- There is a greater recognition of the importance and benefit of management, staff and operative development and training at company level. However, in recessionary times training budgets can get squeezed. Therefore, there is need for companies to appreciate that human capital is an appreciating asset and requires investment and mentoring.
- Employees also have a greater role to play in engaging in training initiatives to improve their skills and becoming more aware of their role in the success and growth of the company.
- In conclusion, much has been done by the third level institutions and development agencies to meet the training and education requirements of the sector, but gaps still prevail. However, greater marketing of existing provision to the sector is required.

1. Introduction

1.1 Introduction & Background to the Expert Group Study

In 2007, the Expert Group on Future Skills Needs (EGFSN) report *Tomorrow's Skills: Towards a National Skills Strategy* highlighted the need to up-skill the Irish workforce by 2020 to ensure the continuing economic growth and prosperity of the country. In relation to the food processing sector, the report highlighted the need to ensure the continued employability of the approximately 30,000 workers who have second-level or lower educational attainment as well as meeting the sector's high-skilled requirements.

With this in mind, the EGFSN decided that it was timely to review the current and future skills demand and supply position for the food and beverage sector (having already published a report on the sector undertaken by PricewaterhouseCoopers in 2003).

The EGFSN, supported by Forfás, commissioned PricewaterhouseCoopers (PwC) in November 2008 to undertake an update study to review the current and future education and skills needs of the sector and identify the key gaps in current education and training provision. Having identified the industry skill gaps, this study also proposes recommendations to bridge these gaps.

1.2 Terms of Reference

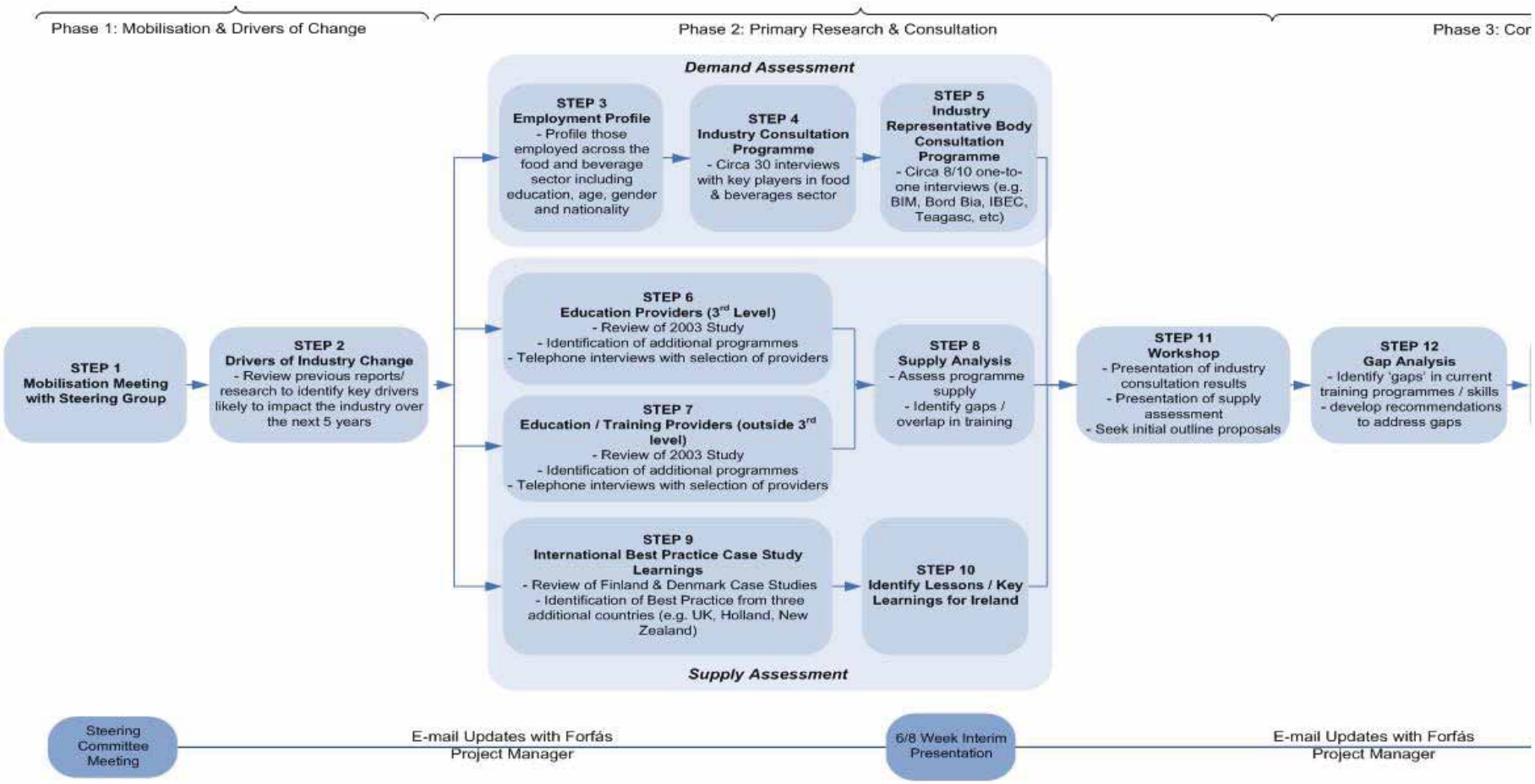
The focus of this study is to assess the current skill levels in the food and beverage sector and determine the skill gaps that need to be addressed to both meet the current challenges facing the sector and the long term needs of the sector.

The objectives of this study were as follows:

- Describe the current sector overall in terms of its position within the Irish economy and the change drivers that are affecting its current and future performance;
- Identify any particular changes, either to the sector overall or within specific sub-sectors (including the seafood & beverage sub-sectors), since publication of the 2003 report and in particular their effect on skills requirements;
- Profile the current composition of those employed across the food and beverage sectors, including details of educational attainment, age, gender and nationality;
- Capture the progress made on issues and the recommendations for action and change in the 2003 report (which can be found in Appendix 1.1);
- Review and update the education and training provider data from the 2003 report and identify any consequences arising for skills supply; and
- Identify further action required since the 2003 report and outline a series of recommendations to achieve this, assigning responsibility for action to specific bodies.

1.3 Approach and Methodology

The approach to the research involved a structured work programme which placed a strong emphasis on consultation with key informants from the food and beverage sector as well as examining the education and training provision among third level education institutions and state agencies. The main steps in the project are depicted in diagram 1.1 overleaf.


Phase 1: Mobilisation & Drivers of Change
Phase 2: Primary Research & Consultation
Phase 3: Cor
Demand Assessment
STEP 1
Mobilisation Meeting with Steering Group
STEP 2
Drivers of Industry Change
- Review previous reports/ research to identify key drivers likely to impact the industry over the next 5 years
STEP 3
Employment Profile
- Profile those employed across the food and beverage sector including education, age, gender and nationality
STEP 4
Industry Consultation Programme
- Circa 30 interviews with key players in food & beverages sector
STEP 5
Industry Representative Body Consultation Programme
- Circa 8/10 one-to-one interviews (e.g. BIM, Bord Bia, IBEC, Teagasc, etc)
STEP 6
Education Providers (3rd Level)
- Review of 2003 Study
- Identification of additional programmes
- Telephone interviews with selection of providers
STEP 7
Education / Training Providers (outside 3rd level)
- Review of 2003 Study
- Identification of additional programmes
- Telephone interviews with selection of providers
STEP 8
Supply Analysis
- Assess programme supply
- Identify gaps / overlap in training
STEP 9
International Best Practice Case Study Learnings
- Review of Finland & Denmark Case Studies
- Identification of Best Practice from three additional countries (e.g. UK, Holland, New Zealand)
STEP 10
Identify Lessons / Key Learnings for Ireland
Supply Assessment
STEP 11
Workshop
- Presentation of industry consultation results
- Presentation of supply assessment
- Seek initial outline proposals
STEP 12
Gap Analysis
- Identify 'gaps' in current training programmes / skills
- develop recommendations to address gaps
Steering Committee Meeting
E-mail Updates with Forfás Project Manager
6/8 Week Interim Presentation
E-mail Updates with Forfás Project Manager

In broad terms, the research approach involved a high level review based largely on qualitative interviews with key informants. On the topic of course provision in particular, while the review of the courses available from the selected providers is comprehensive, it is not intended to incorporate a detailed audit of course provision in individual universities and colleges, and the report recommendations should therefore be viewed in this context.

1.4 Report Structure

This introduction is the first of seven chapters in the report. The remainder of this report comprises 6 additional chapters. An overview of the remaining chapters' content is provided below.

Chapter 2 provides a contextual background to the study by describing the Irish Food & Beverage environment. This includes a profile of the current sector and sub-sectors and their outlook for the future. This chapter also examines the current and future drivers of change and implications from a skills perspective.

Chapter 3 profiles the current composition of those employed in the Food & Beverages sector, in terms of their educational attainment, age, gender, location and nationality.

Chapter 4 provides an overview of education and training available to the Food & Beverage sector as provided by third level institutions and state agencies.

Chapter 5 illustrates examples of international best practice in relation to the provision of education and training in other leading agri-food countries, and the key lessons that might be applicable to the Irish Food & Beverages sector. The countries reviewed in this chapter are the UK, Australia, New Zealand, Denmark and Finland.

Chapter 6 outlines the skill and competency requirements of the sector as derived from the industry consultations. It also examines the current education and training provision responding to these requirements and identifies any gaps that need to be addressed.

Chapter 7 concludes the report by presenting the proposed recommendations arising from the project findings.

2. Profile of the Irish Food & Beverage Sector, Future Drivers of Change & Implications for the Skills Base

2.1 Introduction

The purpose of this chapter is twofold: firstly to profile the performance and significance of the Irish Food & Beverages sector, and secondly to identify and outline the current and future drivers-of-change and the implications these drivers may have on the development of the sector going forward and the underlying skill base.

The remainder of this chapter comprises three sections, namely:

- 2.2 Profile of the Irish Food & Beverages Sector & Outlook;
- 2.3 Strategic Drivers-of-Change; and
- 2.4 Operational Drivers-of-Change, including challenges facing the sector.

The information presented in this chapter is based on extensive desk research and reports from various organisations, namely: CSO; Bord Bia; Food and Drink Industry Ireland; Department of Agriculture, Fisheries and Food; the National Competitiveness Council, Ireland; and Forfás. See Bibliography for reports used.

2.2 Profile of the Food & Beverage Sector & Outlook

This section examines the value and contribution of the Irish food and beverage sector, highlights any changes since the 2003 study and takes a look at how the sector might develop over the coming years.

The food and beverage sector has been examined under a number of headings in order to develop a clear profile and outlook for the industry. These headings are:

- Economic Overview – Gross Value Added (GVA), Output and Expenditure;
- Employment;
- Exports, and
- Sector Outlook for beverages; poultry; pork; beef; dairy; animal feed; food ingredients; prepared consumer foods; and seafood.

2.2.1 Summary of Key Economic Features

The key economic features of the food and beverage sector are:

- Gross Value Added for the food and beverage processing sector in 2007 was estimated at €6.9 billion – 4% of national GVA.

- Total Irish employment in 2008 was reported at 2.1 million, 230,000 (11%) of which is employed in the wider Agri-food sector. 50,000 individuals are employed directly in the food and beverage sector and as such are the focus of this study.
- In 2006 the Food & Beverage sector consisted of 586 enterprises, 93% of which were Irish owned. The 7% of foreign owned enterprises accounted for 25% of employment in the sector (*Census of industrial enterprises 2006, CSO)*.
- The 586 enterprises represent a wide spectrum of companies varying in size, employment levels and productivity levels. An estimated 46% of these entities employ less than 20 people. This lower end classification represents less than 6% of the total employment within the sector and generates 3% of the gross output from the sector. Those enterprises employing over 250 persons, account for just 6% of the total number of companies. However these larger enterprises account for 39% of total employment and over 50% of the gross output associated with the food and beverage sector. Companies ranging in size from 20 to 250 employees account for 55% of employment in the sector and represents 48% of the total number of companies.
- The value of Food & Beverages exports grew from €6.5bn in 2002 to €8.2bn in 2008, an increase of €1.7bn. Export forecasts remain positive with the level predicted to reach €9.5bn by 2011 – up 16%. In terms of the food and beverage sector's contribution to total Irish exports, this accounted for 10% in 2007.
- The Irish food and beverage sector has a high utilisation of domestically sourced raw materials and other inputs. Irish Economic Expenditure (IEE)[9] accounts for just less than three-quarters of total expenditure in the Food & Beverage sector. This outperforms the manufacturing sector as a whole, where the equivalent rate of IEE is approximately 40%.

2.2.2 Economic Profile

National Gross Value Added (GVA)[10]

The agri-food sector encompasses both primary production (agriculture, fishing and forestry) and the Food & Beverage and Wood Processing sectors. As a sector it has a significant economic impact by way of a sizeable contribution to the GVA level within the national economy. According to the CSO data, the primary production sector represented a Gross Value Added of €4.2 billion in 2007, while the food and beverage processing sector's economic activity was measured in Gross Value Added terms at €6.9 billion. The total GVA for the agri-food sector in 2007 was therefore estimated at €11.2 billion, accounting for just under 7% of the Gross Value Added at factor cost.

9 Irish Economic Expenditure (IEE) consists of wages, Irish raw materials and Irish services.
10 The CSO definition of "Gross Value Added at factor cost" is equal to the sum of the values of the goods and services (or parts thereof) produced in the country without deducting an amount in respect of capital consumption (i.e. depreciation). It excludes taxes on production and includes subsidies on production".

Table 2.1 Contribution of the Agri-Food Sector to GVA

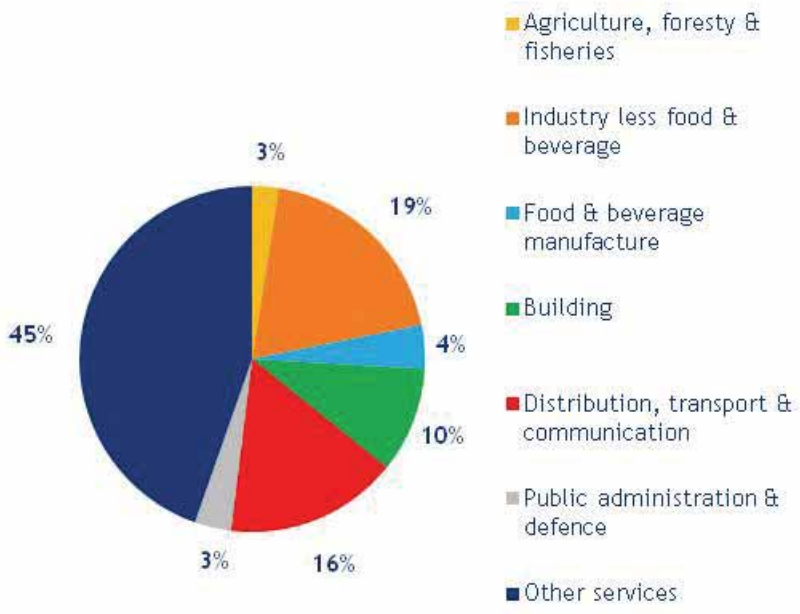
	2006 (€m)	2007 (€m)
Total Gross Value Added (GVA) at factor cost for all sectors of which:	**154,899**	**167,563**
GVA in Primary Agriculture, Fisheries & Fisheries at factor cost	*3,812*	*4,206*
GVA in Food & Beverage Processing Sector	*6,907*	*6,961*
Total Agri-Food GVA	**10,719**	**11,167**
% GVA in Primary sector	*2.5%*	*2.5%*
% GVA in Food & Beverage Processing	*4.5%*	*4.2%*

Source: Census of Industrial Production 2006 & National Income & Expenditure 2007; CSO

The food and beverage processing sector accounts for approximately 4.2% of total GVA. However, the food and beverage processing sector has an economic impact beyond that captured by its direct contribution to the economy. It is a sector dominated by indigenous companies and hence it does not have a significant repatriation of profit earnings abroad. As a sector it has a high utilisation of domestically sourced raw materials and inputs, which reflects the strong linkages between the primary agriculture and the food and beverage processing sectors.

The GVA of the food and beverage sector should be measured in terms of its size and importance relative to the wider manufacturing sector. In 2007, the Irish economy generated a GVA of €167.5 billion, of which €39.7 billion was accounted for by the manufacturing industry. Manufacturing industry represented 24% of the total national GVA and food and beverage processing represented 18% of total manufacturing.

Figure 2.1 Distribution of GVA at factor cost by sector, 2007

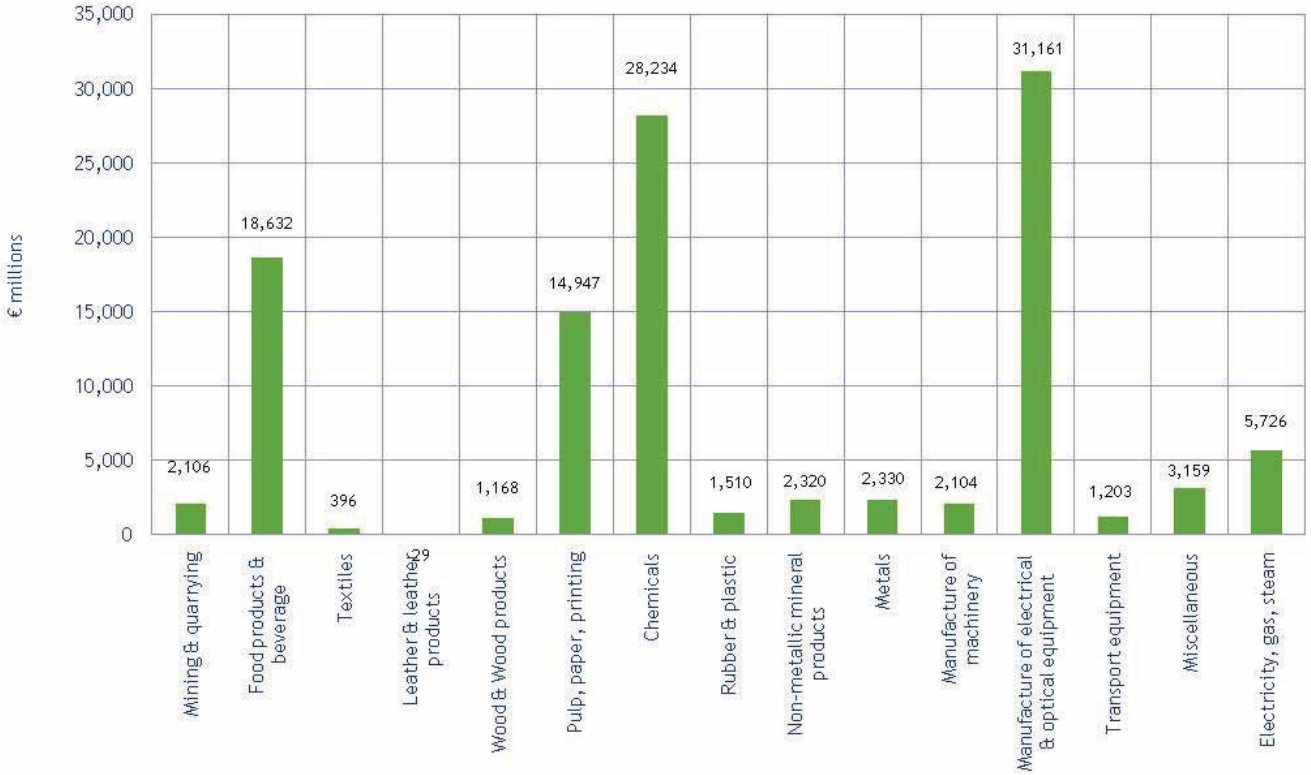


Source: Census of Industrial Production 2006 & National Income & Expenditure 2007; CSO

Industrial Output[11]

In 2006, the industrial manufacturing sector generated a gross output of €115 billion. However the activity is concentrated in four sub-sectors, which collectively represent 81% of the gross output from the industrial sector. The food and beverage processing sector with a gross output of €18.6 billion accounts for 16% of industrial output, which ranks along side the chemical sector (25%), Pulp, paper, publishing and printer sector (13%) and the Electrical and optical equipment sector (27%). The significant position of the food and beverage sector is illustrated in Figure 2.2 which quantifies the gross output by sub-sector for the industrial manufacturing component within the Irish economy. In terms of gross output contribution, the food and beverage processing sector is the third largest sector within Irish industrial manufacturing.

Figure 2.2 Gross Output across industrial manufacturing by sub-sector



Source: Census of Industrial Production 2006, CSO

11 The CSO definition of gross output is a "value that represents the net selling value of all goods manufactured in a year, whether sold or not, including work done and capital assets manufactured for own use. Operating subsidies related to production or sales of the output are included in the value of gross output; excise duty and VAT are excluded". The most recent data pertains to 2006.

Industrial manufacturing accounts for 24% of the national GVA, and within this GVA contribution, the food and beverage processing sector accounts for €6.9 billion equivalent to 17%. The economic impact of the food and beverage sector represents nearly one fifth of the entire industrial manufacturing base, the sector's contribution to industrial manufacturing across key economic metrics is summarised in the following table.

Table 2.2 Impact of the Food & Beverage Processing sector within National Industrial Manufacturing, 2006

Food & Beverage Processing sector		% of total industrial manufacturing
Turnover	€23,281m	19%
Gross Output	€18,632m	16%
Net Output	€10,195m	15%
Gross Value Added	€6,901m	17%
Employment	41,966	18%

Source: Census of Industrial Production 2006, CSO

Enterprise and Employment Levels

The food and beverage processing sector is dominated by indigenous companies. The Census of Industrial Production Report of 2006 estimated that the food and beverage sector (including seafood processing) consisted of 586 enterprises, 93% of which were Irish owned. Irish owned units accounted for three quarters of the employment level within the food and beverage processing sector, which implies that just 7% of enterprises provided for nearly 25% of the employment. The value of Gross Output is evenly split between Irish and foreign owned units, with Irish owned units accounting for €9.3 billion and the remaining €9.33 billion provided by foreign owned units. This suggests that the foreign owned companies are larger in scale and operate with higher productivity levels as typically, the foreign owned companies have higher levels of automation, processes tend to be larger and they are involved in more value added processing, e.g. beverages and infant formula sectors.

Table 2.3 Comparison of Irish owned with foreign owned enterprises in the Food & Beverage sector

Food & Beverage Processing sector	No. of enterprises	Turnover € millions	Gross Output € million	Gross Value add € millions	Proportion of employment
Irish owned	549	10,511	9,300	2,254	77%
Foreign owned	37	12,769	9,330	4,652	23%
Total	586	23,281	18,631	6,907	

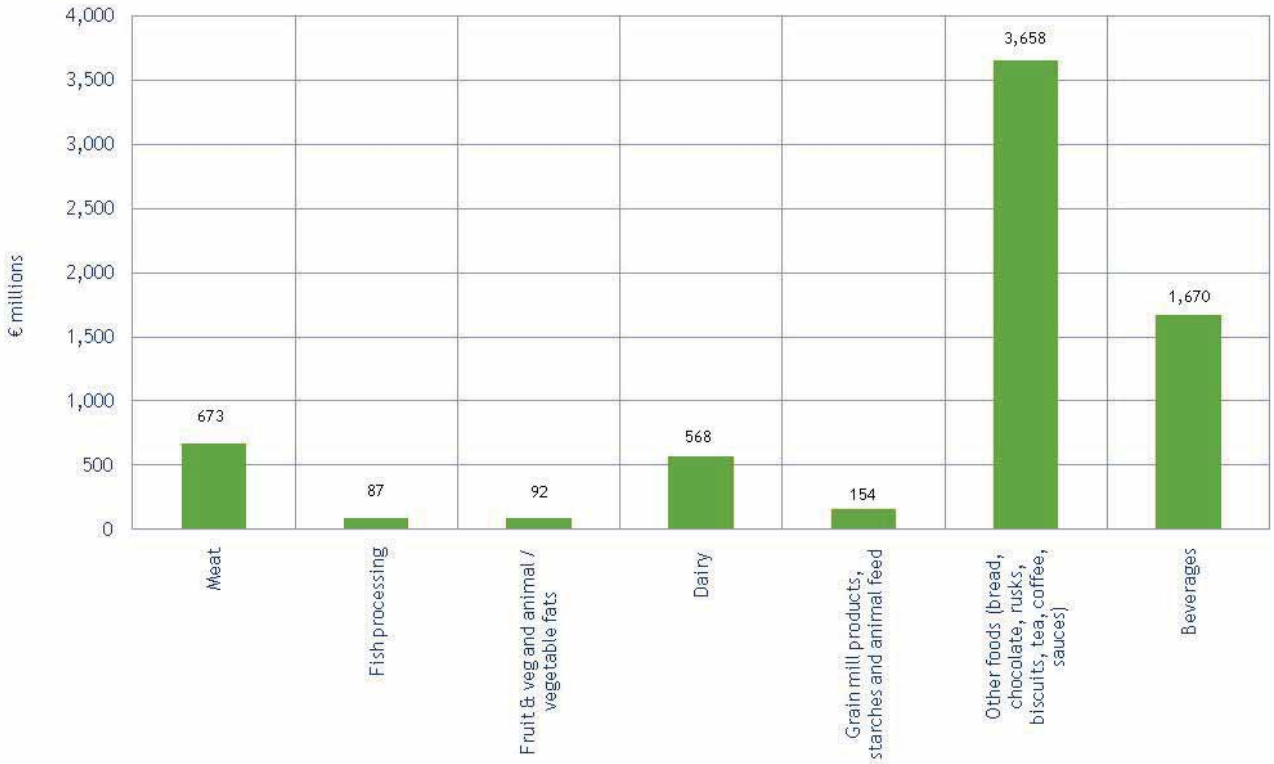
Source: Census of industrial enterprises 2006, CSO

2.2.3 Food & Beverage sub-sector performance

Gross Value Added by Sub-Sector

The performance of the food and beverage processing sector by sub-sector is summarised in Figure. 2.3. As already indicated the Gross Value Added generated by the food and beverage Sector in 2006 was estimated to be €6,907 million. The meat sector accounts for 10% of the sector's GVA, while the dairy industry contribution is estimated to be over 8%. The beverage sub-sector is a major source of GVA, accounting for a significant 24% share of GVA activity. The beverage sector can be broadly explained by two categories, the first category covering distilled spirits, beer and malt and the second category of mineral waters and soft drinks. The larger category is that of distilled spirits, beer and malt, which accounts for 80% of the GVA output from the beverage sector.

Figure 2.3 Gross Value Added by sub-sector group for the Food & Beverage process sector, 2006



Source: Census of Industrial production 2006, CSO & Department of Agriculture, Fisheries & Food

The other significant grouping in Figure 2.3 is that described by "other foods (bread, chocolate, rusks, biscuits, tea, coffee, condiments)" and estimated to have a GVA of €3,658 million. This grouping includes "bread, pastry and cakes" with an estimated GVA of €210 million, also in the grouping is "cocoa, chocolate, sugar confectionary, tea, coffee and sauces" with a GVA contribution of €3,250 million. The other sub-set of "biscuits, rusks, sugar and macaroni" has an estimated €198 million in GVA.

Output by Sub-Sector

There are three key significant sub-sectors, namely meat, dairy and beverages, which collectively represent 45% of the gross output from the food and beverage processing sector. Meat accounts for 21% of gross output and 10% of Gross value added of the sector, while dairy represents 14% of the gross output and just over 8% of the GVA. The beverage sector has a significant added value component, and while it is less than half the meat sector in terms of gross output, it greatly outperforms the meat sector with respect to Gross Value Added.

Table 2.4 Gross Value Added (GVA) at factor cost for the Food & Beverage sector

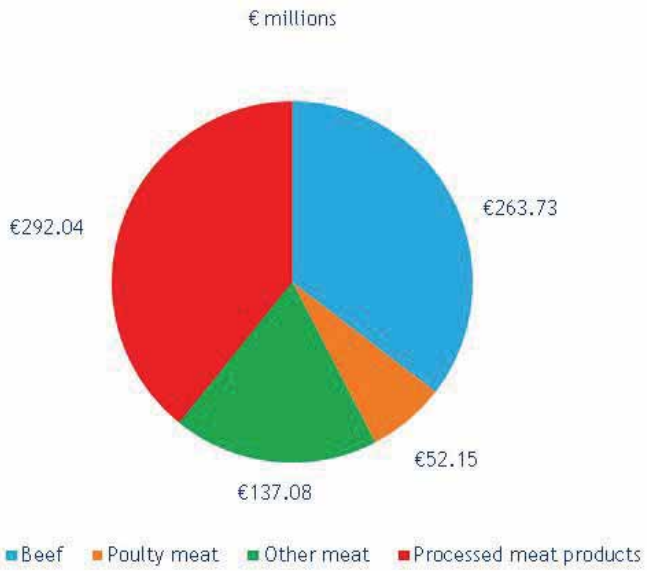
Description	2006 €m	2007 €m	% change
All manufacturing industries	**36,685**	**39,701**	**+8.2%**
Meat processing	*673*	*745*	*+10.6%*
Fish processing	*87*	*93*	*+6%*
Fruit & Vegetable processing	*92*	*81*	*-12%*
Dairy	*568*	*854*	*+50%*
Grain mills, starches & animal feed / pet food	*154*	*160*	*+3.8%*
Other foods	*3,658*	*3,516*	*-3.8%*
Beverages	*1,670*	*1,512*	*-9.4%*
Total Food & Beverage	**6,902**	**6,961**	**+0.8%**

Source: Census of Industrial Production, 2006

Meat and dairy are two sub-sectors that are showing steady growth in GVA. Fish processing is showing more modest growth levels. Fruit & vegetable processing is in decline. A significant sector which is showing a decline is beverages, where the GVA contracted by 7.6% in 2006 and again contracted in 2007. Whiskey remains a key growth area in the beverages sector however both cider and beer are experiencing a contraction.

The meat sub-sector is dominated by beef, which accounts for approximately 47% of the total meat sector turnover, while in GVA terms it accounts for approximately 35%. Figure 2.4 shows the breakdown of the meat sector GVA, where the GVA for the meat sector was equivalent to €745 million in 2007.

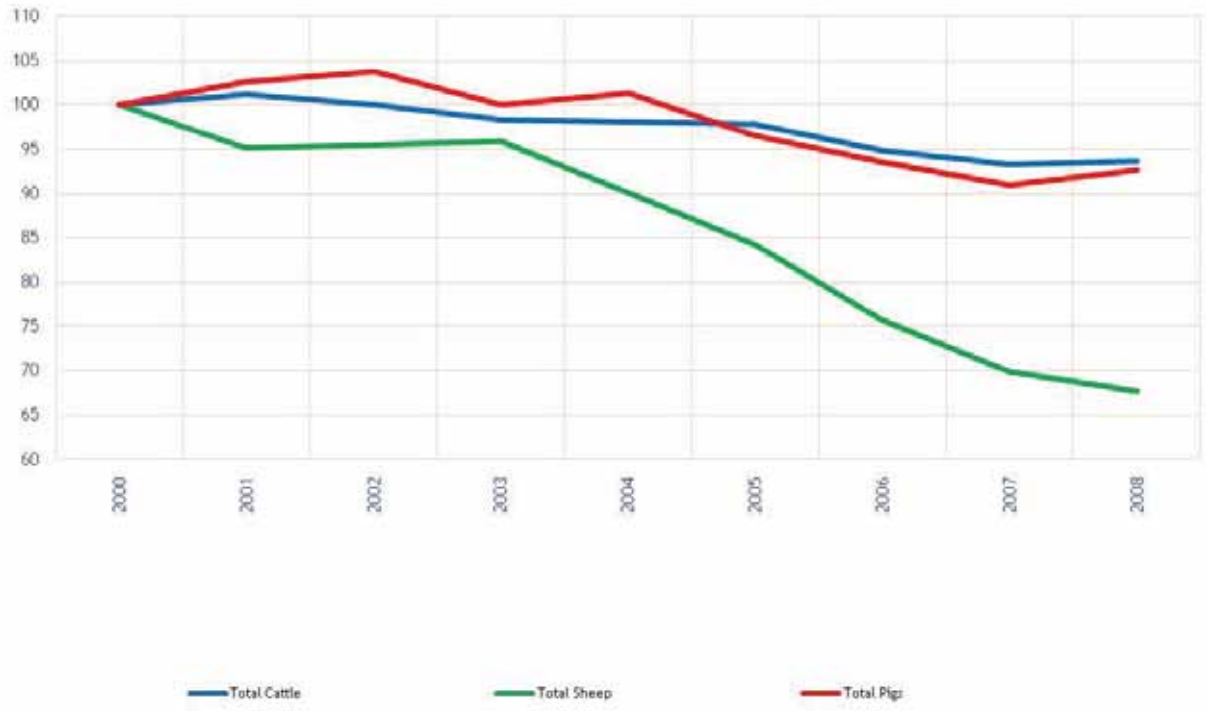
Figure 2.4 GVA in meat sector 2007



Source: DAFF & Census of Industrial production, CSO

As a sector meat is significant in size, it employs over 14,000 people, being the largest area of employment in the food and beverage processing sector. With gross output of over €4 billion, the meat industry is of huge economic significance. The meat processing sector is underpinned by the large primary production livestock base. The livestock sector has experienced a decline in numbers in recent years. This trend is illustrated in Figure 2.5 and of prominence is the decline in the sheep stock, which has fallen from over 5 million head in 2000 to less than 3.5 million head in 2008. While numbers have also fallen in both cattle and pigs the extent of the decline is not as dramatic as that evident among the sheep sector. Cattle numbers have dropped to 5.9 million head from 6.3 million head in 2000, while pigs have dropped from 1.7 million head to 1.6 million head.

Figure 2.5 Livestock numbers index 2000 - 2008



Source: Department of Agriculture, Fisheries & Food

Despite the decline in both sheep and cattle numbers Ireland remains the largest net exporter of beef in the EU and likewise is the largest net exporter of sheep meat within the EU.

Table 2.5 Number of animals slaughtered annually

	2001	2002	2003	2004	2005	2006	2007
Beef	1,700,000	1,675,000	1,766,000	1,725,000	1,606.000	1,692,000	1,692,000
Sheep	3,500,000	2,925,000	2,792,000	3,229,000	3,280,000	3,150,000	2,990,000
Pigs	3,180,000	3,030,000	2,800,000	2,600,000	2,600,000	2,600,000	2,500,000

Source: Department of Agriculture, Fisheries & Food, CSO

The impact of reduced stock on farms is reflected in the level of slaughtering. While the beef sector is relatively static, both the sheep and pig sectors are experiencing a contraction in slaughtering activity attributed to the reduced availability, due to declining breeding stock numbers.

BIM estimates that there are approximately 198 companies in the seafood sector, which can be divided into three categories; those producing bulk seafood, those selling fresh seafood products and those that produce processed or prepared seafood. The latter group of prepared seafood products is represented as the fish processing sector in Figure 2.3 and Table 2.4 above. The seafood sector faces challenges in respect of supply, with export volumes reducing from 216,256 tons in 2000 to 198,623 tons in 2005. The estimated fish landing in 2007 was 259,587 tons, previously having been 285,937 tons in 2004.

The output volume in aquaculture has remained static since 2001, fluctuating between 55,000 tons and 60,000 tons.

Table 2.6 Irish seafood export profile by volume and value in 2005

	No. of companies	Tons	Value €'000
Bulk seafood products	11	116,117	108,348
Fresh / live seafood products	116	54,881	130,083
Prepared seafood products	76	27,625	354,054

Source: BIM

2.2.4 Employment

Table 2.3 outlines the numbers employed in the 'manufacture of food products and beverages' (NACE Code 15) in the Republic of Ireland versus total employment between 2004 and 2008, as gathered by the Quarterly National Household Survey (QNHS).

Table 2.7 Irish Food & Beverage Manufacturing Industry (NACE code 15)[12] Employment (2004-2007)

Year	Total Employment	NACE Code 15 Employment	Year-on-year growth of NACE Code 15 employment	NACE Code 15 employment as % of total Irish employment
2004	1,834,000	53,000	-	3%
2005	1,928,000	53,000	0%	3%
2006	2,018,000	54,000	2%	3%
2007	2,102,000	52,000	-4%	2%
2008	2,108,000	50,000	-4%	2%

Source: CSO, Quarterly Household Survey, Quarter 2

The QNHS estimates that total Irish employment increased by 13%, from 1.8 million in 2004 to 2.1 million in 2008. The food and beverage sector's share of total employment remained relatively static over this period at 50,000 with a share of 2% to 3%.

Later in this section we set out employment levels by sub-sector based on the Census of Industrial Production (CIP) 2006 which estimates total employment in the food and beverage sector at 42,000. However, QNHS figures for the corresponding year quote employment in the sector at 54,000 a differential of 12,000 employees. This variance can be attributed to the different methodologies used for collection of the data in both surveys. The QNHS is a quarterly face-to-face survey of 39,000 households with survey results being weighted to be representative of population estimates. Whereas, the Census of Industrial Production is a census of industrial enterprises that employ more

[12] NACE Code 15 titled the 'manufacture of food products & beverages' represents nine sub-codes covering various processing and manufacturing sub-sectors of the Food & Beverage industry including: fruit & vegetables, meat, prepared animal feeds, dairy products, fish, animal oils and fats, beverages, grain mill products, starches, etc. Further detail on NACE code 15 can be found in Chapter 4, Employment & Education Profile within the Irish Food & Beverages Sector.

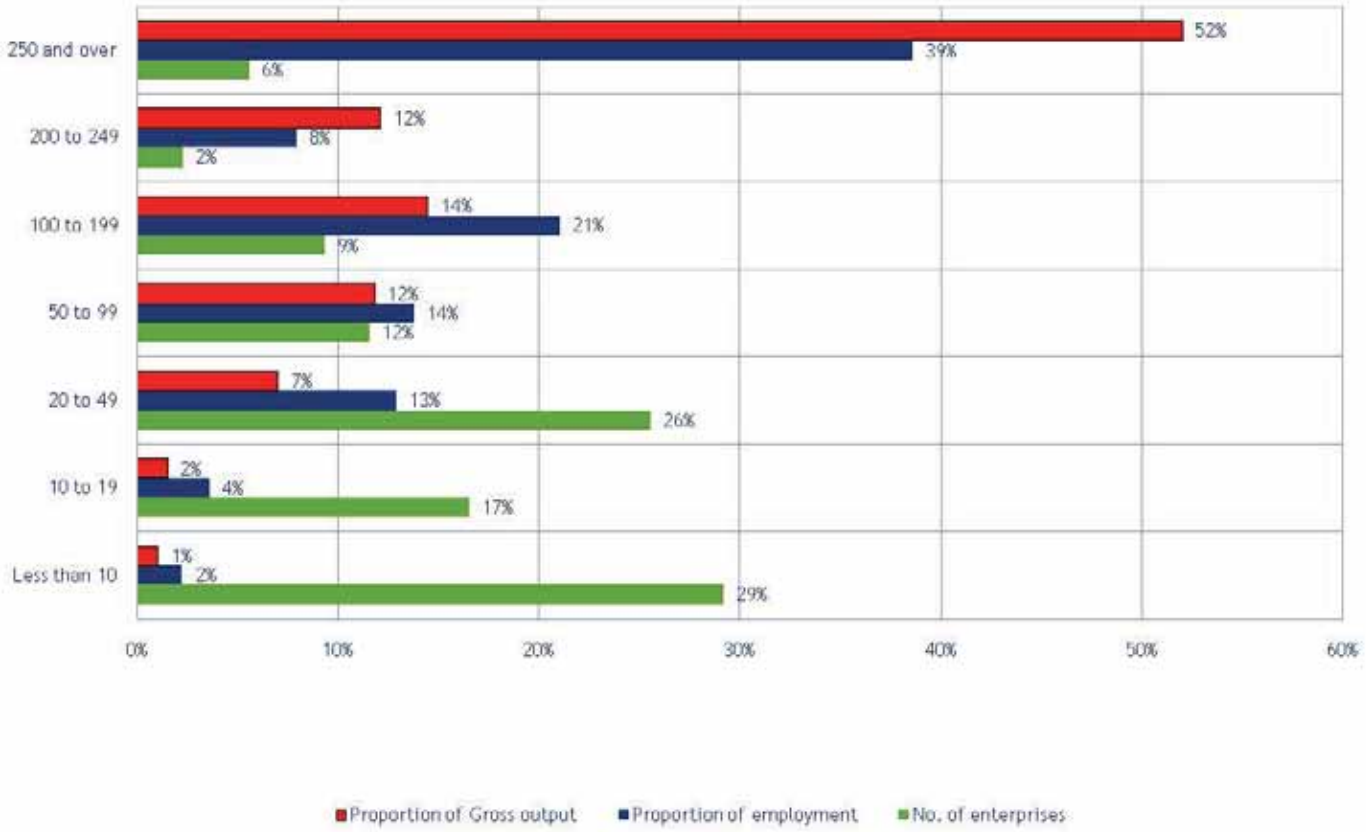
that 3 employees (drawn from the Business Register). As such, these figures should not be viewed as being directly comparable.

The figures as presented in Table 2.3 relate to the direct employment in the food and beverage processing sector, however the indirect employment linked to the food and beverage sector is estimated to be approximately 60,000. This indirect employment is associated with transport, distribution, warehousing, engineering supplies, and other services. Also it should be noted that the food and beverage sector is closely linked to activities in primary production and therefore helps to support some 120,000 farmers. Hence the total employment impact that can be attributed to the entire Agri-Food industry is approximately 230,000.

As already highlighted the food and beverage processing sector consists of an estimated 586 enterprises, where an enterprise is defined as a unit with 3 or more persons. The 586 enterprises represent a wide spectrum of companies varying in size, employment levels and productivity levels. Classifying the enterprise in terms of size by the number employed, there are a large number of enterprises, estimated to be 46%, that fall into the classification at the lower end defined as employing less than 20 persons. This lower end classification represents less than 6% of the total employment within the sector and generates just 3% of the gross output from the sector. At the other extreme are the larger enterprises defined in size as those employing over 250 persons, this group account for just 6% of the total number of enterprises. However these larger enterprises account for 39% of the employment and over 50% of the gross output associated with the food and beverage sector. The distribution of employment and gross output across the varying size of enterprises is presented in Figure 2.6.

The food and beverage sector is notable for having a high number of enterprises. At 586 enterprises the food and beverage sector is comparable to the pulp, paper, publishing and printing sector which has 614 enterprises. As mentioned earlier the food and beverage sector ranks as a significant sector within the manufacturing industries along with the chemical sector and the electrical & optical equipment manufacturing sectors, however these two latter sectors are more concentrated with just 188 and 351 enterprises respectively. In comparison to these two larger manufacturing sectors the food and beverage sector is more fragmented, with very many small enterprises. The meat sector consists of approximately 139 enterprises, whereas the dairy sector is somewhat less fragmented with just 53 enterprises as detailed in the Census of Industrial Production 2006. Both the meat and dairy sector are similar with respect to the proportion of enterprises defined as employing less than 20 persons, which in both cases is approximately 30%. The average gross output per enterprise for the meat sector and dairy sector is €28.8 million and €44.4 million respectively. In contrast, both the fish processing and fruit & vegetable processing sectors are much more fragmented with less scale. Here the smaller enterprises, those employing less than 20 persons, account for over 50% of the enterprises. The average gross output per enterprise in the fish processing sector is €4.3 million and approximately €6.7 million in the case of the fruit & vegetable processing sector. According to BIM, less than 10% of the companies in the seafood processing sector operate with turnovers in excess of €20 million, while 45% of the companies have turnovers less than €1 million.

Figure 2.6 Distribution of employment, gross output and number of enterprises by size of enterprise

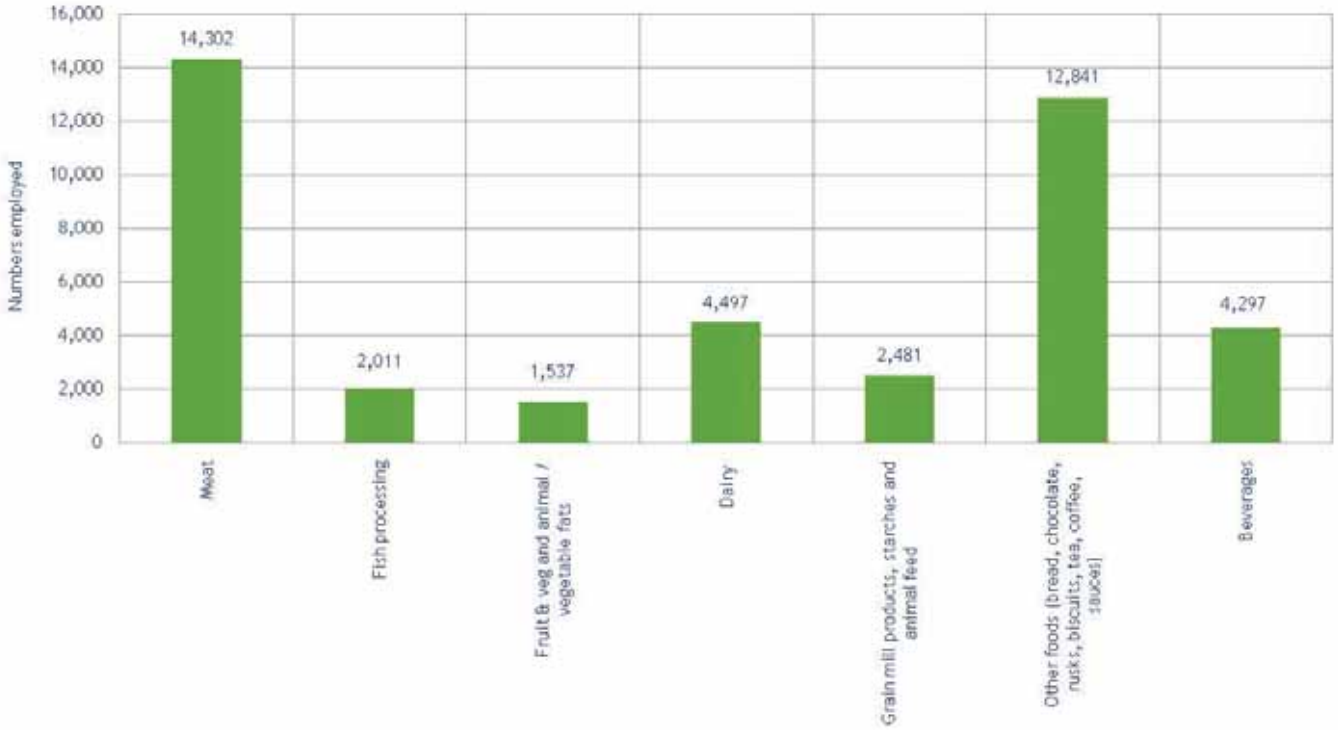


Source: Census of Industrial Production 2006, CSO

It is evident from Figure 2.6 that the impact of the small enterprises on both gross output and employment is small.

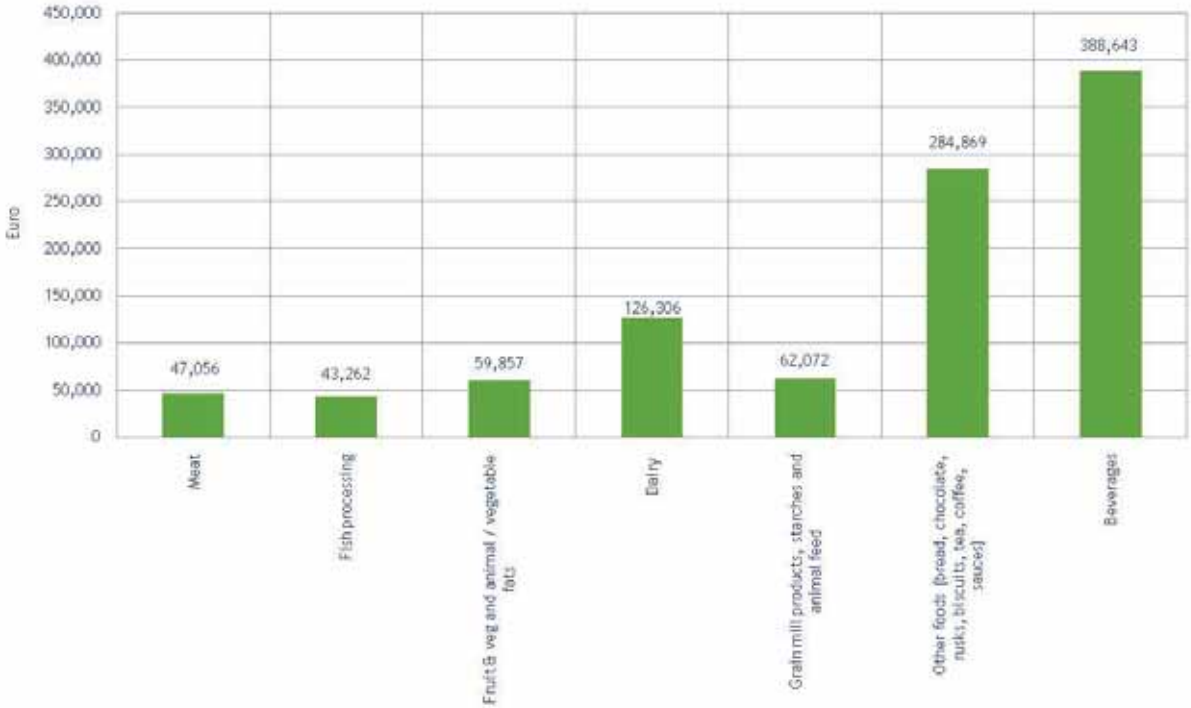
The high numbers employed in the meat sector is highlighted in Figure 2.7, with over 14,000 employees. However Figure 2.8 demonstrates the variance in productivity across the food and beverage sector as measured in terms of GVA per employee. The most productive sector is the beverage sector, which is consistent with the earlier commentary regarding GVA output associated with the beverage sector. The dairy sector significantly outperforms those other sectors that are closely linked with primary production. The average GVA per employee for the total food and beverage sector is €164,466, based on 2006 CSO data.

Figure 2.7 Distribution of employment across sub-sector within Food & Beverage industry, 2006



Source: Census of Industrial Production 2006

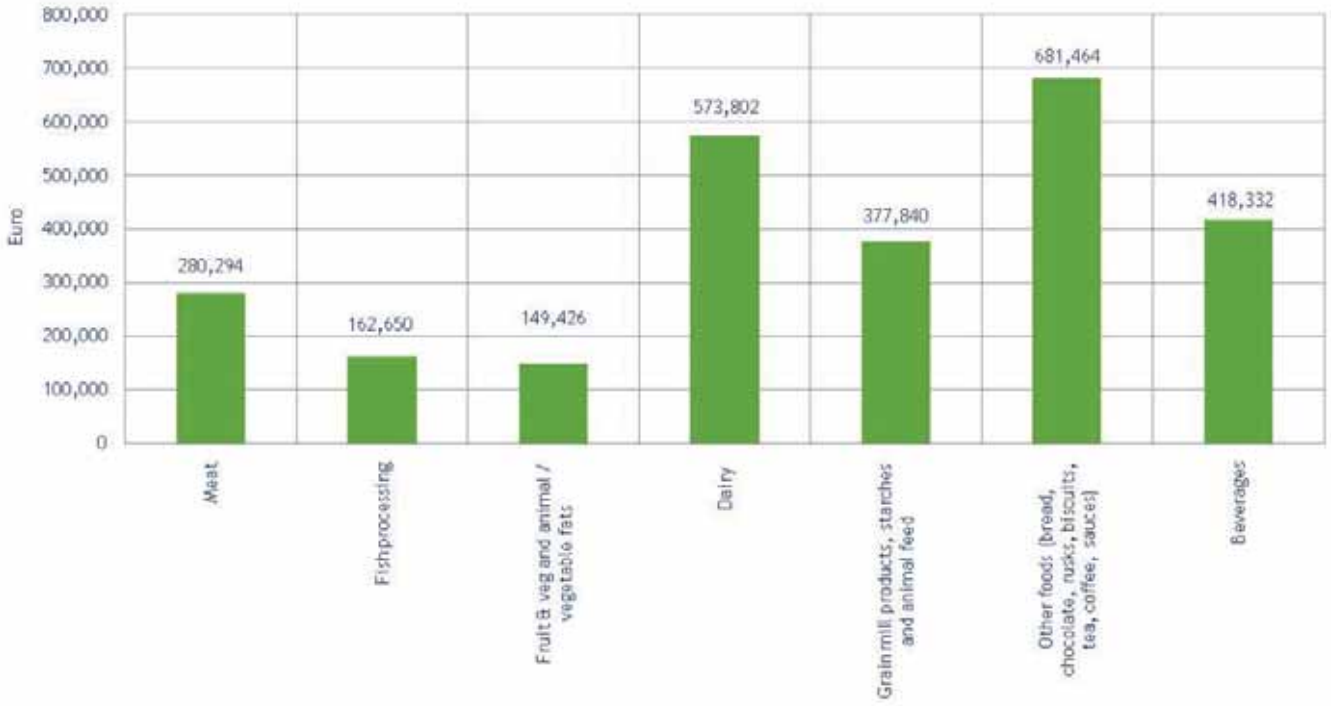
Figure 2.8 GVA per employee across sub-sector in the Food & Beverage Industry, 2006



Source: Census of Industrial Production 2006

Figure 2.7 shows that 2,011 persons are employed in the fish processing sector, however BIM estimates that an additional 4,000 persons are engaged full-time in fisheries, with an extra 780 working full-time in aquaculture; the part-time element accounts for another 3,000 persons. BIM data therefore indicates that the seafood sector supports approximately 11,097 jobs. The seafood processing sector is concentrated in the coastal regions of Donegal, Galway, Cork, Kerry and the South East.

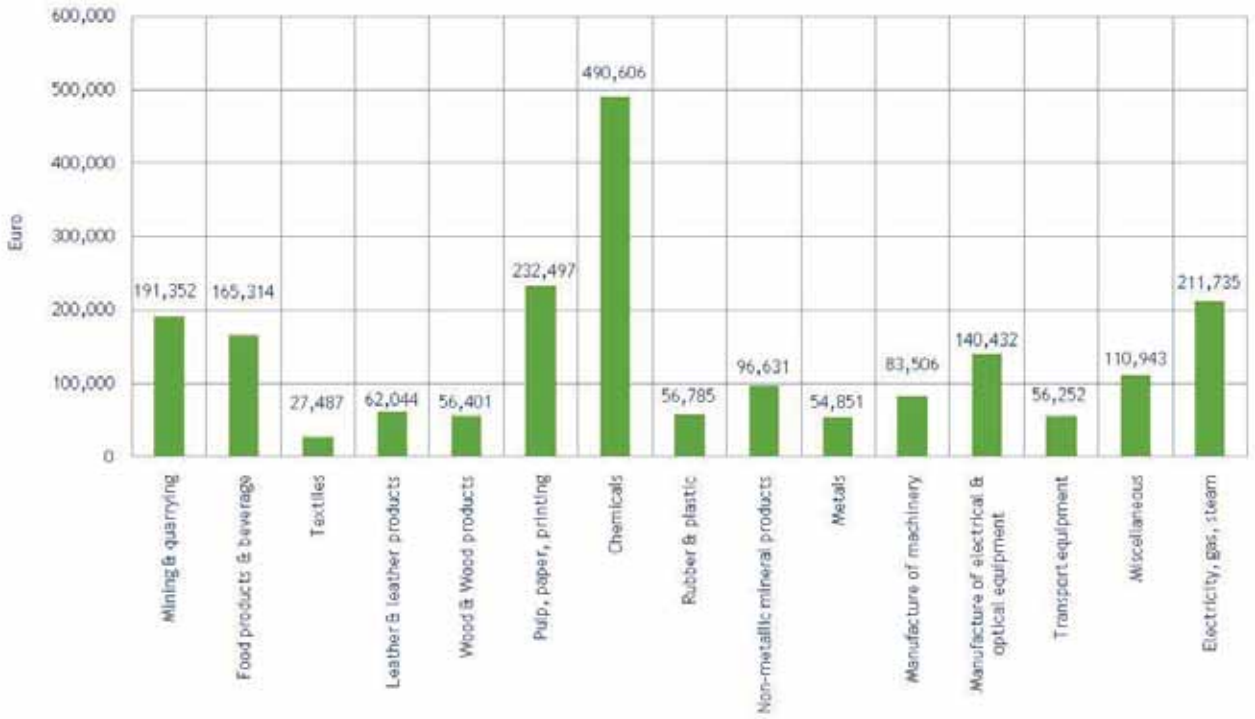
Figure 2.9 Gross output per employee by sub-sector for the Food & Beverage industry, 2006



Source: Census of Industrial Production 2006

Figure 2.9 shows the gross output per employee and the data highlights the sub-sectors which have the greatest scale and productivity. The average gross output per employee for the total Food & Beverage sector is €443,968. A key observation is that the meat, fish processing and fruit & vegetable sub-sectors significantly lag the industry average with respect to gross output per employee. This reflects the labour intensive and manual nature of the work and points towards an opportunity for productivity gains through new technology and raising of skill levels.

Figure 2.10 GVA per Employee comparison across manufacturing industries, 2006



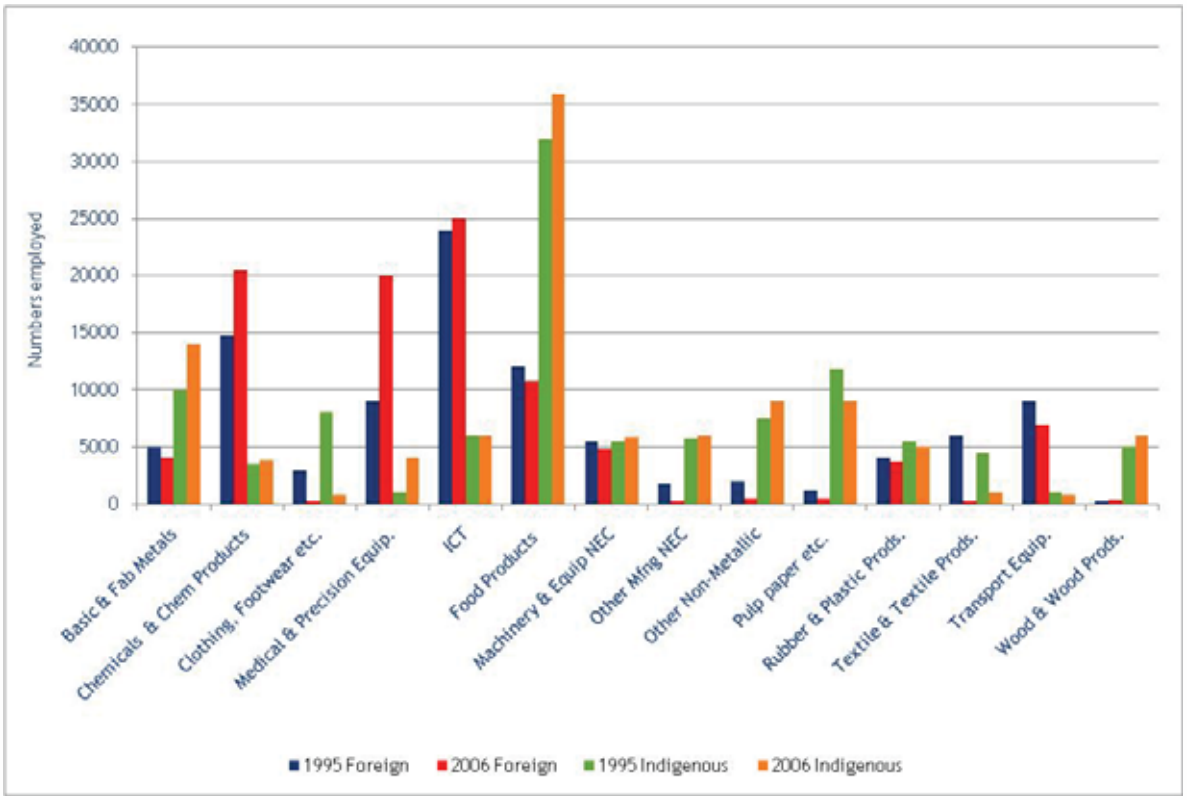
Source: Census of Industrial Production 2006

Figure 2.10 compares the GVA of food and beverage sector with that of other manufacturing industries. While the sector lags the chemical industry it compares favourably with the electrical & optical equipment manufacturing sector.

As stated earlier the food industry remains a very important constituent within the overall manufacturing industry in Ireland and particularly has a prominent contribution to employment, as evident from Figure 2.11. The striking feature from Figure 2.11 is that the food manufacturing sector stands out as the sector with the highest numbers employed among indigenous companies.

Employment in the indigenous food sector grew by approximately 10% over the period 1996 to 2006, while employment among foreign owned food companies declined by about 10%. The food sector accounts for over 35% of the employment provided by the indigenous manufacturing industry.

Figure 2.11 Manufacturing Employment by Ownership and Sector: 1995, 2006



Source: Forfás, 'The Report of the High Level Group on Manufacturing', March 2008

2.2.5 Exports

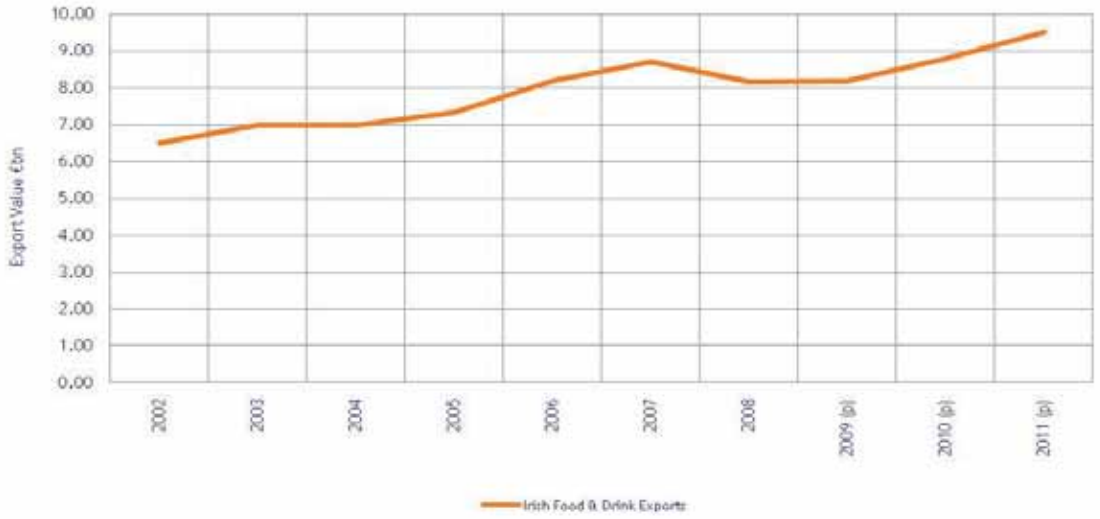
Figure 2.12 illustrates the Irish food and beverage sector's export value between 2002 and 2008, and its forecast value over the next three years to 2011, which is sourced from the Bord Bia report, 'Strategic Priorities, 2009-2011'.

The data indicates that Irish food and beverage exports have grown strongly between 2002 and 2008 from €6.5bn to €8.2bn[13] respectively, reaching a peak of €8.7bn in 2007.

Despite foreign exchange rate movements and commodity price fluctuations, forecasts for Irish food and beverage exports remain positive. Continued export growth is predicted for the period between 2009 and 2011, where food and beverage exports are estimated to increase from €8.2bn in 2009 to €9.5 billion by 2011, an increase of 16%.

[13] This figure includes live animals and processed products but excludes animal feed.

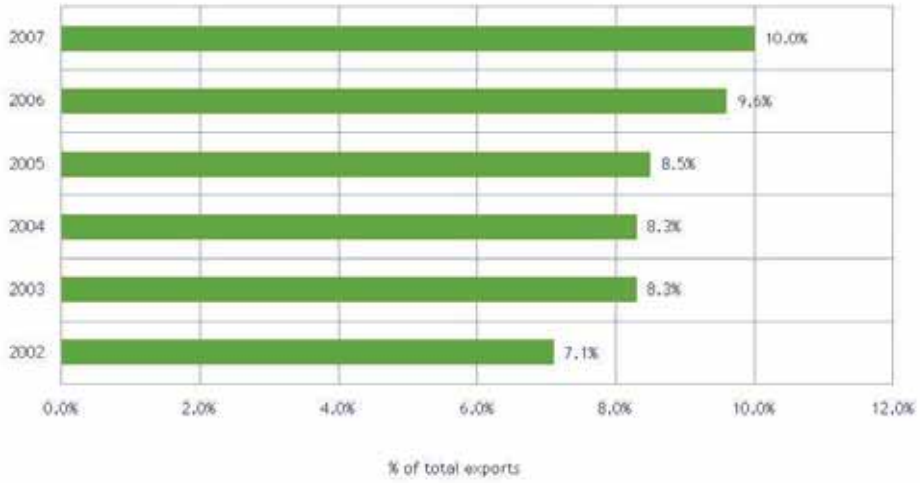
Figure 2.12 Irish Food & Beverages Exports, 2002 – 2011



Source: Bord Bia, 'Strategic Priorities: 2009-2011'

Figure 2.13 illustrates the value of exports from the Irish food and beverage industry as a percentage of total Irish exports between 2002 and 2007.

Figure 2.13 Irish Food & Beverage Exports as a Percentage of Total Irish Exports



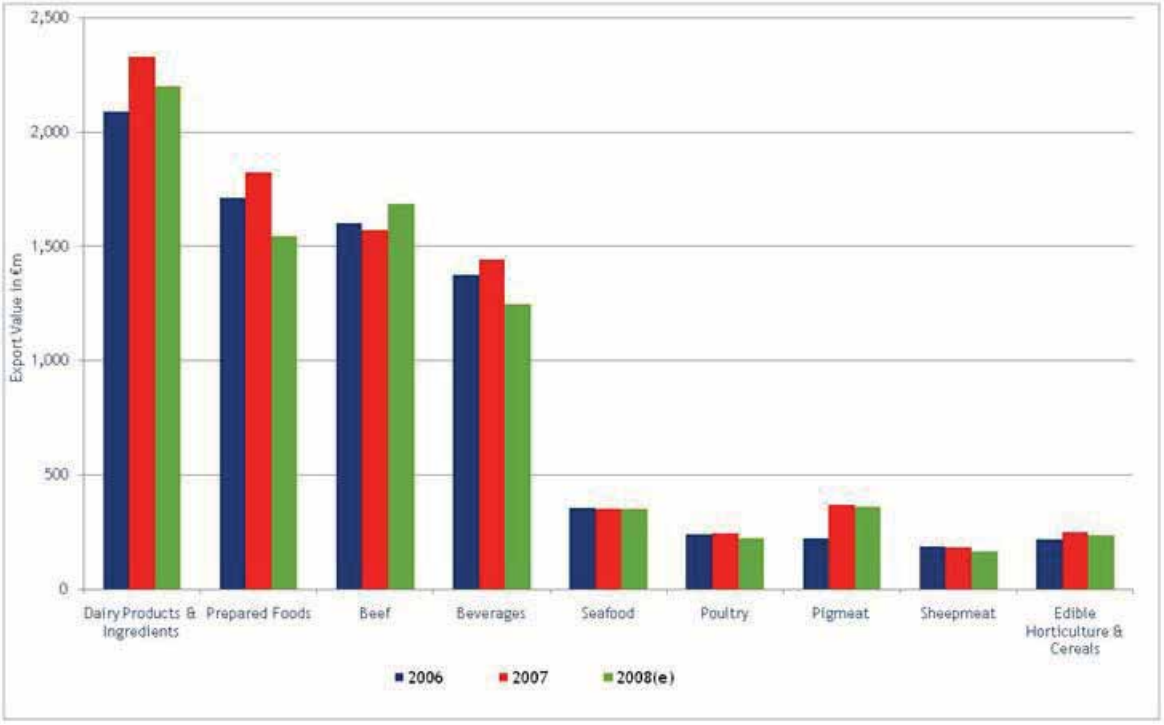
Source: Bord Bia, 'Performance & Prospects 2008/09'

Food and beverage exports share of total Irish exports increased steadily over this period by almost 3%, from 7% in 2002 to 10% in 2007.

Figure 2.14 illustrates the export value of the individual sub-sectors within the Irish food and drinks industry between 2006 and 2008. Based on this data, the sub-sectors can be grouped into two tiers, as follows:

- Sub-sectors with an export value of less than €500m, namely: seafood; poultry; pig meat; sheep meat; and edible horticulture & cereals, and;
- Sub-sectors with an export value in excess of circa €1.5bn, namely: dairy products & ingredients; prepared foods; beef; and beverages.

Figure 2.14 Irish Food & Beverages Exports by sub-sector, 2006 – 2008(e) [14]



Of the larger sub-sectors, beef showed the strongest performance during 2008. Beef export value in 2008 reached an estimated €1,687 million from the 2007 level of €1,570 million, a 7.5% increase. This value gain reflects the rise in prices due to a combination of tight supplies domestically and import restrictions from Brazil into the EU. It should be noted that in volume terms exports actually declined in 2008, dropping from 523,000 tons in 2007 to 483,000 tons. In 2008, an estimated 261,000 tons was exported to the UK, with 217,000 tons exported to continental Europe, and the balance of 5,000 tons to the international market.

[14] 2008 figures are estimates

Dairy exports declined in 2008, following substantial growth of 12% in 2007. The 2008 decline reflects the slowdown in the global dairy market and the resulting lower prices. Despite this short term price volatility Ireland remains a key exporter of dairy ingredients, and continues to benefit growth in areas such as infant formula. Ireland produces 15% of the total global output of infant formula. Ireland also has a strong position in casein and is the largest exporter of casein to the US.

The beverage sector, though declining in 2008, has come through a period of sustained export growth. Key export categories are cream liqueur and whiskey. It is estimated that whiskey exports have expanded three fold over the last ten years and are projected to double between 2008 and 2015. The key success in growing whiskey volumes has been successful market diversification with strong growth in the United States, Russia, Eastern Europe and South Africa. The global market for cream liqueurs continues to show steady growth with strong long term potential through further market diversification and development.

Prepared foods which includes ready to eat foods, confectionery, and bakery products is a significant export category reaching a value of €1,822 million in 2007. The UK continues to be the key market for prepared foods. However there has been some market development in continental Europe with progress in Benelux, Scandinavia, Spain and Germany.

The poultry sector saw exports falls by 8% in 2008. There has been a decline in production levels despite improvement in consumer demand for poultry. However domestic supply on the EU market is challenged by import competition from Brazil and Thailand. Irish poultry exports focus on value added products and chilled cuts. Bord Bia estimates that processed poultry accounts for 70% of the poultry export value, with the UK accounting for 80% of the total exports.

The pig meat sector has seen a decline in breeding stock numbers and hence export volumes are impacted. The UK is the main export destination and accounted for 70,000 tons in 2008 with exports to continental Europe estimated to be just less than 40,000 tons, while the international market accounted for 23,000 tons. The market for pig meat is well diversified with a significant presence in markets such as Japan, China, Hong Kong and Russia. The dioxin scare and product recall at the end of 2008 will present challenges in terms of restoring market confidence and maintaining market share. Another impact from the dioxin crisis will be removal of sows on affected farms which will further reduce supply.

As mentioned earlier there has been a sharp fall in sheep numbers. The decline has impacted sheep exports which fell by 15% in volume terms to 42,000 tons in 2008, following a decline of 10% in 2007.

Table 2.8 Sheep meat exports

	2006	2007	2008
Exports in tons	54,000	48,900	42,000

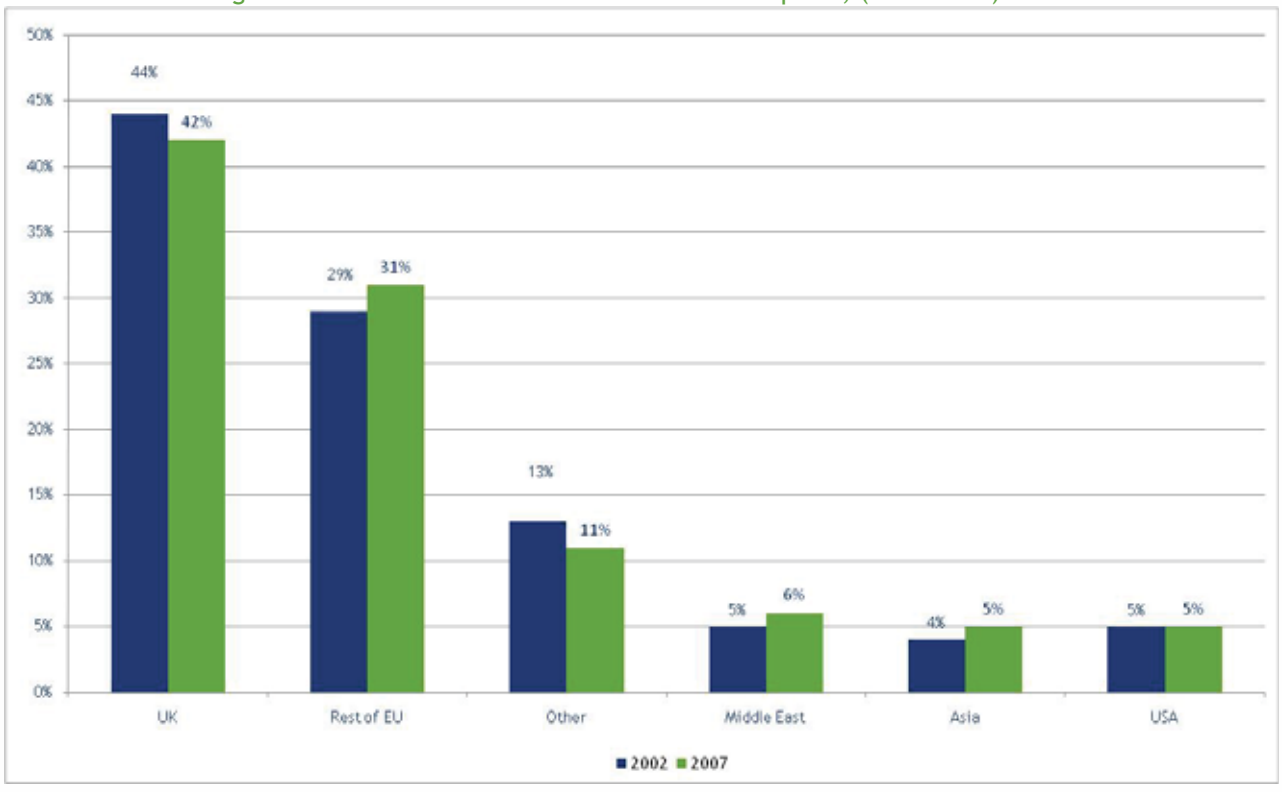
Source: Bord Bia & Department of Agriculture, Fisheries & Food

The main export market continues to be France, which accounts for circa 50% of Ireland's sheep meat exports. The export quantity to France in 2008 was 21,000 tons. A key competitor on the French market is New Zealand, which is increasing its presence of chilled lamb on the EU market. The other key export market for Irish sheep meat is the UK, which accounted for 12,500 tons in 2008.

Seafood exports have been static over recent years, 87% of seafood exports are directed to EU markets with the balance going to Far Eastern and African markets. The main export destinations remain unchanged, with France accounting for approximately one-quarter of exports, followed by the UK and Spain.

Overall in terms of the destination of Irish food and beverage exports, the UK remains the single most important market, accounting for an estimated 43% of overall food & drink exports in 2008. Irish food and beverage represent over one-fifth of overall imports of food & drink into the UK. Ireland's other major destination markets for food and beverage are among the remaining EU member states, collectively accounting for 31% of exports.

Figure 2.15 Distribution of Irish Food & Drink Exports, (2002-2007)



Source: Bord Bia Performance & Prospects 2008-09

2.2.6 Contribution to the Irish Economy

Forfás compiles data in its Annual Business Survey of Economic Impact (ABSEI) comparing Irish Economic Expenditure (IEE) levels across the various sectors. Irish Economic Expenditure (IEE) consists of wages, Irish raw materials and Irish services. Table 2.9 illustrates absolute comparisons between the food and beverage sector and the overall manufacturing sector in terms of this breakdown in expenditures. It can be seen that IEE accounts for just less than three-quarters of total expenditure in the food and beverage sector.

This outperforms the manufacturing sector as a whole, where the equivalent rate of IEE is approximately 40%.

Table 2.9 Forfas analysis of Irish Economic Expenditure, 2004 – 2007, € billions

	Food & Beverage sector				All Manufacturing			
	2004	2005	2006	2007	2004	2005	2006	2007
Payroll	1.7	1.8	1.8	1.94	7.3	8.18	8.8	9.2
Irish raw material	6.2	6.5	6.5	6.5	11.3	10.5	10.8	10.6
Irish services	1.8	1.8	1.9	2.0	5.9	5.7	6.1	6.4
Total Irish Economic Expenditure	9.7	10.1	10.3	10.4	25.0	26.8	27.5	26.2
Total Expenditure	12.9	13.8	14.2	14.4	51.9	56.8	60.9	66.4
Sales	15.5	16.2	17.2	17.3	78.67	82.68	87.55	93.2
IEE as % of Total Expenditure	75.5%	75.4%	74.2%	72.2%	48.1%	45.9%	45.2%	39.,5 %
IEE as % of Sales	62.5%	64.2%	61.3%	60.1%	31.7%	32.4%	31.4%	28%

Source: Forfas Annual Business survey of economic impact, 2007

A report commissioned by the Department of Agriculture, Fisheries and Food estimated the net inflow of funds to the Irish economy from different sectors within the economy. The net inflows are measured as the net value of exports - that is the revenues associated with exports minus the associated outflows on imported materials and repatriation of profits by foreign owned companies. The study grouped agriculture, fishery, forestry, food and drinks industries into a grouping described as the "bio-sector". The key finding was that while the "bio-sector" accounted for 16% of gross export value from manufacturing, its proportion of net foreign export earnings was significantly higher at 32%. The higher proportion of net export earnings is due to the low quantity of imports consumed in the "bio-sector". Hence the "bio-sector" share of net foreign earnings, in 2005, amounted to 32% of the total net earnings from primary and manufacturing industries. This is double the "bio-sector's" 16% contribution to exports.

In addition to the reduced import requirements in the "bio-sector", foreign ownership and thus repatriation of profit is lower than in other manufacturing sectors. The "bio-sector" also benefits from EU payments to a greater extent than other sectors.

2.2.7 Sector Outlook

As already stated, Bord Bia is forecasting export growth for the food and beverage sector with projections for exports to increase[15] from €8.2bn in 2008 to €9.5bn in 2011.

Table 2.10 outlines the background, opportunities and / or challenges for each sub-sector moving forward. Estimates regarding future performance are indicated as 'in growth' (↑); 'in decline' (↓); or remaining 'static' (↔). The information in this table has been derived from PwC knowledge and resources, feedback collected during the consultation programme with industry and industry representative bodies and from a desk-research review of relevant industry reports and material.

Table 2.10 Food & Beverage Industry Outlook by Sub-sector

Subsector	Estimated Future Performance	Background, Challenges, and Opportunities
Beverages	↑	**Background** • Multinationals own and invest in Irish brands e.g. Guinness, Baileys, Bulmers / Magners, Murphys, Ballygowan etc. • Additional presence of artisan companies in juices, liquors and microbreweries. **Challenges** • Increased taxation on alcohol; growth in import share of consumption; and the 22% decline in production of domestically produced alcohol between 2000 and 2007.16 • The increased cost of raw materials is a further challenge facing the industry along with the strong scientific criteria required to promote health and wellness of a product.[17] • Awareness campaigns promoting responsible drinking and increasing regulatory environment for advertising and voluntary codes in relation to the promotion of alcohol. **Opportunities** • Areas for innovation in the beverage sector have been identified, for example R&D and innovation around pack size, packaging format and product line extensions. • Further growth and market diversification for whiskey and cream liqueurs.
Poultry	↓	**Background** • In Ireland production levels continue to fall. • In 2007 slaughtered 73 million birds, a decline of 2.6% on 2006. • Profitability is vulnerable to volatility in the feedstuff market. **Challenges** • Increased competition from low cost production regions such as Thailand and Brazil. • The expectation is that the EU will become a net importer of poultry meat.

[15] 'Strategic Priorities: Growing the Success of Irish Food, Drink and Horticulture 2009 -2011' Bord Bia, 2009
[16] 'The Economic Contribution of the Drinks Industry,' Anthony Foley, Commissioned by the Drinks Industry Group of Ireland, July 2008
[17] 'Food Research Map: An Overview of Food Research Capability in Ireland,' Enterprise Ireland, 2008

Pork	↔	**Background** • EU consumption and production is projected to increase. • EU-27 output increased to 22.3 million tons in 2007, a gain of 4%. • Irish production is dropping, due to a decline in the Irish breeding stock. **Challenges** • Challenges facing Irish pork include the lack of a brand position within the EU. • Pig processors in Ireland are small in comparison to their Danish counterparts. • Investment in the industry is capital intensive. • Environmental standards and planning criteria are high. • Increased competition from Holland and Denmark, both countries with a significant global presence and scale. **Opportunities** Demand for pork is still high in the domestic market, with pork representing 41% of meat sales in Ireland in 2008.[18] • Teagasc estimates that national herd will consist of 1.7 million pigs including 150,000 sows in 2015. • Teagasc estimates that annual slaughtering will reach 3.6 million pigs per annum in 2015. The number of slaughtering in 2007 was 2.6 million pigs. • Teagasc are targeting productivity improvements through better feed conversion efficiency (from 2.47 kg feed / kg weight gain to 2.3kg feed / kg weight gain) and sow productivity (from 21 to 24 pig / sow / year).
Beef[19]	↓	**Background** • EU beef production projected to decline to 7.6 million tons in 2014 with imports expected to reach 743,000 tons. In 2009 the EU beef deficit is expected to hit 190,000 tons. • Ireland remains the largest net exporter of beef within the EU. **Advantages** • Irish climate and pasture-fed are advantages when compared to competing supply bases, clear opportunity to promote sustainable features such as biodiversity. **Challenges** • Underlying issue: Profitability is poor. • Irish beef has benefited from EU restrictions on Brazilian beef owing to veterinary standards and animal health. • Future WTO agreement will have huge bearing on this sector regarding import quotas and tariffs. • Currency fluctuations can impact beef exports to the UK - Ireland's largest beef export market. • The Irish beef industry is predicted to come under increased price pressure from the larger supermarkets looking for lower costs. • Sustainability is a headline issue across the Food & Beverage sector currently and could have an impact on beef sales as consumers switch to meat with a lower carbon footprint, such as chicken and pork. **Opportunities** • A move to local sourcing and local EU supply would be favourable for Irish beef. • Meat consumption and demand increasing in markets where markets are still developing e.g. Asian markets. • Opportunities exist for farmers to tailor beef cattle by improving genetics – niche products. • EU deficit of beef predicted to reach 7.6 million tonnes by 2014. • A fall in UK domestic supplies should benefit demand for Irish beef.

[18] 'Food Research Map: An Overview of Food Research Capability in Ireland,' Enterprise Ireland, 2008
[19] 'Strategic Priorities: Growing the Success of Irish Food, Drink and Horticulture 2009 -2011' Bord Bia, 2009

		Projections • Teagasc estimate the beef cow numbers will be 1.08 million head in 2014, a fall from the current 1.2 million head. • Teagasc estimate that in 2014 there will be 90,000 beef herds, a decrease of 10% from current levels.
Dairy	↑	**Background** • The EU-27 dairy herd expected to fall from 24.2 million head to 21.9 million head by 2014, with milk supply expanding by 2.2%. • Expectation is for increasing volumes of cheese to be produced, with reduced availability of butter and skim milk powder. **Advantages** Clear cost advantage from grass based production in an international context. **Challenges** • The quota removal may present a challenge for the processing industry and will require strategic decisions around the utilisation of the increased milk supply i.e. what products should be made from the milk? • The increase in milk production will also require an investment in processing capacity. • Farm production sector also needs to make capital investment. • Will need to be cost competitive on world markets. **Opportunities** • End of quotas by 2015 bringing increased milk production to 5.6 billion litres with Teagasc projecting an expansion of 20% by 2020. Total milk volume predicted to reach 6.8 billion litres by this time. • Possible opportunity for farms to switch to dairy from beef to capitalise on elimination of quotas.[20] **Projections** • Teagasc estimate the number of dairy farmers will fall from 20,197 to 15,500 in 2015. • Teagasc estimate the national dairy herd will increase by 65,000 to reach 1.127 million in 2015. • The average dairy herd will increase from 52 cows to 73 cows by 2015.
Animal Feed	↑	**Challenges** • Traceability and food security are key issues for this sector especially in the wake of recent highly publicised food scares. • The growth in Bio-fuels may impact animal feeds through price inflation and demand as energy crops are diverted to the Biofuel industry. • The availability of locally sourced raw materials, such as by-products from food processing operations may be reduced if such operations contract. This could have an impact on raw material costs as animal feed manufacturers look for alternative raw material sourcing. • Future demand will be contingent on livestock numbers. • Key growth will take place in developing regions and hence the animal feed sector will become increasingly global and dominated by scale. **Opportunities** • Potential opportunities could exist for value-added animal feed for a niche sector of farmers aiming to target the traceability and food safety trend.

[20] 'Towards 2030: Teagasc's role in transforming Ireland's Food & Beverage sector and the wider Bio-economy' Foresight Report p.40, May 2008

Food Ingredients	↔	**Challenges** • Reduced availability of raw materials presents a challenge for this sector in the future. **Opportunities** • Opportunities exist for nutritional ingredients with applications in the medical and hospital sectors. • Focus on new technology. • Opportunity in the bio-medical sector with the identification of bio-actives from plant and animal based products.
Prepared Consumer Foods	↑	**Challenges** • 90% dependent on the UK market. Currency fluctuations could result in a less price competitive offering. • Under pressure from retail multiples to provide products at lowest costs and sustain deep-cut promotions. • Producing prepared foods without additives and optimising new preservation technologies which allow for clean labelling of food products. **Opportunities** • Challenge to diversify into continental Europe. • Highly competitive market but opportunities exist for innovative, value-added products tailored to customers' needs.[21] • Need to understand trends – consumers want healthy, ethical, premium, indulgent and convenient food with a move towards fresh and chilled in recent years. • Formulating prepared foods that are nutritionally balanced with respect to key nutrients such as salt, fat will be key requirements.
Seafood	↑	**Background** • Strong consumer demand for fish and the associated health and well-being benefits. • Quota restrictions on certain pelagic and demersal species. • Sustainable approach to managing the fish stocks. • Fish stocks falling below the biological limit. • Promotion of aquaculture as a sustainable solution and growth sector. • World wide 50% of fish stocks from farmed sources, however Ireland lags this trend at 38%. • The Government has committed €141 million to marine research. **Challenges** • Fish processing sector is extremely fragmented with little brand identification. • Need to address licensing and regulatory issues with respect to developing the aquaculture sector. • Low level technology in the processing sector and need to develop the technology and supply chain infrastructure. **Opportunities** • The increasing use of aquaculture as a raw material for the processing sector could ensure its future growth.
Sheep	↓	**Background** • Continued decline in breeding stock, in 2008 a fall of 8% in the breeding sheep numbers. • Exports declined by 14% in 2008 and by 9% in 2007. • **Projections** • Teagasc estimate the national flock will be 2.7 million ewes in 2015, a decline of 10%. • Teagasc estimate that in 2015 there will be 29,000 flocks, a decline of 12%. • Teagasc predict that in 2015 lowland sheep sector will dominate and account for 75% of the ewes and 85% of lamb carcass output.

Source: PwC derived

[21] 'Food Research Map: An Overview of Food Research Capability in Ireland,' Enterprise Ireland, 2008

In summary, the outlook for these sub-sectors are as follows:

- In the short-term, the sector remains exposed to currency fluctuations, being dependent on the UK market for over 40% of exports. Sub-sectors such as meat where margins are low will be under pressure to remain competitive. Allied to this, prepared convenience foods are under pressure from the weakness of sterling. This may have a negative impact on employment.
- In the medium-term, the sector will seek to diversify into continental European markets and thereby mitigate currency risks going forward. This will help stabilise employment prospects over the medium term.
- Currently some sub-sectors, notably meat and fish are labour intensive and lag the other sub-sectors in terms of Gross Output per employee. Over the long-term the focus will be on raising productivity levels through new technology and skills development. The impact of this may be increased output levels per employee but reduced numbers employed.
- The sub-sectors with the most positive long term employment prospects are dairy and drinks which show strong demand growth prospects. Ireland given its low cost grass based production system is well positioned to avail of growth opportunity post the abolition of milk quotas in 2015. This will require an investment in additional processing capacity and employment. In the drink sector, whiskey output is projected to double between 2008 and 2015 this projection will be accompanied by process capacity expansion.
- Meat is a sub-sector with weak prospects, at primary producer level the numbers of livestock are projected to decline. As a consequence, the processing sector is likely to go through a period of consolidation. However in a European context, Ireland is expected to remain a significant domestic EU supplier of beef and sheep. Ireland's position as a preferred supply base for meat products may benefit from increased awareness and concern regarding sustainability. Ireland's meat sector has an opportunity to set out its sustainability credentials. Going forward sustainability will grow in importance, already many governments such as Saudi Arabia, South Korea, Japan are looking at long term food security strategies. Water scarcity is becoming a major issue for many countries and the long-term scenario will see food production converge in regions with secure water resources.
- In summary, given Ireland's natural advantage and heritage in food, the food industry should be recognised as one of the key platforms for growth and supported accordingly.

2.2.8 Strategic and Operational Drivers of Change

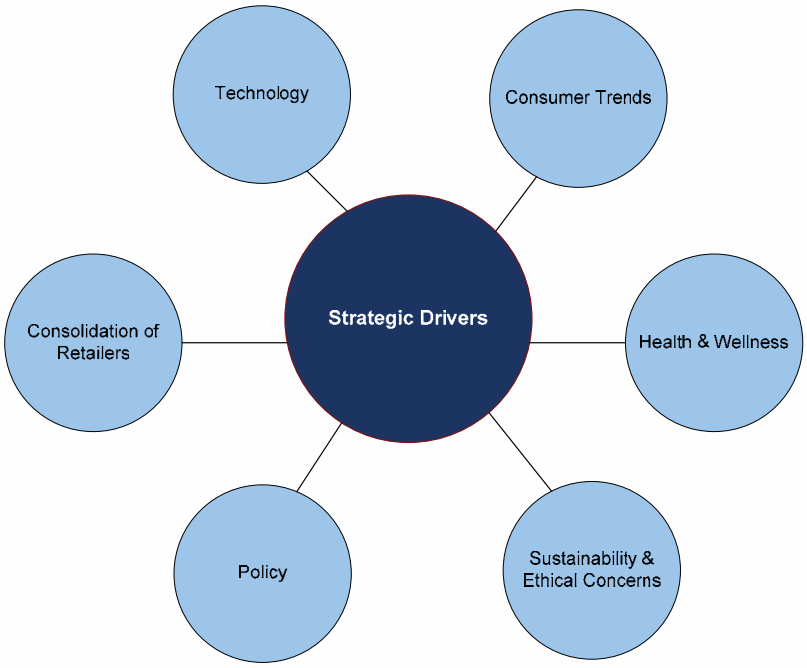
This section of the report examines the strategic and operational drivers-of-change facing the food and beverage sector. Operational drivers of change can be defined as those issues that impact on the day-to-day running or the business, whereas strategic drivers of change are of significance during planning and development stages in the organisation. This section comprises the following sub-sections, namely:

- 2.2.9 Strategic Drivers of Change (and their implications for the industry); and
- 2.2.10 Operational Drivers of Change.

2.2.9 Strategic Drivers of Change

Six key drivers-of-change facing the Irish food and beverage sector were identified. The selection of these drivers is based on feedback from industry and industry representative bodies during the consultation programme and through an extensive desk based research exercise. These drivers and their implications for the skills base in the Food & Beverages sector are outlined in the subsequent paragraphs.

Figure 2.16 Strategic Drivers of Change



Source: PwC derived

2.2.9.1 Consumer Trends

During the past 15 years consumer choice and expectations have grown and changed rapidly. A number of trends have combined to influence this, namely:

- Lifestyle changes;
- Convenience;
- Media awareness of food scares;
- The celebrity chef phenomenon; and
- Health.

These are discussed in more detail below.

Lifestyle changes resulting from longer working hours and a growing number of families with two working parents have increased the demand for semi-prepared food, convenience foods, and more meals eaten outside the home.

This demand for convenience is further underpinned by the trend towards smaller households, with the average household size decreasing from 3.3 persons in 1991 to 2.8 persons in 2006. Consumers want quick meal solutions either on-the-go or in the home. Chilled, fresh and ambient foods are perceived as meeting these criteria and have seen a growth in recent years. In response to the demand for convenience the food industry has invested significantly in the following categories: ready to eat; ready to heat; ready to cook. In pursuit of these categories the food industry is challenged with developing and acquiring new technologies and developing the necessary workplace skills.

With increasing **media awareness of food scares,** whether it is melamine in milk or bacteria in bottled water, consumers have become more knowledgeable about the food they eat and the impact on their health. Consumers have a greater appreciation of nutritional values and understanding of food ingredients. Jaime Oliver's high profile Channel 4 programme 'Jamie's School Dinners'[22], which aired in 2006, brought public appreciation of what children today are eating, the impact these food choices have on their health and the nutritional content of food.

Furthermore, the industry continues to develop quality assurance systems such that there is greater traceability throughout the supply chain. The expectation is that through higher traceability standards, food scare occurrences will be reduced and when issues do emerge that they can be better managed.

The **Celebrity Chef phenomenon** has encouraged consumers to get back into the kitchen and start cooking simple dishes using natural, fresh ingredients. This is reawakening an interest in cooking and further embedding the value of fresh and "natural". Increasingly consumers are concerned about **health** and are aware of the link between diet and well-being. Consumers are thus exhibiting a mix of behaviours, availing of convenience foods and eating on-the-go during the busy working week, while at the weekend preparing traditional meals from fresh ingredients.

2.2.9.2 Health & Wellness

The second driver-of-change affecting the food and beverage sector is the area of health and wellness. Since 2003 obesity has emerged as a key issue. Obesity is a growing health problem worldwide, in Ireland alone it is estimated that obesity results in 2,500 premature deaths annually. Obesity triggers the onset of various diseases including: type II diabetes, heart failure, stroke, angina, colon cancer. It is estimated that in Ireland 200,000 people are clinically diagnosed with type II diabetes while an additional 100,000 people have high blood glucose levels and will only be diagnosed when they present with medical complications.

[22] http://www.channel4.com/life/microsites/J/jamies_school_dinners/

Health care professionals estimate that the numbers of type II diabetes patients will double over the next 10 years due to increasing prevalence of obesity. The WHO estimates that by 2015, 2.3 billion people worldwide will be overweight and a further 700 million will be obese. The key concern for governments everywhere is the cost of treating obesity and the pressure placed on healthcare budgets. This is a public health issue, hence the food industry is faced with pressures from both consumers seeking products with healthier profiles and secondly, regulatory pressure to reformulate and label products accordingly.

In this context there will be increased focus on the diet of children, with greater transparency on food labels. In response to health concerns many food manufacturers have already invested significant effort in removing artificial flavours, colours and preservatives from foods. The labelling on many products has been revised to highlight certain nutrient contents, quoting the level of sugar, saturated fat, trans fat and salt.

The challenge for the food industry is to respond with innovative products designed to meet current nutritional requirements relevant in today's society where people pursue a more sedentary lifestyle with less physical activity.

The following section will address the issue of health and wellness under the headings:

- Changing demographics;
- Employment change; and
- Functional health benefits.

Changing demographics will increase the move towards foods offering health benefits. In 2006 33% of the Irish population was 45 years and over.23 It is predicted that by 2041 48% of the Irish population will be 45 years and over, 20% of which will be aged 65 years and over24. An ageing population will require foods designed to match their special nutritional needs, for example products that help prevent cardiovascular disease, stroke, age related macular degeneration or Alzheimer's disease. This change in demographics with its expanding "older age category" will generate increased opportunities for tailored nutritional and functional foods. Already the industry has responded with examples such as cholesterol lowering foods.

Food nutritionists and more innovative R&D teams will be expected to develop products with novel ingredients capable of delivering a positive health function. Food manufacturers will need to develop skills in the verification and validation of such health functions. This will involve increasing the extent to which clinical trials are undertaken by the food industry. The regulatory environment has already responded with measures governing the marketing of food products with nutritional and health claims[25].

[23] http://www.cso.ie/statistics/popnbyage2006.htm
[24] 'Population and Labour Force Projections – 2011-2041' CSO, April 2008
[25] Regulation 1924/2006 of the European Parliament and the Council on 'Nutrition and Health Claims made on Foods' and Directive 2000/13/EC 'on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs.'

Another lifestyle change which is driving change is the growth in **employment** within the services sector in Ireland. This shift in employment results in a more sedentary lifestyle, which is considered one of the factors contributing to the obesity issue in Ireland. There is significant research being undertaken on identifying peptides and ingredients that can contribute to satiety value and assist in weight reduction. Avoiding childhood obesity is a key public health initiative and believed to assist in reducing the risk of related health problems manifesting in adulthood. As the science of food nutrition further develops it will overlap with medicine and an area known as personalised nutrition may emerge. As this occurs, leading food and drinks companies will need to acquire new skills associated with areas such as proteomics, genomics, nutrinomics, immunology and toxicology.

Furthermore, as companies aim to market products providing **functional health benefits** there will be an increased level of regulation. Any health benefits and claims will require validation with clinical trials and scientific evidence. These companies will need to build new process capabilities around protocols for clinical tests, regulatory approval procedures etc. Additional competencies around Intellectual Property should be developed to ensure unique products and processes can be capitalised upon by the particular company by licensing out the technology to other companies. This also presents challenges for regulatory bodies, in terms of having the requisite skills to keep pace with new developments.

2.2.9.3 Sustainability and Ethical Concerns

Another emerging phenomenon is the area of **sustainability,** which is not only impacting the Food & Beverage sector but the manufacturing industry as a whole. Consumers want to understand how the food they eat is produced and are concerned about issues such as food safety, animal welfare, the application of pesticides to crops and the use of hormones. Increasingly, when purchasing products, consumers consider a range of issues before they make their purchase decision, such as: carbon footprint; water footprint; impact on the environment; amount and type of packaging used; and the product and company's record on ethical trade. At the same time, companies will be faced with challenges such as securing raw material supplies, conserving water, acquiring low carbon energy sources, and reducing greenhouse gas emissions while protecting biodiversity. Manufacturers will be required to become more knowledgeable about the procedures involved in meeting these new retailer requirements and the impact this may have on their current work practices.

Additionally, in recent years consumer choices have been driven to some extent by **ethical concerns** and the rise in popularity of Fairtrade products. There is also a growing interest among consumers to buy locally produced foods, organic foods, and free range produce. PwC research into consumer attitudes and habits in the UK demonstrates the existence of mainstream public awareness and concern about sustainability issues, i.e. over 60% of consumers stated that sustainability issues were the most important issues facing the world. PwC research indicates that fair-trade food penetration has grown from 20% of shoppers in 2005 to 50% in 2008[26].

[26] PricewaterhouseCoopers, 'Sustainability – Are Consumers Buying It' 2008.

2.2.9.4 Policy

The reform of the **Common Agricultural Policy** (CAP) in 2002 led to the demise of sugar growing in Ireland. Future CAP and WTO reforms are likely to lower the level of market support given to primary agriculture. Of key concern for Ireland will be policy changes relevant to meat and dairy. The recently collapsed WTO negotiations and the proposed changes to the rules governing market access (tariffs) and export competition (export subsidies) would have had a significantly negative impact for Irish agriculture. However a future WTO deal will require the industry to compete successfully in a market environment with less government market intervention. The trend will be for agricultural and food enterprises to be more exposed to market forces. The **abolition of milk quotas** after 2014 will have significant implications for Ireland with an expected expansion of the dairy sector in Ireland.

Government regulation will increase in areas such as food quality and the environment. Future policy issues are likely to focus on carbon and policy measures as part of abatement strategies at both national and EU level.

The food and beverage sector is becoming an increasingly regulated sector. The most recent development has been the **regulation "on nutrition and health claims**[27]**"**, which requires that any health claims made must first go through an approval process.

2.2.9.5 Consolidation of retailers

The consolidation of retailers will have a significant impact on the food and beverage sector, largely due to the shift in power balance from the producer to the retailer, international expansion of retailers, retailers moving to international structures and centralised procurement. Increasingly the buying power is concentrated in a small number of retailers, each with a significant global presence.

The elimination of trade barriers is creating an increasingly competitive environment for companies in the food and beverage industry. Food manufacturers are increasingly encouraged to invest in deep-cut product promotions designed to retain shelf space and as a tactic in protecting market share position. Branded food manufacturers are encountering significant competition for their customers through own-label products under the retailer label.

Furthermore, many retailers are **expanding internationally** across national borders. Retailers are moving away from national structures and are organising around **international structures**.

Another key impact for food and beverage companies would be a move by retailers towards **centralised procurement** departments operating on a Pan-European level. Irish manufacturers will need to develop selling skills for a regional or multi-national buying centre. Additionally, changes to how the sales force carry out their business will also change as a result of this shift, with a need for more superior selling and negotiation skills and account management.

[27] Regulation 1924/2006 of the European Parliament and the Council on 'Nutrition and Health Claims made on Foods'

2.2.9.6 Technology

New technologies may become accepted which allow for sustainable production methods by developing plant resistant varieties that reduce the use of pesticides. Technological advances may make food production more efficient through the use of enzymes that improve feed digestibility and utilisation in animals (reducing greenhouse gas emissions such as methane). **Biotechnology and nanotechnologies** will increasingly be deployed as tools in the development of novel or functional foods. Biotechnology will be central to the identification and extraction of bioactive substances from commodity products. In this way new value-add revenue streams will be possible.

Technology will also become significant within the supply chain in areas such as traceability and the use of **Radio Frequency Identification (RFID)** tags may become a standard requirement. RFID tags in the case of beef could provide information electronically on the farm of origin, the name of the cow and nutritional information about the beef.

Energy costs are a key issue for the manufacturing sector. In recent years energy costs have been rising much more rapidly in Ireland than in other EU countries, Ireland now ranks as the second most expensive of the EU-15. This high cost of electricity is attributed to our dependence on imported fossil fuels. There is a challenge to develop and invest in renewable energy as a cost effective alternative. Increasingly companies will need to reduce the greenhouse gas emissions from the various processes and technologies. In this regard companies will need to develop low carbon technologies and ensure processes are energy efficient.

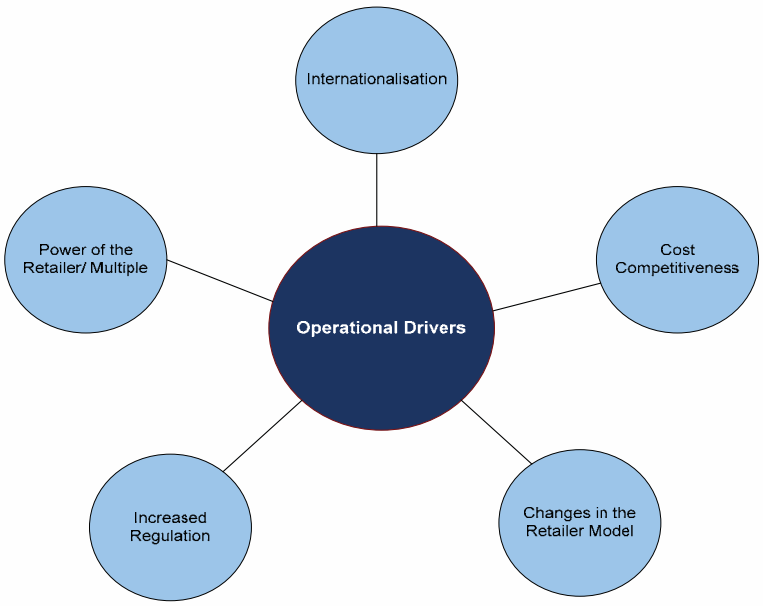
In conclusion, in order to remain competitive, the food and drinks sector has to respond to the aforementioned drivers-of-change. Companies need to be cognisant of emerging technologies, evolving consumer behaviour and preferences, while investing resources in product line extensions and new product development. Furthermore, companies need to have strategies that address mature and end-of-life-cycle products and markets.

The following section addresses the operational drivers of change affecting the food and beverage sector.

2.2.10 *Operational Drivers of Change*

Five key operational drivers-of-change were identified as illustrated in Figure 2.17. Each of these drivers-of-change is reviewed in detail in the subsequent sections. Further detail on the implications for skills of these operational drivers-of-change will be addressed in Chapter 6 of this report.

Figure 2.17 Operational Drivers-of-Change



2.2.10.1 *Internationalisation*

The world population is predicted to reach 9.2 billion by 2050 and 60% of the population will be in Asia[28] which means that the global demand for food will increase. With this increase comes a new set of challenges such as 'where will the extra food needed to feed this population be sourced from?'. Ultimately this presents new opportunities and new markets for export.

In order to take advantage of these opportunities and internationalise the business base, it will be imperative for companies to have the ability to do business overseas, understanding and responding to heretofore unknown customer needs and demands.

2.2.10.2 *Cost Competitiveness*

Manufacturers are facing a growing number of challenges as they try to remain competitive. Over the past decade the market has experienced pressure from commodity price inflation, wage inflation, energy inflation, waste disposal inflation, and rent inflation to name a few. In a report by the National Competitiveness Council[29], a number of issues were highlighted as regards the cost of doing business in Ireland. The report cites high industrial energy costs which are driven by a reliance on imported fossil fuels and limited competition in the generation and supply of energy. Senior and

[28] 'World Population Prospects: The 2006 Revision' United Nations
[29] 'Annual Competitiveness Report 2008', National Competitiveness Council, Ireland

functional managers need to be more aware of the drivers of cost and inefficiencies with their business area, and commercial skills and acumen need development and honing.

2.2.10.3 Changes to the Retailer Model

The retail model is changing with retailers taking ownership of a greater percentage of the supply chain through the introduction of Central Distribution Centres and moving to direct procurement from parent companies. In order to retain a viable business, manufacturers will need to ensure an efficient

supply chain to meet retailer requirements on time. The pressures to have an efficient supply chain has significant implications for the skills sets required from procurement to logistics to key account management.

2.2.10.4 Increased Regulation

The need to respond to regulation such as the 2008 EU Nutrition and Health Claims Directive[30] is putting food and beverage manufacturing companies under increasing pressure. Much of the new regulation is a response to the growing health and wellness trend and obesity concerns in Ireland. These regulations are changing the way companies innovate with a focus on 'Existing Product Development' (EPD) as distinct from New Product Development (NPD). This rebalancing of nutrient profiles towards lower salt levels can require significant re-engineering of processes and products, and may present challenges in retaining the taste profile and stability of the product. In some instances this re-engineering may require an entire reformulation of a product.

Increasingly more information is provided on the packaging regarding the ingredients and nutritional levels within the product. This includes voluntary initiatives such as providing Guideline Daily Amounts (GDA) information on packaging.

2.2.10.5 Power of the retailer and multiple putting greater pressure on suppliers

Retailers are moving to a more process-driven business and as these processes are developed and rolled out they present the supplier with more formal procedures. The introduction of plannograms is an example of this. These processes mean the ways of working have become more structured. Suppliers have to comply with such processes and, in so doing, have to adapt their internal systems and processes. As regards new product launches, suppliers should be more organised and communicate their plans to the retailer in advance in order to secure product listings. Given the reduced frequency of new product listings it is important that suppliers engage early in the new product development cycle and invest sufficient resource in identifying the consumer insight.

When a new product is launched, retailer information systems track performance on the product. This information gives the retailer early indications on the product performance. Having the internal systems, processes and skill sets to engage constructively with retailers are not without their challenges.

[30] Regulation 1924/2006 of the European Parliament and the Council on 'Nutrition and Health Claims made on Foods'

2.3 Comparison to 2003 Drivers of Change

Based on the findings set out in this section, it can be concluded that the drivers-of-change identified in the 2003 study, presented in Table 2.11 are, for the most part, still relevant to varying degrees to the food and beverage sector today. In particular, the focus on nutrition and health has a greater impact for the food and beverage industry and going forward, as science develops its significance, is expected to increase. Since 2003, all the leading food and beverage manufacturers have included nutrition and health as central elements in their strategic plans. A further major development since 2003 has been the emergence of sustainability as a change driver, with sustainability becoming a pivotal component to company strategies going forward. Table 2.11 revisits the drivers-of-change identified in the 2003 study and describes their relevance to the current food and beverage sector, six years on.

Table 2.11 Drivers of Changes identified in 2003 Study[31]

	Relevance Today	Comments
Consumer Trends: Changing consumer lifestyles and eating preferences	▫	The 2003 report noted that consumers were: busier; wealthier; wanted value-for-money; more widely travelled; aging; more individual; and experiencing changes in household structures. As the global economy moves to a recessionary phase, the consumer expenditure contracts with consumers seeking out value-for-money. Convenience was another driver mentioned in 2003 and continues to be of major importance in today's market. NPD was cited as a driver of change. Today, with shifting retailer behaviours the focus today is on Existing Product Development (EPD) as well as NPD.
Trade Purchasing Developments: Retail; Food service; and Ingredients	▫	This driver of change is significant today. Since 2003 the trend has been for more retailers to adopt central distribution models. More significantly is the trend towards multi-country clusters with the large retailers moving procurement from a national structure to pan European structures.
Industry Structure and its Evolution	▫	Industry structure is as relevant today as it was in 2003. However, the structure today is significantly different with retailer consolidations; internationalisation of the industry; and the power of the retailer driving change in the sector.
Agricultural and Trade Policy	▫	In 2003 CAP and impending EU enlargement were the reason behind this driver. The recent collapsed WTO negotiations had the potential to have a key economic impact on primary agriculture. In the absence of a future WTO deal, it is likely that issues such an animal heath and animal disease status will emerge as trade barriers. Increasing EU regulations have ensured that policy still remains a relevant driver of change.
Food Regulation	▫	There is an overlap today between food regulation and policy, with EU regulations on nutrition and health claims driving change in the industry.
Technology/ Biotechnology	▫	Still of relevance today is that technology and biotechnology act as drivers of change developing future processes and products such as the use of enzymes and enabling traceability in the food chain. The novel foods regulation 258/97 has been effective since May 1997. There will be continued interest and development in the area of novel foods and novel food ingredients.
Domestic Economy	▫	In 2003 exchange rates; wage inflation; labour availability; input costs; and competitiveness were cited as drivers of change under the heading of domestic economy. These are still relevant today with the recognition that food manufacturers are facing increased competition.

Source: PwC derived

[31] 'The Demand and Supply of Skills in the Food Processing Sector', Forfás and the Expert Group on Future Skills Needs, 2003

2.4 Key Chapter Findings

The Irish food and beverage industry plays a significant role as the largest employment provider in the manufacturing and industrial sector in Ireland. While there are challenges facing the industry moving forward there are also substantial opportunities for the sector.

However, as the industry becomes more regulated, product development practices are changing as some products need to be reformulated to meet requirements. Consumers are actively seeking out products with specific nutrient levels such as low-salt, low-fat, low-calorie and are also searching for products promoting health with substantial health benefits. Manufacturers need to understand customer requirements across a range of issues such as new product innovations; day-to-day delivery schedules; investment in promotions; and measurement of customer service and performance levels. Above all, manufacturers need to be cost competitive.

3. Employment & Education Profile within the Irish Food & Beverage Sector

3.1 Introduction

The purpose of this chapter is to profile the current composition of those employed in the food and beverage sector, in terms of their educational attainment, age, gender, location and nationality,

Data on the employment and educational attainment levels of those working within the sector was not available at the time of the 2003 report, and thus a key requirement of this update study was to present a profile of those employed in the food and beverage sector, through analysing all publicly available secondary data collected by bodies such as the Skills & Labour Market Research Unit (SLMRU, FÁS) and the Central Statistics Office (CSO).

The remainder of this chapter comprises the following sections:

- 3.2 Employment Profile of the Food & Beverages Sector
  - 3.2.1 Age Profile
  - 3.2.2 Gender Profile
  - 3.2.3 Occupation Profile
  - 3.2.4 Nationality Profile
  - 3.2.5 Regional Profile
  - 3.2.6 Educational Profile
- 3.3 Summary of Key Chapter Findings

3.2 Employment Profile of the Food & Beverage Sector

The 2003 report covered the following food sub-sectors: dairy; meat; fruit and vegetable processing; grains and starches processing; bread, biscuits, sugar, chocolate and sugar confectionary; bread; food ingredients; and prepared consumer foods. The scope of this study is broader, covering all sectors referred to under NACE Code 15 (manufacture of food products & beverages), which includes the following sub-codes:

- 15.1: Production, processing & preserving of meat and meat products;
- 15.2: Processing and preserving of fish & fish products;
- 15.3: Processing and preserving of fruit & vegetables;
- 15.4: Manufacture of vegetable and animal oils & fats;
- 15.5: Manufacture of dairy products;
- 15.6: Manufacture of grain mill products, starches & starch products;
- 15.7: Manufacture of prepared animal feeds;
- 15.8: Manufacture of other food products;
- 15.9: Manufacture of beverages.

All data provided in this section is based on data supplied from the SLMRU from the Quarterly National Household Survey (QNHS)[32] collected by the CSO. The QNHS is a widely-cited nationwide survey of households which produces quarterly labour force estimates and provides sector-by-sector data, including the 'manufacture of food products & beverages' under NACE Code 15. QNHS data is available for two digit codes only, therefore, the following analysis refers to NACE Code 15 as a whole, and not for each sub-code under NACE Code 15 detailed above.

Table 3.1 outlines the numbers employed in the 'manufacture of food products & beverages' (NACE Code 15) in the Republic of Ireland versus total employment between 2004 and 2008 gathered in the QNHS.

Table 3.1 NACE Code 15 as % of Total Employment. 2004-08

Year	Total Employment	NACE 15 Employment	Year-on-year growth of NACE 15	NACE 15 as % of Total Employment
2004	1,834,000	53,000	-	3%
2005	1,928,000	53,000	0%	3%
2006	2,018,000	54,000	2%	3%
2007	2,102,000	52,000	-4%	2%
2008	2,108,000	50,000	-4%	2%

Source: CSO, Quarterly National Household Survey, Quarter 2 (seasonal quarter, March - May)

The QNHS estimates that 50,000 people were employed in the food and beverage manufacturing industry in 2008, representing 2% of total employment in the Republic of Ireland. This figure has been in steady decline since 2006, decreasing by 4,000 people or 7.4% between 2006 and 2008. Food & Beverages share of total employment has reduced slightly over the same period, from 3% in 2006 to 2% in 2008.

More recent figures produced by the QNHS (based on calendar quarter 1 January to March as opposed to the seasonal calendar in Table 3.1 above), as detailed in Table 3.2, illustrate a continuation of this trend with the number of employees falling by a further 2,180 to 47,170 in Q1 2009, a decline of 4% on Q1 2008. On close review of the 4% reduction by occupation type for the same period it is primarily operative, sales and technical areas that have experienced staffing reductions.

[32] The QNHS is a large-scale, nationwide survey of households in Ireland conducted by the CSO. It is designed to produce quarterly labour force estimates that include the official measure of employment and unemployment in the state (ILO basis). The survey began in September 1997, replacing the annual April Labour Force Survey (LFS). A fieldforce comprising 12 field co-ordinators and 152 field interviewers interview 39,000 households each quarter. Information is collected on laptop computers using computer-assisted personal interview (CAPI) software. The survey meets the requirements of Council Regulation (EC) No. 577/98 (PDF 42KB) adopted in March 1998, which requires the introduction of quarterly labour force surveys in EU member states.

Table 3.2 NACE Code 15 as % of Total Employment. Q1 2008 and Q1 2009

Quarter	Total Employment	NACE 15 Employment	Year-on-year growth of NACE 15	NACE 15 as % of Total Employment
Q1 2008	2,123,820	49,350	-	2%
Q1 2009	1,963,970	47,170	-4%	2%

Source: CSO, Quarterly National Household Survey, Quarter 1 2008 and Q1 2009 (calendar quarters- January to March)

The following sub-sections provide a more in-depth analysis of those employed in the manufacture of food and beverage, by presenting a profile of workers in terms of their:

- Age;
- Gender;
- Nationality;
- Occupation;
- Region and location; and
- Education.

3.2.1 Age Profile

Firstly, the QNHS is analysed to show the proportion of workers across the key 'age groups' in the food and beverage sector. Table 3.3 profiles the growth of workers across the various age groups between 2004 and 2008 and Figure 3.1 over illustrates those age groups as a percentage of total employment.

Table 3.3 Growth of NACE Code 15 by Age Group 2004-08

Age	2004	2005		2006		2007		2008		Growth 2004/08
	Nace 15	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	
15-19	1,000	1,000	0%	1,000	0%	1,000	0%	1,000	0%	0%
20-24	6,000	6,000	0%	6,000	0%	6,000	0%	5,000	-17%	-17%
25-34	16,000	17,000	6%	18,000	6%	19,000	6%	16,000	-16%	0%
35-44	14,000	14,000	0%	14,000	0%	11,000	-21%	14,000	27%	0%
45-54	11,000	10,000	-9%	10,000	0%	9,000	-10%	9,000	0%	-18%
55-59	4,000	4,000	0%	3,000	-25%	3,000	0%	4,000	33%	0%
60-64	2,000	2,000	0%	2,000	0%	2,000	0%	1,000	-50%	-50%
65+	-	-	-	1,000	-	-	-	-	-	-
Total	53,000	53,000	0%	54,000	2%	52,000	-4%	50,000	-4%	-6%

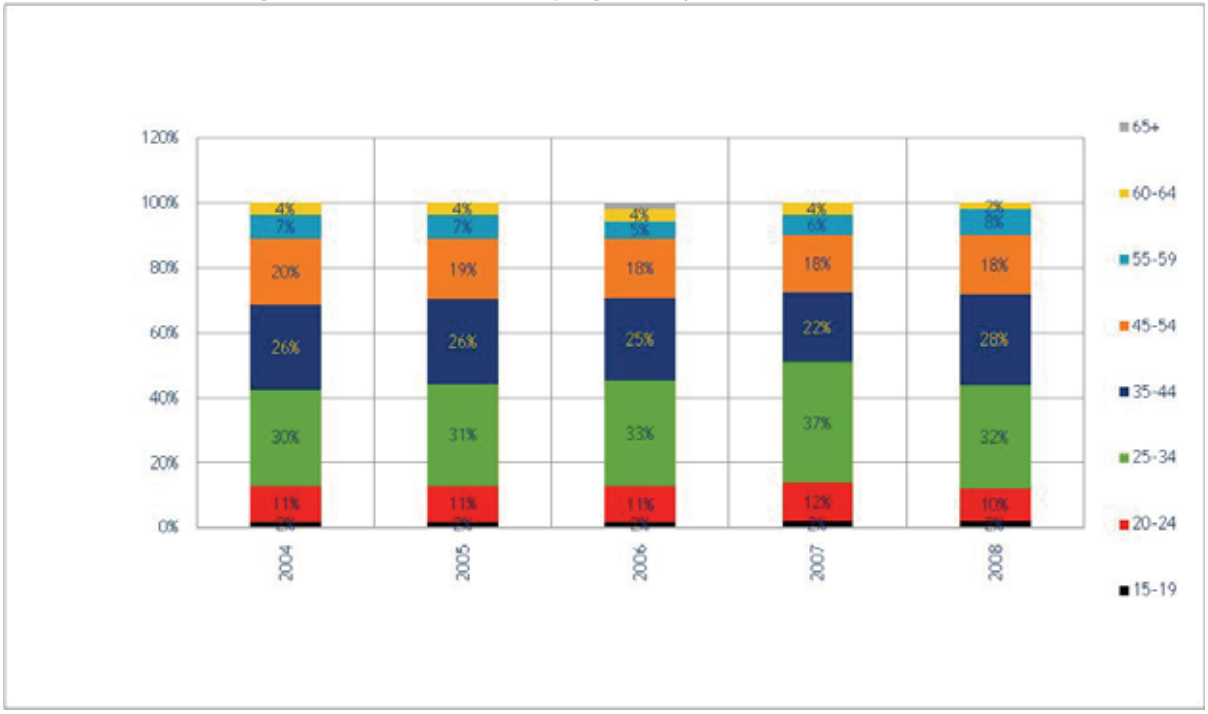
Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March - May)

Note: The figures may not add up to their corresponding 'Total' figure - figures are rounded to the nearest 1,000 and groups of less than 1,000 people are not included in the Table.

As illustrated in table 3.3 and figure 3.1, it is evident that the majority of workers directly engaged in food and beverage manufacturing are aged between 25 and 44 years. This age group's proportion of total employment has steadily increased over the past four years, rising from 56% in 2004 to 60% in 2008, representing 30,000 of the 50,000 workforce as calculated by the QNHS data, indicating a steady supply of young workers coming into the sector.

The groups of employees aged 45 plus have been in continuous decline over the same period, dropping from 31% of total employment in 2004 to 28% in 2008.

Figure 3.1 NACE Code 15 by Age Group as % of Total, 2004-08



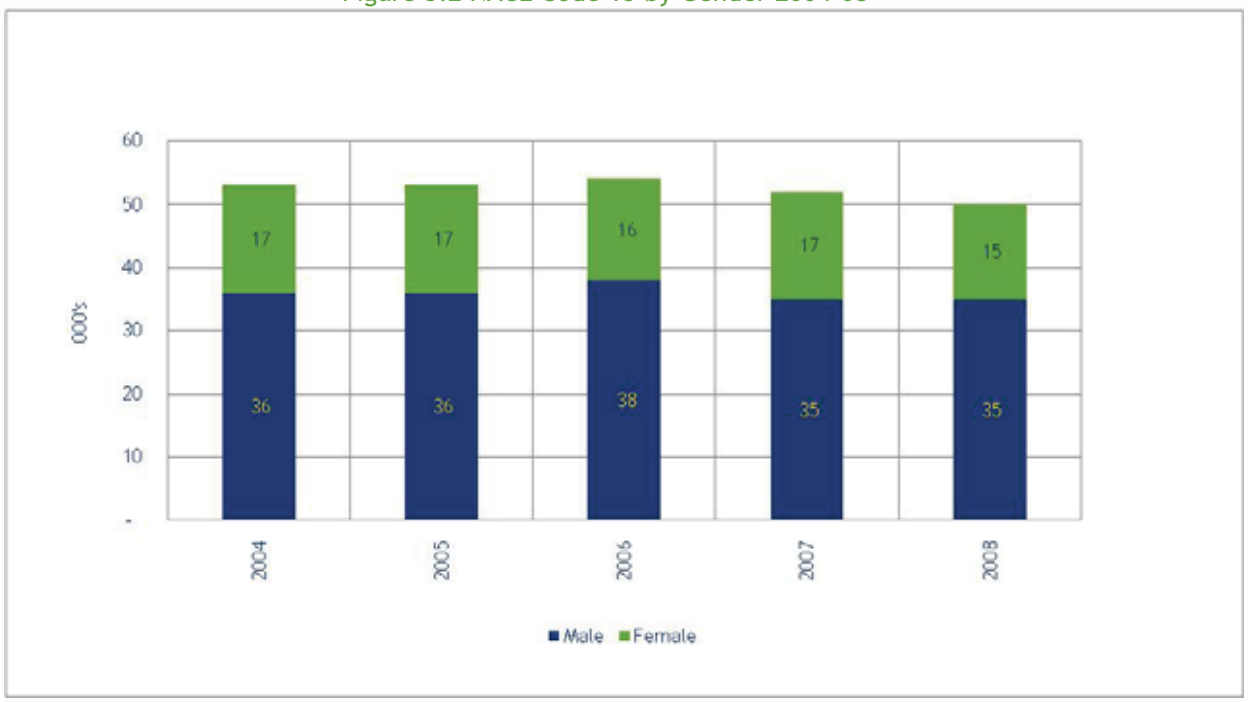
Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March - May)

3.2.2 Gender Profile

In relation to gender, the QNHS data indicates that the food and beverage sector as a whole attracts a greater proportion of males than females to its workforce. Figures 3.2 and 3.3 illustrate this trend, and present a breakdown of male versus female employees across the industry between 2004 and 2008.

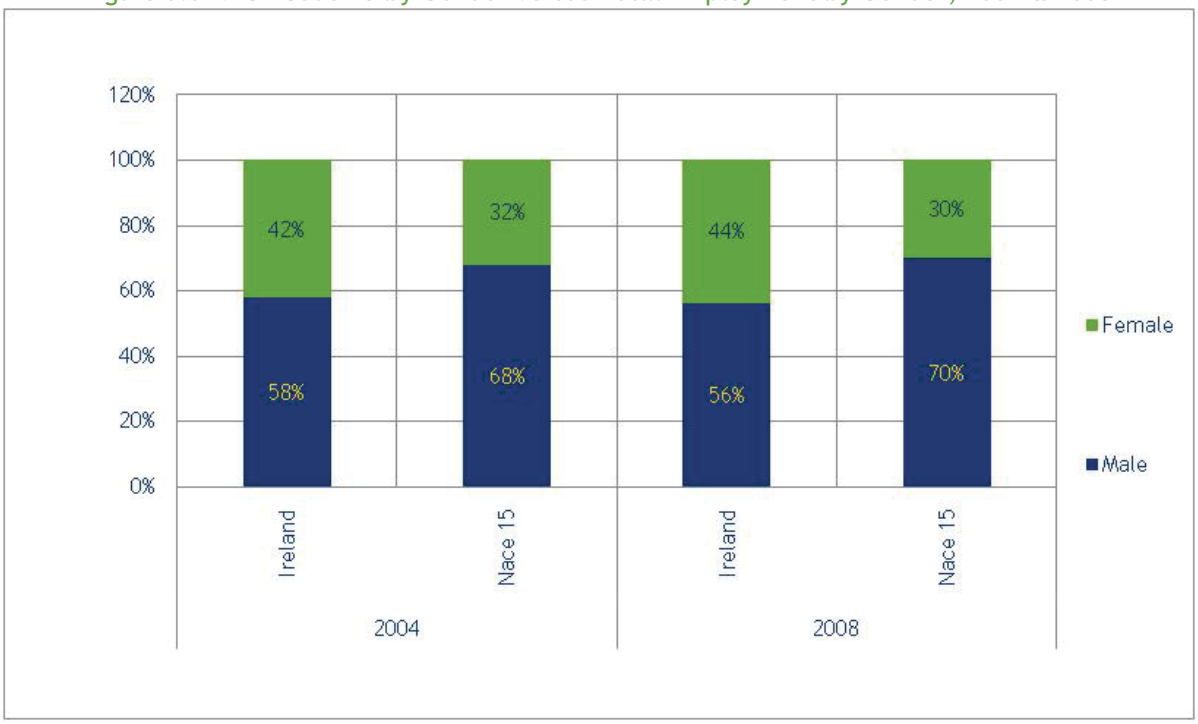
The analysis shows that in 2008, males represented circa 70% of the total workforce, 14% higher than the national average. A review of the four year period between 2004 and 2008 shows this gap has been steadily increasing. Although the proportion of males in the workforce was in decline nationally (from 58% in 2004 to 56% in 2008), the proportion of male employees in the food and beverage sector increased over the same period, from 68% in 2004 to 70% in 2008 (see Figure 3.2).

Figure 3.2 NACE Code 15 by Gender 2004-08



Source: *CSO, Quarterly National Household Survey, Quarter 2 (seasonal quarter, March – May)*

Figure 3.3 NACE Code 15 by Gender versus Total Employment by Gender, 2004 & 2008



Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March – May)

3.2.3 Occupation Profile

To gain an accurate picture of the skills profile of those employed in the food and beverage workforce, it is important to understand the spread of workers across manual or low-skilled positions versus managerial or professional occupations. Table 3.4 and Figure 3.4 present a breakdown of the QNHS data from this perspective, splitting the data into nine different occupations ranging from craft, sales or operative occupations to managerial positions.

Table 3.4 Growth of NACE Code 15 by Occupation 2004-08

Age	2004	2005		2006		2007		2008		Growth
	Nace 15	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	2004/08
Managers & Administrators	8,000	7,000	-13%	7,000	-	6,000	-14%	6,000	-	-25%
Professional Occupations	2,000	2,000	-	2,000	-	2,000	-	2,000	-	0%
Associate Professional & Technical Occupations	2,000	2,000	-	2,000	-	2,000	-	2,000	-	-
Clerical & Secretarial Occupations	6,000	5,000	-17%	5,000	-	5,000	-	5,000	-	-17%
Craft & Related Occupations	7,000	7,000	-	8,000	14%	7,000	-13%	6,000	-17%	-14%
Personal & Protective Service Occupations	1,000	1,000	-	1,000	-	1,000	-	1,000	-	-
Sales Occupations	3,000	4,000	33%	4,000	-	3,000	-25%	3,000	-	-
Plant & Machine Operatives	19,000	19,000	-	20,000	5%	19,000	-5%	20,000	5%	5%
Other Occupations	4,000	5,000	25%	6,000	20%	6,000	-	6,000	-	50%
Total	53,000	53,000	0%	54,000	2%	52,000	-4%	50,000	-4%	-6%

Source: CSO, Quarterly National Household Survey, Quarter 2 (seasonal quarter, March - May)

Note: The figures may not add up to their corresponding 'Total' figure - figures are rounded to the nearest 1,000 and groups of less than 1,000 people are not included in the Table.

Figure 3.4 Occupation Type as % of total NACE Code 15, 2004-08

Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March - May)

As evident from Figure 3.4, in 2008 a significant proportion of employees (39%) in the food and beverage manufacturing sector were employed at a plant and machine operative level. The skills level within this group will vary across sub-sector. Traditionally this group was considered to be predominantly low-skilled or manual work. However in many sub-sectors these roles have become more complex, requiring skill levels that ensure a high product quality, conformity to environmental standards and high levels of process reliability. By comparison, those jobs based on formal qualifications such as managerial and professional occupations (i.e. managers and administrators, professional occupations, association professional & technical occupations) represented a fifth of all employees (20%).

A review of the four year period between 2004 and 2008 shows that an increasing number of plant & machine operatives have been employed in the sector, whereas the proportion of managerial and administrative roles have decreased over the same period (see Figure 3.4). The fact that the trend is towards increasing numbers of plant and machine operatives coupled with a reduced dependency on managerial & administrative roles is indicative of the move towards raising the skill level required at the operative level.

3.2.4 Nationality Profile

The large number of immigrant workers employed in the food and beverage sector has emerged as a significant feature in recent years. This trend was highlighted in the 2003 study which based on feedback from an industry survey, found that "it would appear that all sub-sectors of the food processing industry have recorded an increase in the number of immigrant workers employed since 1999". In particular the meat sub-sector was reported to be significantly dependant on immigrant workers as a source of labour.

The 2003 survey also found that the majority of respondents who completed the industry survey indicated that "they intend to increase the number of immigrant workers employed in their business going forward, assuming favourable government policy in this regard"

In 2004, new legislation was introduced, allowing citizens from the 10 new accession countries to be free to work in Ireland without work-permit requirements. This development, in addition to other contributing factors cited below, contributed to an increase in employment of those from EU accession countries. Other factors include:

- Economy at full employment;
- Labour supply shortage;
- Sustained period of economic growth levels; and
- High wage inflation and labour market conditions attractive to immigrants.

Immigrant workers were an attractive labour market supply option for employers, for the following reasons:

- Help mitigate wage inflation;
- A high level of flexibility and willingness to adapt to new work practices;
- Facilitate extensive restructuring programmes; and
- Excellent work-ethic.

To build upon the findings of the 2003 study, nationality data from the QNHS was extracted to identify any developments or changes over the past four years and is presented in Table 3.5 and Figure 3.5.

Table 3.5 Growth of NACE Code 15 by Nationality, 2004-08[33]

Nationality	2004	2005		2006		2007		2008		Growth
	Nace 15	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	2004/08
Irish	47,000	46,000	-2%	43,000	-7%	37,000	-14%	35,000	-6%	-26%
EU 15	1,000	1,000	-	1,000	-	1,000	-	1,000	-	0%
EU accession*	-	4,000	-	8,000	100%	10,000	25%	11,000	9%	-
Other	5,000	2,000	-60%	1,000	-50%	3,000	200%	3,000	-	-40%
Total	53,000	53,000	0%	54,000	2%	52,000	-4%	50,000	-4%	-6%

Source: CSO, Quarterly National Household Survey, Quarter 2
**Data on EU Accession Countries is only available from 2005*

Note: The figures may not add up to their corresponding 'Total' figure - figures are rounded to the nearest 1,000 and groups of less than 1,000 people are not included in the Table.

Figure 3.5 NACE Code 15 by Nationality as % of Total, 2004-08[34]

Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March - May)

[33] Data on EU accession countries is only available from 2005.
[34] Data on EU accession countries is only available from 2005.

The large number of immigrant employees has remained a significant feature of the food and beverage sector since the 2003 study, and in particular workers from EU accession countries. Figure 3.5 shows that since 2005, the group of workers from EU accession countries has almost trebled, from 8% (4,000 workers) to 22% (11,000 workers) in 2008. Consequently, the proportion of Irish people working in the industry has decreased by almost 20% over the same period, from 89% of total employment to 70% in 2008.

Figures for Q1 2008 and 2009, as detailed in Table 3.6, illustrate that all nationalities have experienced a decline in employment in the sector. While typically EU accession employees have been increasing in the sector, this group, according to the data, has experienced the greatest decrease – 12% between Q1 2008 and Q1 2009.

Table 3.6 Growth of NACE Code 15 by Nationality, Q1 2008 and Q1 2009

Nationality	Q1 2008 Nace 15	Q1 2009 Nace 15	Growth '08/ 09
Irish	35,800	34,400	-4%
EU 15	-	1,330	-
EU accession*	9,910	8,760	-12%
Other	2,730	2,690	-1%
Total	49,350	47,170	-4%

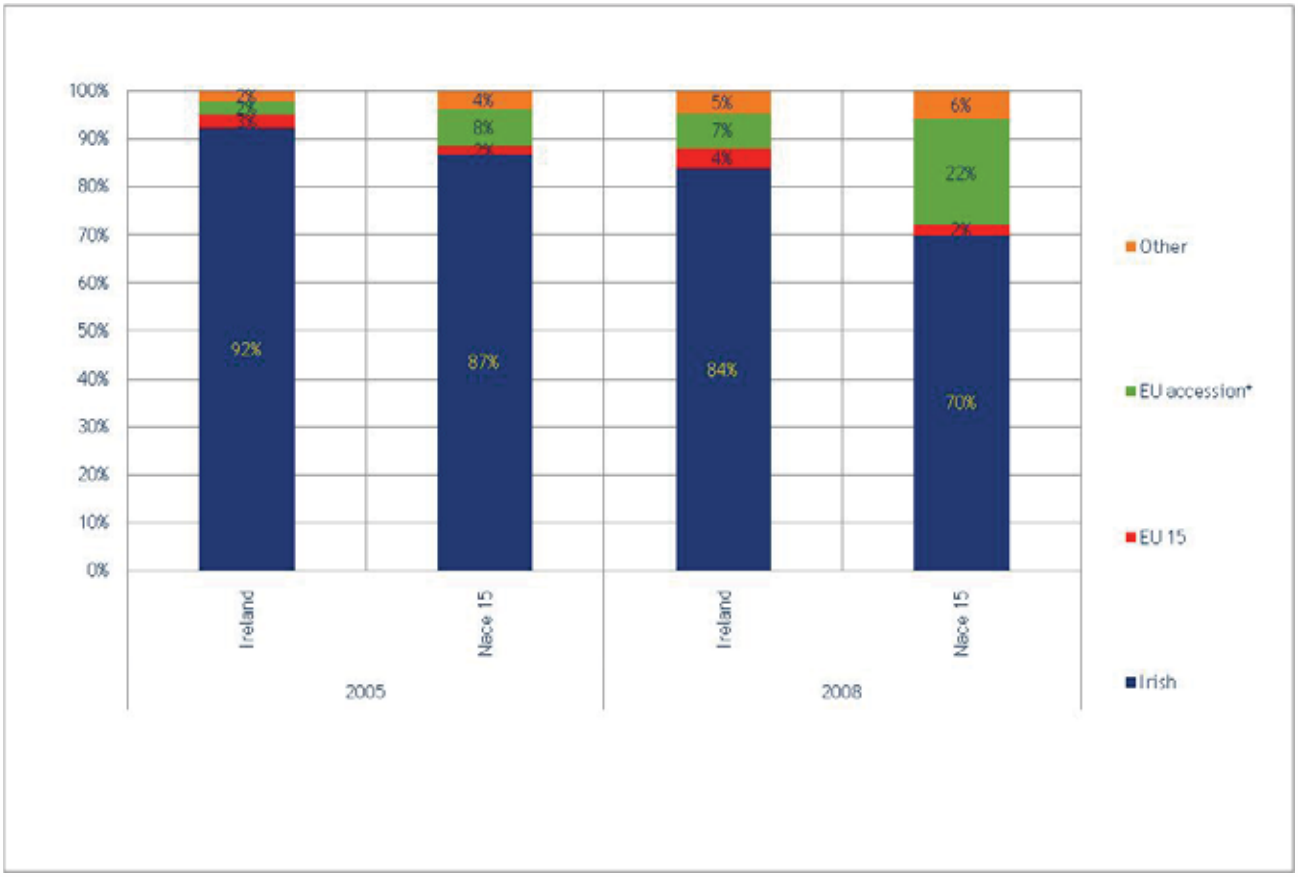
Source: CSO, Quarterly National Household Survey, Quarter 1 2008 and Q1 2009 (calendar quarters- January to March)

Note: The figures may not add up to their corresponding 'Total' figure - figures are rounded to the nearest 1,000 and groups of less than 1,000 people are not included in the Table.

Figure 3.6 compares the breakdown of nationality in the food and beverage sector versus total employment in 2005 and 2008.

This development is not just restricted to the Irish food and beverage sector as the data points towards a national trend of increasing numbers of immigrants entering the Irish workforce. From a national perspective, 8% of the Irish workforce comprised immigrant workers in 2005 with this figure doubling to 16% in 2008.

Figure 3.6 NACE Code 15 by Nationality versus Total Employment by Nationality, 2005 & 2008



Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March – May)

**Data on EU Accession Countries is only available from 2005*

It is clear however, that the food and beverage sector has a greater reliance on workers from EU accession countries as a source of labour when compared to the Irish workforce as a whole. While 22% of the food and beverage workforce comprised workers from EU accession countries in 2008, workers as a whole from these countries represented only 7% of the national workforce in the same year.

As detailed in the previous section, a significant number of jobs in the food and beverage sector are plant and machine operative positions. A contributing factor to the large proportion of EU accession workers in the food and beverage sector could be the fact that there has been a degree of re-structuring within the sector. The sector has gone through a period of change, which has been accompanied by a move towards outsourcing of some activities. Many companies have restructured supply chain and logistics activities with increased dependency on migrant workers. Restructuring within manufacturing operations has resulted in increased numbers of migrant workers employed as plant and machine operatives, which has happened to varying degrees, depending on the sub-sector.

The general view among food companies is one of satisfaction with migrant workers. Any changes in the numbers of migrant workers will be determined by the business performance and there is no planned move to reduce dependency on the migrant worker on the part of industry management.

3.2.5 Regional Profile

The QNHS data also allows for a breakdown of food and beverage employment by region. The eight regions are defined as:

- Border (Cavan, Donegal, Leitrim, Louth, Monaghan and Sligo);
- Dublin;
- Mid-East (Kildare, Meath and Wicklow);
- Midlands (Laois, Longford, Offaly and Westmeath);
- Mid-West (Clare, Limerick and Tipperary North);
- South-East (Carlow, Kilkenny, Tipperary South, Waterford and Wexford);
- South-West (Cork and Kerry); and
- West (Galway, Mayo and Roscommon).

Table 3.7 and Figure 3.7 present this employment data across these eight regions, highlighting growth and any changes in food and beverage employment between 2004 and 2008. Overall there is a good spread of employment across all the regions, however, there appears to be two tiers in terms of the concentration of food and beverage employment across Ireland. For example:

- The 'upper tier' comprises four regions, namely Dublin, Border, South-West and South-East, which represent between 16% and 20% of total food and beverage employment. As expected, Dublin retains the highest share of employment with 20%, followed by the Border region (18%) and the South-West and South-East, with a 16% share each (see Figure 3.7). This regional distribution reflects concentrations of particular industries. The drinks, bakery and prepared convenience food sectors have a heavy concentration within the Dublin area, while logistic and distribution activity is prominent within the Dublin region. A large proportion of the dairy industry nationally occurs in the South West and South East regions. The drinks industry is a significant sector in the South West region with manufacturing operations in brewing, distilling and soft drinks.
- The second tier comprises the remaining four regions, namely South-East, Mid-West, the West and Midlands, which have a smaller share of total employment of between 4% and 12%.

Table 3.7 Growth of NACE Code 15 by Region 2004-08

Region	2004	2005		2006		2007		2008		Growth 2004/08
	Nace 15	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	
Border	8,000	8,000	0%	8,000	0%	8,000	0%	9,000	11%	13%
Dublin	11,000	10,000	-9%	10,000	0%	10,000	0%	10,000	0%	-9%
Mid-East	4,000	6,000	50%	5,000	-17%	5,000	0%	6,000	17%	50%
Midlands	3,000	3,000	0%	3,000	0%	4,000	33%	4,000	0%	33%
Mid-West	5,000	6,000	20%	6,000	0%	5,000	-17%	4,000	-25%	-20%
South-East	9,000	8,000	-11%	9,000	13%	8,000	-11%	8,000	0%	-11%
South-West	10,000	8,000	-20%	9,000	13%	9,000	0%	8,000	-13%	-20%
West	3,000	4,000	33%	4,000	0%	3,000	-25%	2,000	-50%	-33%
Total	**53,000**	**53,000**	**0%**	**54,000**	**2%**	**52,000**	**-4%**	**50,000**	**-4%**	**-6%**

Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March – May)

Note: The figures may not add up to their corresponding 'Total' figure - figures are rounded to the nearest 1,000 and groups of less than 1,000 people are not included in the Table.

Since 2004, employment in the food and beverage sector has increased by more than 33% in two regions, namely the Mid-East and Midlands. By comparison, regions that are traditionally renowned for having a strong food and beverage industry, such as the South-West and South-East, have experienced employment losses of 11% to 20% over this same period. Some of the smaller regions, specifically the West and Mid-West, are also reducing their share of the overall employment market (see Table 3.7).

Figure 3.7 Region as % of total NACE Code 15, 2004-08

Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March – May)

Figure 3.8 NACE Code 15 by Region versus Total Employment by Region, 2004 & 2008

Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March – May)

Figure 3.8 compares this analysis vis-à-vis the national employment statistics. Interestingly, unlike the Food & Beverages sector, the split of national employment across the eight regions has remained broadly unchanged between 2004 and 2008. The notable development since 2004 has been the food and beverage sector expansion in the Mid-East region, going from 8% to 12%. This expansion may be due to strong growth in the prepared convenience foods sector and in particular expansion in prepared pizzas. The other region to expand was the borders region which moved from 15% to 18%, again largely attributed to growth in ready meals manufacture and convenience prepared foods.

Furthermore, the data indicates that there is a greater geographical spread of food and beverage employment across Ireland with a lower concentration in Dublin, when compared with the national average. For example in 2008, 20% of food and beverage employment was located in Dublin versus the national average of 29%, which is to be expected given the tendency for the food and beverage sector to be co-located with raw material sourcing and primary agriculture.

3.2.6 Education Profile

The educational attainment levels of those working in the food and beverage sector is of particular importance to this study. A key concern of many of the Irish development agencies is the upskilling of those employees who lack basic skills and providing opportunities for further training. Within the food processing sector, particularly at an operative level, there are a significant number of employees who lack any formal qualifications, with the perception that basic skills such as literacy and numeracy are poor. There is a concern that low literacy levels may be an underlying barrier to engaging in formalised training, leaving individuals vulnerable if they were to become unemployed.

The following section provides an insight into the education levels of those working within the food and beverage sector, based on analysis of QNHS data. Table 3.8 and Figure 3.9 provide an overview of the education attainment levels of workers across the food and beverage sector.

Table 3.8 Growth of NACE Code 15 by Education Attainment Levels 2004-08

Age	2004	2005		2006		2007		2008		Growth
	Nace 15	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	Nace 15	% Growth	2004/08
No formal/ primary education	9,000	7,000	-22%	7,000	0%	6,000	-14%	7,000	14%	-22%
Lower secondary	11,000	11,000	0%	11,000	0%	8,000	-27%	9,000	11%	-18%
Upper secondary	15,000	16,000	7%	15,000	-6%	14,000	-7%	15,000	7%	0%
Post leaving cert	5,000	5,000	0%	5,000	0%	5,000	0%	4,000	-25%	-20%
Third level non degree	5,000	5,000	0%	4,000	-20%	5,000	25%	4,000	-25%	-20%
Third level degree or above	6,000	6,000	0%	7,000	17%	7,000	0%	7,000	0%	17%
Other/not stated	2,000	4,000	100%	4,000	0%	7,000	75%	4,000	-75%	100%
Total	53,000	53,000	0%	54,000	2%	54,000	0%	50,000	-8%	-6%

Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March – May)

Note: The figures may not add up to their corresponding 'Total' figure - figures are rounded to the nearest 1,000 and groups of less than 1,000 people are not included in the Table.

The data indicates that a considerable majority of workers (62%) have no formal qualification or only a secondary education. The proportion of workers with a third or fourth level qualification is significantly smaller at 22% and 8% have a post leaving cert qualification (see Figure 3.9).

A positive trend is that the group of employees with low or no formal qualifications have been in decline. Workers with no formal or primary education and a lower secondary education have decreased by 22% and 18% respectively between 2004 and 2008. Consequently, the group of workers with a third level degree or fourth level qualification has steadily increased over the same period by 17% to 7,000 workers (see Table 3.8). This trend is reflected in the industry view that the sector is becoming more complex with a dependency on more advanced skills. The industry recognises the need for skilled personnel and has invested significantly in the recruitment process. Increasingly companies are choosing to use a recruitment centre approach and are deploying tools such as aptitude tests in their selection processes. This reflects the increased focus on product quality, continuous improvement, environmental requirements, legislation, increased reliability and customer service requirements.

More recent figures published by the CSO QNHS for Q1 2008 and 2009 support this trend with a continuation of declining numbers of employees in the sector with no formal/ primary education or lower secondary educational attainment levels and conversely increases at upper secondary level and above (see Table 3.9).

Table 3.9 Growth of NACE Code 15 by Education Attainment Levels Q1 2008 and Q1 2009

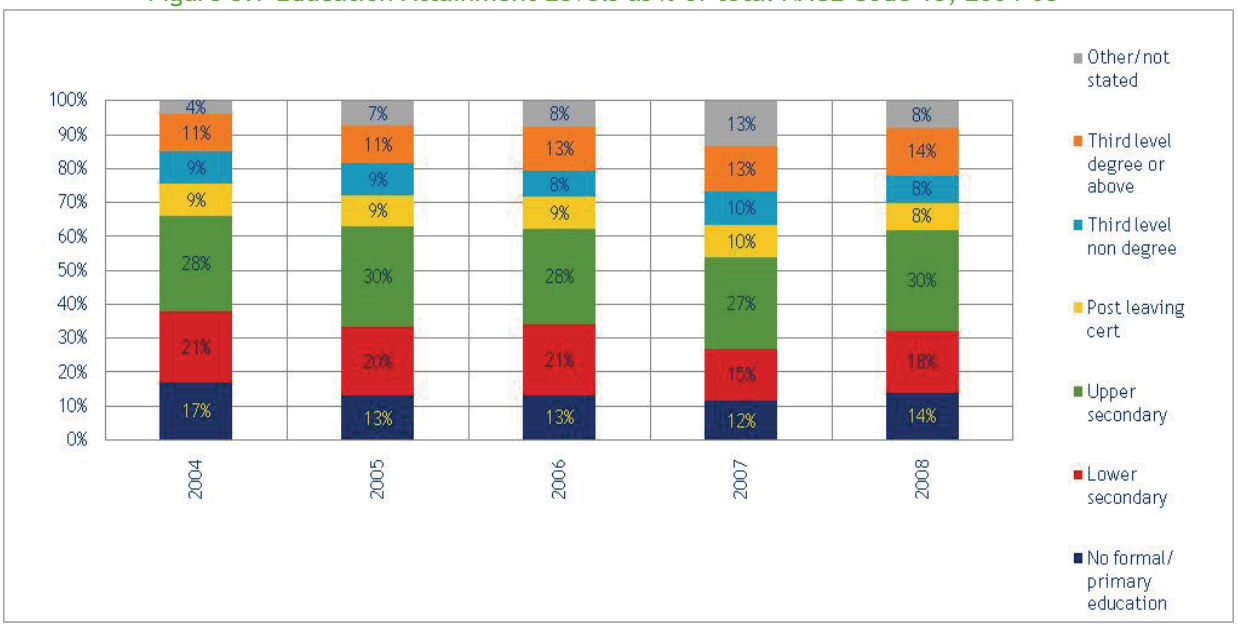
Age	Q1 2008 Nace 15	Q1 2009 Nace 15	Growth '08/ '09
No formal/ primary education	5,870	5,000	-15%
Lower secondary	8,960	7,150	-20%
Upper secondary	15,160	15,830	4%
Post leaving cert	4,200	4,800	14%
Third level non degree	4,260	4,580	8%
Third level degree or above	6,580	6,870	4%
Other/not stated	4,330	2,940	-32%
Total	49,350	47,170	-4%

Source: CSO, Quarterly National Household Survey, Quarter 1 2008 and Q1 2009 (calendar quarters- January to March)

Note: The figures may not add up to their corresponding 'Total' figure - figures are rounded to the nearest 1,000 and groups of less than 1,000 people are not included in the Table.

Figure 3.10 compares education attainment levels in the food and beverage sector in 2004 and 2008 with national education attainment. A greater proportion of workers employed in the food and beverage sector have no formal or primary education or a secondary education when compared with the national average (62% versus 51% in 2008) and the group of workers in the food and beverage sector with a third or fourth level qualification is considerably smaller than the national level (36% versus 22% in 2008).

Figure 3.9 Education Attainment Levels as % of total NACE Code 15, 2004-08



Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March - May)

Figure 3.10 NACE Code 15 by Education Attainment Levels versus Total Employment by Education, 2004 & 2008

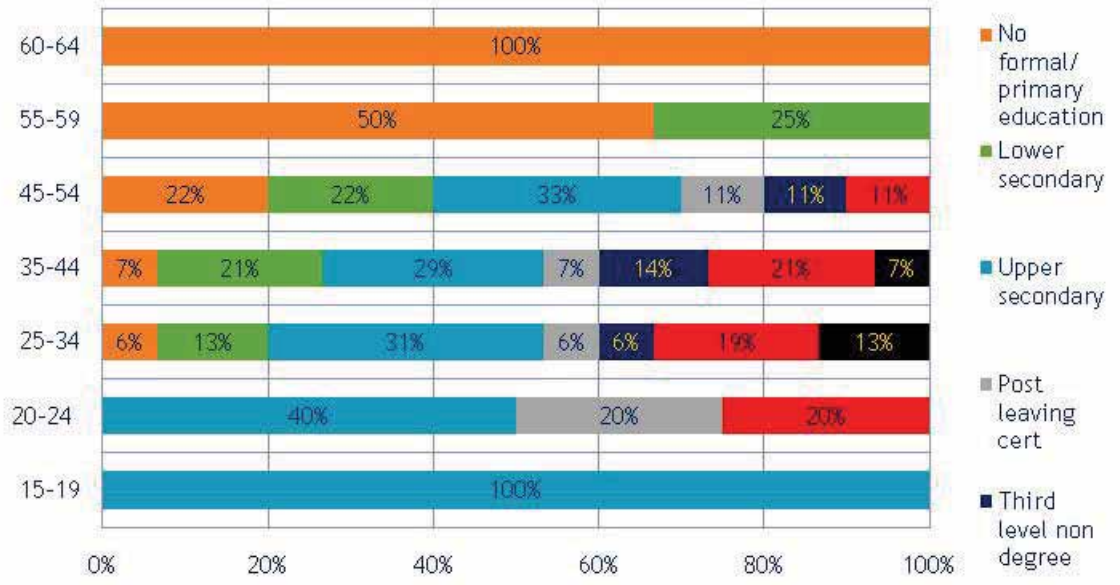
Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March – May)

Whereas the previous tables presented an overview of educational attainment levels in the food and beverage sector, Figures 3.11 to 3.14 provide an in-depth analysis of the 2008 education data in relation to age, gender, nationality and occupation of employees.

It is important to note that some results are formulated from a low base (e.g. 1,000, 2,000 respondents) and samples of any less than 1,000 respondents have not been included in the results. Therefore, it is important that the results are viewed in this light. Despite these limitations, the results allow for a more in-depth profile of the education levels and point towards some interesting trends across the sector.

Firstly, in relation to education attainment levels across the different age groups in the food and beverage sector, the data indicates that the older the age profile, the lower the level of educational attainment, i.e. a greater proportion of employees with 'no formal or primary education' or a 'lower secondary' education (see Figure 3.11). Furthermore, a significant proportion of employees aged between 20 and 54 years have a maximum of an 'upper secondary' qualification (ranging between 33% and 40%). The two mid-tier age groups (i.e. aged 25-34 and 35-44) have the highest proportion of employees with a third or fourth level education, albeit this minority only represents between 25% and 35% of all employees across these age groups. Caution must be taken with regard to the 60-64 age group, as those with second or third level qualifications were so small they were not reported on by the QNHS.

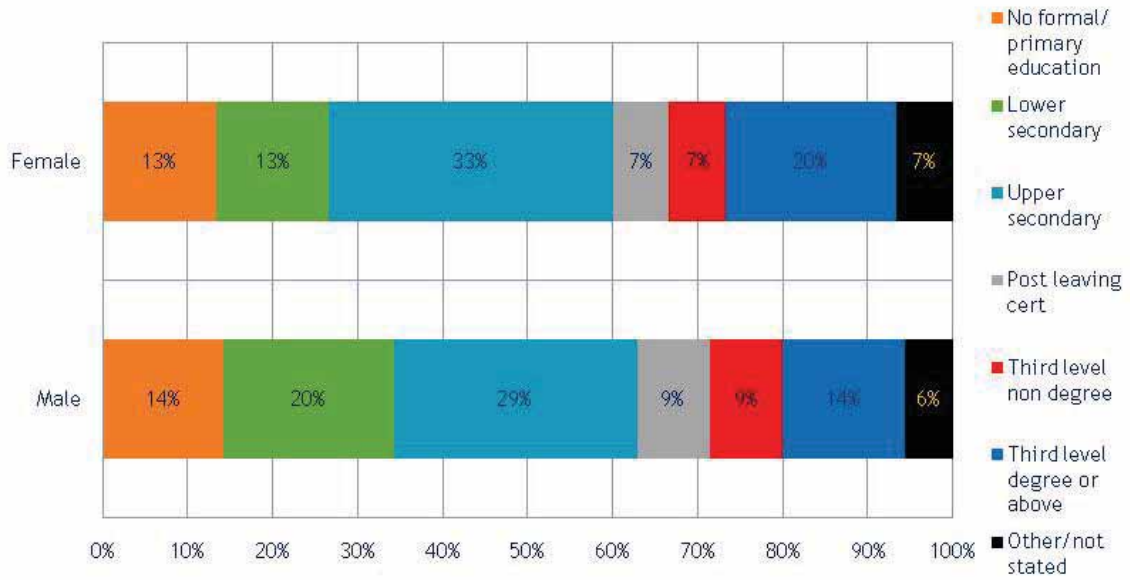
Figure 3.11 Education Attainment Levels for NACE Code 15 by Age, 2008



Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March - May)

As detailed in Section 3.2.2 on **gender,** the food and beverage manufacturing sector attracts a greater percentage of males than females to the workforce. This next stage of analysis allows us to see education attainment levels by gender.

Figure 3.12 Education Attainment Levels for NACE Code 15 by Gender, 2008



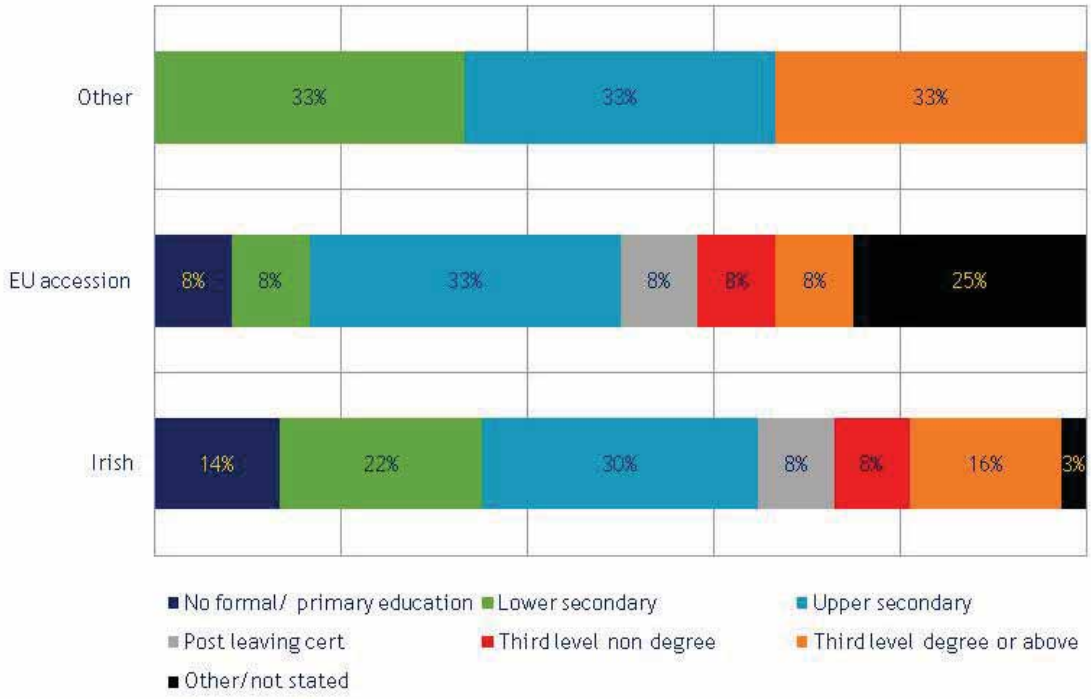
Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March - May)

Based on the data presented in Figure 3.12, a greater proportion of females have a third or fourth level education than males working in the food and beverage sector (27% versus 23%), while a greater proportion of male employees have no formal or primary education or just a secondary school education (63% versus 59%). Despite these differences, the key finding is that only one third of all males and females have any formal qualifications other than a primary or secondary school education.

Section 3.2.4 on **nationality** noted that the food and beverage sector has a significant dependence on immigrants as a source of labour, with EU accession countries representing 22% of all employment in 2008. It is difficult to draw a meaningful comparison of the major nationality groups in terms of their education due to insufficient sample sizes and incomplete information on EU accession immigrants.

Based on the limited data available however, the findings indicate that a significant share of Irish and EU accession employees have little or no formal qualifications. Education levels for both groups of workers are relatively low, however the data indicates that a greater proportion of the Irish Labour force force had no formal qualification or primary or secondary education when compared with EU accession workers (66% versus 49% in 2008). Allied to this, a comparatively small proportion of both groups have a post leaving cert, third or fourth level education (see Figure 3.13).

Figure 3.13 Education Attainment Levels for NACE Code 15 by Nationality, 2008



Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March - May)

Note: Data for EU 15 is not available as sample size was insufficient

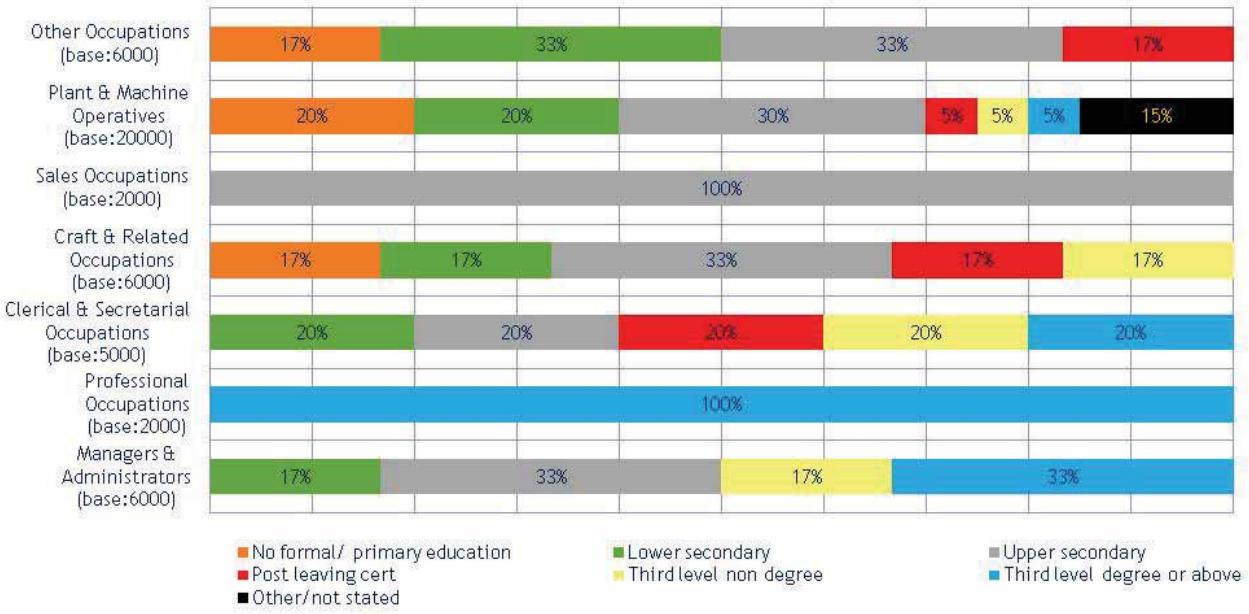
In addition to numeracy and literacy problems of those employees with little or no qualifications, immigrant group workers also face additional barriers to upskilling and training such as English language proficiency and often the short-term nature of their work contracts.

Section 3.2.6, occupation profile, illustrated that in 2008 almost 40% of workers were employed as plant and machine operatives, with managerial and professional occupations representing only a fifth of all employees. Figure 3.14 profiles this occupation data by educational attainment. Again, it is important to note that some occupation profiles are working from a relatively low base (e.g. sales, professional occupations, etc) so the results may not present an accurate picture of the education attainment for each occupation.

The key findings emerging from the data includes:

- A greater percentage of workers employed in professional, managerial, administrative, clerical or secretarial positions have third or fourth level qualifications, when compared to lower-skilled and operative occupations; and
- The vast majority of operatives (70%) and craft & related occupations (67%) have no formal qualification or have a secondary school education.

Figure 3.14 Education Profile for NACE Code 15 by Occupation, 2008



Source: CSO, Quarterly National Household Survey, Quarter 2(seasonal quarter, March - May)

NOTE: Results may not be fully representative of the education level for each occupation, as some results are working from a low base and do not include results of less than 1,000 people.

3.3 Key Chapter Findings

- Recent QNHS figures shows that the number of employees working in the food and beverage sector fell by 2,180 employees from Q1 2008 to 47,170 in Q1 2009, a decline of 4% over this period. Those occupations most affected by this decline appear to be at operative, sales and technician level.
- A considerable majority of workers (62%) in the food and beverage sector have no formal qualification or only a secondary education – a greater proportion when compared with the national average (51%). This group of employees has been in decline however over the last four years, with the number of employees with a third level qualification or higher rising over the same period. This trend reflects a move towards raising the overall standard and the level of upskilling within the sector.
- The sector attracts a greater proportion of males than females to its workforce. Although the proportion of males in the workforce is declining nationally, the proportion of males working in food and beverage industries is rising. Females tend to have a higher level of education than males.
- The majority of workers are aged between 25 and 44 years, and this age category has been steadily increasing over the past four years. The older the age profile, the greater the proportion of employees with no formal qualifications or a lower secondary education.
- A significant proportion of employees are employed at a plant and machine operative level. Operative positions have been steadily increasing over the past four years, while managerial and professional occupations have been in decline over the same period. The data indicates that the vast majority of operatives and craft and related occupations have no formal qualification or have only a secondary school education.
- There is significant dependence on immigration in the food and beverage sector as a source of labour – the proportion of employees from EU accession countries in the food and beverage sector is almost treble the national average (22% versus 8%). The propensity for immigrants to enter the Irish workforce may not grow as significantly as seen in recent years, due to worsening economic conditions and limited job opportunities. A significant share of both Irish and EU accession employees have little or no formal qualifications, however the data indicates that a greater proportion of the Irish Labour force have no formal qualifications or only a secondary education.
- Good spread of employment across all the regions, however there is a greater concentration of employment in the Dublin, Border, South-West and South-East regions.
- Employees with low or no formal qualifications are in decline, third or fourth level employees are on the increase.

4. The Provision of Food & Beverage Related Education & Training Programmes in Ireland

4.1 Introduction

This chapter provides an overview of a number of key providers of food and beverage education and training in Ireland. It builds on the research and analysis undertaken in the 2003 study on the 'Demand and Supply of Skills in the Food Processing Sector'. The 2003 study provided an in-depth quantitative profile of the key food and beverage tertiary, public and private training providers and course provision in Ireland. As such, this review of education and training should not be considered in isolation, as it is not a complete list of all programmes available.

The key objectives of this chapter are to:

- Provide an overview of the scope and quantity of the food and beverage related education, training, executive education, and continuing professional development and management development programmes and initiatives delivered by Irish third-level institutions and Irish development agencies and identify the key changes since the publication of the 2003 study;
- Understand the accreditation and certification level of such programmes under the National Qualifications Framework of Ireland;
- Outline the different teaching methods to deliver programmes and initiatives;
- Identify any overlaps or gaps in the current provision of education and training programmes and initiatives;
- Quantify the demand for food and beverage programmes and the numbers of students entering the sector; and
- Understand how regularly programmes and initiatives are updated and reviewed and how they are synchronised with industry developments and labour force requirements.

This analysis is based on information gathered through desk-based research in addition to a consultation programme with a selection of education and training providers in Ireland. In total eight education and training providers were consulted as part of this study (three universities; one institute of technology (IoT); five development agencies). Details of all training providers reviewed are listed in Table 4.1.

Table 4.1 Universities, Institutes of Technology, Training Providers Consulted

	Universities	Institutes of Technology	Development Agencies
Consultations	➢ University College Cork (UCC) ➢ University College Dublin (UCD) ➢ University of Limerick (UL)	➢ Dublin Institute of Technology (DIT)	➢ Enterprise Ireland (EI) ➢ Teagasc, Ashtown Research Centre ➢ FÁS ➢ Bord Bia ➢ Skillnets
Desk-Based Research	➢ National University of Ireland, Galway (NUIG) ➢ National University of Ireland, Maynooth (NUIM) ➢ Queens University Belfast (QUB) ➢ College of Agriculture, Food & Rural Enterprise (CAFRE)	➢ Cork Institute of Technology (CIT) ➢ Letterkenny Institute of Technology (LYIT) ➢ Dundalk Institute of Technology ➢ Galway – Mayo IT (GMIT) ➢ IT Blanchardstown (ITB) ➢ Waterford IT (WIT) ➢ Tallaght IT ➢ Sligo IT	➢ Teagasc, Moorepark ➢ Bord Iascaigh Mhara

The nature and extent of the educational programmes delivered by these universities, IoTs and the development agencies are outlined in Appendices 4.1 to 4.3.

To review the adequacy of the provision of food and beverage related education and training by skills providers in Ireland, a key step comprised development of an 'evaluation framework' for review of education and training. The framework comprises three key criteria to assess education and training, namely: programme provision; programme development & update; and industry linkages.

Each area of the evaluation framework in turn comprises several sub-criteria under which Food & Beverage related education and training provision is presented. A high-level description of this framework is provided in Table 4.2.

Table 4.2 Evaluation Framework for Review of Supply of Food & Beverage Education and Training

Criteria	Aspects Reviewed	Description
Programme and Initiative Provision	Number of Third-Level Programmes	- Number of specific food and beverage programmes (e.g. food science, food business, etc) and 'broad' food and beverage related programmes (e.g. nutrition, supply chain management; agriculture programmes etc); - New programmes since 2003 study and planned new programmes; - Continuing professional development and executive education programmes.
	Number of Public-Sector Training Programmes and Initiatives	- Number of food and beverage dedicated programmes and initiatives and broad programmes and initiatives delivered by the development agencies (i.e. Enterprise Ireland, FÁS, Teagasc and Bord Bia); - Number and type of new programmes and initiatives since 2003 study and planned new programmes and initiatives going forward.
	Accreditation and Certification Level	- Level of accreditation of programmes: Diploma, Degree, Post-Grad, PhD, other; - Level of programme provision under NQAI framework.
	Curriculum Focus	- Focus of current programmes on five areas: food science and technology; food business; management; operations and engineering.
	Gap in Education Provision	- Gaps in education provision and programme content or new programmes required as indicated by the education providers interviewed.
	Mode of Delivery	- Different methods used to deliver programmes, e.g. classroom, seminars, projects, work experience, distance learning. - Timing of delivery, e.g. evening, weekends, daytime, block-release, etc
	Graduate Entry and Numbers of Graduates	- First destination of graduates, compared with the 2003 study; - Number of graduates from third level and HETAC accredited food and beverage related programmes compared with the results from the 2003 study; - Number of graduates from FETAC accredited food and beverage related training programmes.
Programme Development & Update	Frequency of programme and module update	- Extent of flexibility in introducing new programmes or modules and updating or changing existing programme modules.
	Flexibility of programme and module update	- Frequency of programme or module review – informal and formal; - Drivers of programme or module update, e.g. industry trends; industry feedback; research; quality of graduates; etc.
Industry Linkages	Industry Design and Delivery of Programme Content	- Extent of industry input into programme and module design, e.g. members of programme boards, industry boards, etc; - Mechanisms used by colleges and universities to ensure structured industry input; - Nature and frequency of delivery of programmes and programme modules.
	Work Placements and Internships	- Level and nature of internships or work placements with industry.
	Other Industry Participation	- Industry mentoring and sponsorship; development of executive education programmes; and any other linkages or participation by industry.

In line with the analysis framework presented in Table 4.2, feedback from the consultations and research is provided under the following four headings:

- 4.2 Summary of Key Chapter Findings
- 4.3 Programme and Initiative Provision
- 4.4 Programme Development & Update
- 4.5 Industry Linkages

4.2 Programme and Initiative Provision

As noted above, Appendix 4.1 to 4.3 provide details of the broad range of food and beverage related programmes delivered by Irish education and training providers. To supplement these overview tables, a detailed description of the food and beverage programme and initiative provision is presented under the following headings: number of third-level programmes; number of public-sector training programmes and initiatives; accreditation and certification level; curriculum focus; mode of delivery; gap in education provision; and graduate entry and number of graduates. Details of each of these are detailed in aggregate for the education institutions and providers consulted.

4.2.1 Number of Third-Level Programmes

A large number of programmes delivered by the third-level education sector that are either specific to, or relevant for, food and beverage were reviewed as part of this study, and are listed in Appendix 4.1 and 4.2.

Of the 20 third-level providers included in the analysis, each college (i.e. university & IoT) typically provides anything between one and 27 programmes that are either specific to, or relevant for, the food and beverage sector. A total of 121 food and beverage related programmes (67 undergraduate, 25 executive education or continuing professional development (CPD) and 29 postgraduate programmes) were delivered across the 20 colleges over the 2008 / 2009 academic year[35].

The majority of programmes (74 programmes) are **specific** food programmes, covering areas such as:

- Food technology;
- Food science;
- Food business;
- Food marketing;
- Food innovation;
- Food product development; and
- Culinary Arts.

35 Programmes that offer different levels of qualification (e.g. a level 7 and level 8 qualifications) are counted as one programme.

The remaining 47 programmes are **broad** in nature, and provide students with skills that are applicable to sectors other than the food and beverage industry, such as agriculture, horticulture, pharmaceuticals and other manufacturing sectors. Such programmes cover areas such as:

- Biotechnology;
- Human nutrition;
- Agricultural science;
- Horticulture;
- Supply chain management; and
- Environmental health.

Of the four colleges interviewed (i.e. DIT, UCC, UCD and UL) five **new or revised programmes** are expected to be introduced over 2009 / 2010, bringing the total number of food and beverage related programmes delivered by third-level providers up to 126. Of these programmes, all are undergraduate programmes. Three of the five programmes are dedicated food and beverage programmes, namely:

- BSc (H) Food Innovation, DIT (replacing BSc Food Technology);
- Higher Cert Food Science & Management, DIT; and
- BSc (H) Food Marketing & Entrepreneurship, UCC (replacing BSc Food Business)

The remaining two programmes are broader in nature, namely: BSc (H) Human Nutrition, UCD; and BAgrSc (H) Dairy Business, UCD.

It is evident that since publication of the 2003 study, a significant number of **new, enhanced or revised food and beverage related programmes** are being delivered by the third-level institutions (highlighted in Appendix 4.1 and 4.2 by a green shading)[36]. DIT and UCC in particular, appear to have changed or enhanced their Food & Beverage education provision significantly since this time.

This can involve the design and introduction of a new programme (e.g. BSc Nutraceuticals for Health & Nutrition, DIT, BSc International Development & Food Policy, UCC, etc) or the change in focus and rebranding of an existing programme (e.g. BSc Food Business replaced by BSc Food Marketing & Entrepreneurship in UCC; BSc Food Technology replaced by BSc Food Innovation in DIT, etc). Further detail on the drivers of programme change can be found in Section 4.4.2.1.

[36] Some programmes listed in Appendix 4,1 and 4.2 may have been available during the publication of the 2003 study, but were not yet accredited.

Of particular note is the development of the 'Food Graduate Development Programme' in 2008, a joint initiative between UCC, UCD and Teagasc. The programme currently offers a series of 10 modules to postgraduate research students in the food area which predominantly cover a range of 'soft' skills such as entrepreneurship, innovation, communications and leadership, etc. Feedback from UCC indicated that strong interest has been expressed in the programme and feedback from students last year was very positive, citing improved commercial awareness and developing a 'supply chain' perspective as key benefits of the programme[37]. DIT noted during their consultation that they were considering developing a similar programme for their research students.

Some of the third-level providers interviewed are also involved in providing **executive education** or **continuing professional development** (CPD) programmes to the food and beverage sector. For example:

- In UCC, the Food Industry Training Unit (FITU) was established 15 years ago to offer part-time training, continuing education and professional development programmes to people working in, or associated with, the food and related sectors. Offering a total of 10 programmes, these short and part-time programmes offer specialist sector skills (e.g. meat, seafood, speciality food, etc) or broader business and management skills, and are all FETAC accredited to either a Level 6 or Level 8 qualification. Since the publication of the 2003 study two additional programmes have been developed, namely the Certificate in Food Packaging and the Certificate in Seafood Technology. Furthermore, the College of Business and Law and the College of Science, Engineering & Food Science in UCC introduced executive education programmes over the past five years on supply chain management and food retailing (see Table 4.3 for further detail on these programmes).
- The Food Product Development Centre (FPDC) in DIT also offers a range of training programmes for the food and beverage sector. A total of 13 programmes cover topics such as food safety and sensory analysis to one or two-day workshops on a selection of topics such as food product development, food marketing and microbiology. Programmes are not FETAC or HETAC accredited (see Table 4.3 for further detail on these programmes). The FPDC also provides customised programmes to companies depending on their requirements.

UL indicated a preference for becoming involved in offering executive education and continuing professional development programmes for the food and beverage sector.

[37] Students earn five credits per module, which each student typically one to three modules per year. To date, the modules are free to students who are sponsored under the Food Institutional Research Measure (FIRM). It is compulsory for all food research students in UCD to become in FGDP; however it is still optional in UCC. FIRM is funded by the Department of Agriculture and Food under the National Development Plan. Its remit is to support research, development and innovation in the Irish food industry.

Since 2003, the colleges have been very active and have introduced a significant number of new, amended or enhanced programmes. Over the 2008/09 academic year, 67 undergraduate, 25 executive education and CPD and 29 postgraduate programmes were available at third-level. The vast majority of programmes (74) are dedicated food and beverage programmes, with the remaining 47 having a broader focus on agriculture, horticulture, human nutrition, etc.

A number of new or enhanced programmes are in development, with five new programmes expected in UCC, UCD and DIT expected to come on-stream for 2009 / 2010.

In terms of recent course development, the colleges are endeavouring to modify and hone programme content in response to industry feedback and requirements.

Students have yet to graduate from a number of recently introduced new or revised programmes (e.g. programmes in UCC, UCD, DIT and UL), which augurs favourably for the total numbers of students graduating annually with relevant skills to work in the food and beverage sector.

4.2.2 Number of Public-Sector Training Programmes and Initiatives

As described above, seven Irish development agencies or representative bodies were interviewed and researched as part of this study, namely Enterprise Ireland (EI), FÁS, Teagasc, Bord Bia, Skillnets, Irish Exporters Association (IEA) and Bord Iascaigh Mhara (BIM), with a view to compiling a composite list of their food and beverage related management development and training provision.

A total of 114 programmes and initiatives are currently delivered by the seven public-sector training providers that are either specific to, or relevant for, the food and beverage sector. The vast majority (circa 97) are food specific programmes, with only a small number of programmes of initiatives (16) which are broad in nature, all of which are delivered by EI.

Since publication of the 2003 study, approximately 80 to 85 new food & beverage related programmes and initiatives have been developed and introduced by the seven development agencies or representative bodies.

- In Teagasc for example, nine of the 36 programmes on offer are new, covering areas such as: meat manufacturing; HACCP in NPD; lean techniques and artisan food business as well as the Food Graduate Development Programme, the joint initiative between UCC, UCD and Teagasc (see Appendix 4.3 for further detail).

- Bord Bia[38] offer a range of market intelligence and management development services to food, beverage and horticulture businesses to assist them to explore, realise and develop new business opportunities. Bord Bia delivers 23 programmes and interventions, all of which are new since 2003. They also offer a number of workshops in areas including: national account management; consumer lifestyle trends, idea generation and concept development. In addition to these programmes and workshops, Bord Bia also provide market intelligence and run a number of events and seminars with the aim of further promoting the food and beverage sector.
- The Food & Drink Unit of the Services to Business Division in FÁS is involved in the development of training programmes to address the skills needs of the industry. Currently FÁS offer 22 food-related programmes, of which 21 were introduced since 2003. Programmes are mainly focused on upskilling those working in the beef, sheepmeat, pigmeat and seafood industries. Two programmes, namely the Diploma in Meat Technology and the Certificate in Food Packaging were developed in conjunction with the FITU in UCC. One of the most notable developments since 2003 was the extent to which EI[39] has entered the management and talent development space. EI now delivers a range of relevant and appropriate programmes and interventions (29 programmes and initiatives, 27 of which are new since 2003). 13 of these programmes are food sector specific and the remaining 16 are cross-sectoral programmes that are offered to clients in the food sector. During our interviews with food companies, two EI programmes, namely the First Flight Initiative to Japan (focusing on lean manufacturing) and their 'International Marketing Programme', were commented upon very favourably (see Appendix 4,3 and 4.4 for more detail on each of these programmes). The food specific programmes delivered by EI cover the areas of international selling, strategy and management development, innovation or NPD and entrepreneurship. The non-food specific programmes cover: international selling and business; supply chain management; supplier and management development; exporting; technology management; and leadership. Although not specifically marketed towards food companies, participants from the sector have attended such programmes in the past (See Appendix 4.2 for more details on participation numbers on these programmes from within the food and beverage sector).
- Skillnets is an enterprise-led support body which promotes and facilitates employment training and upskilling through learning networks which can have either a cross-regional and / or cross-sectoral focus. Since commencement, Skillnets has facilitated over 18,000 Irish enterprises, in over 200 networks to improve the range, scope and quality of training and allowed over 150,000 employees to up-skill and meet their work related training needs. Since 2003, Skillnets has significantly increased its offering and in 2008 / 09 funded a total of 123 learning networks.

  11 of these networks pertain to food and beverage, with almost half of these having come on-line in the last year. A number of consultees referred to Skillnets and specific networks they

[38] Bord Bia is mandated to drive the success of a world class Irish food, drink and horticulture industry by providing strategic market development, promotion and information services.
[39] Enterprise Ireland has responsibility for the development of internationally trading businesses. EI's remit extends to indigenous Manufacturing and Internationally Traded Services companies, High Potential Start-Ups and Foreign and Indigenous companies in the Food sector. Enterprise Ireland also has responsibility for inward investment in the food sector. EI has responsibility for all aspects of the business development model, including finance, R&D, Innovation, Management Development, Productivity/Operations Improvement etc., excluding market development. The exception to this is that Enterprise Ireland has responsibility for market development of non-human foods, for example pet foods.

were involved in and its effectiveness in sourcing or developing appropriate accredited training programmes for employees.

- BIM is responsible for promoting awareness of careers within the seafood industry and to develop its human resources, and as a result BIM provides training in catching, fish farming and seafood processing. Of particular interest is their programme run in conjunction with Kerry County Enterprise Board, namely 'Starting / Running a Seafood Business'.
- The IEA represents the whole spectrum of companies within the export industry, including food and beverage companies and are also involved in providing training programmes to the sector. Two programmes, namely the Channel Clusters programme and the Celtic Recipes programme, have been developed since 2003 specifically for the food sector. Both programmes are focused on improving companies export abilities and procedures and current operations.

While Teagasc, FÁS, Bord Bia and BIM programmes are available to the wider food and beverage sector, EI programmes and interventions are on offer to their client base only.

Of the seven development agencies or representative bodies interviewed and researched seven **new programmes** (taught and research) appear to be currently in development, bringing the total number of Food & Beverage related programmes delivered by the development agencies up to 121. These include as follows:

- New product development for SME's (Teagasc);
- SME technology support (Teagasc);
- PhD in Food / Agriculture area (Teagasc)
- Food Development Channels (IEA);
- The Food Innovator (FÁS / EI);
- Marketing Fellowship Programme (Bord Bia);
- Partner Account Plans (Bord Bia); and
- National Account Management (EI).

Since 2003, the development agencies or representative bodies have been very active and introduced a significant number of new dynamic programmes and initiatives, with currently 114 initiatives on offer to the food sector and seven new programmes and initiatives currently in development across the seven agencies or representative bodies.

A major development since 2003 is the extent to which EI has entered the management and talent development space. During this time, EI identified skills issues and sought to provide interventions and solutions. Their current suite of programmes and interventions appear to be very relevant and favourable feedback was obtained from industry on the manner in which the HRD Department in EI works closely with Client Advisors to help to address current skills issues. Skillnets and Bord Bia have also entered the training facilitation and skills enhancement space since 2003, with favourable feedback on their interventions and support reported by industry.

4.2.3 Accreditation and Certification Level

Also analysed during the review process was the level of accreditation and certification of Irish food and beverage related education and training programmes. The National Framework of Qualifications was not in place during the development of the 2003 study. This analysis reflects these advancements and highlights the number of programmes at each level. The Framework consists of ten levels, details of which can be found in Appendix 4.5.

4.2.3.1 Third-Level Institutions

Each of the 167 qualifications offered across all the 126 food and beverage related programmes delivered at third-level (as detailed in Appendix 4.1 and 4.2) are grouped as a Level 6-10 under the National Qualifications Framework, and are summarised in Table 4.3.

Table 4.3 Third Level Programmes by NQAI Level[40]

	NQAI Level							
	Level 6	Level 6/7	Level 7	Level 8	Level 9	Level 10	n/a	Total
Third Level Programmes	20	11	30	50	39	4	13	167
% of Total	12%	7%	18%	30%	23%	2%	8%	100%

Source: PwC Analysis[41]

Apart from the 13 continuing professional development programmes delivered at the Food Product Development Centre in DIT, all programmes at third-level are accredited under the National Qualifications Framework. Table 4.4 indicates that of the remaining food and beverage related programmes, the majority of qualifications (30%) are at Level 8 (e.g. an Honours Bachelors Degree, or a Higher Post Diploma). This is followed by Level 9 (a Masters Degree or a Graduate Diploma) and Level 7 (an Ordinary Bachelors Degree) and qualifications, with 23% and 18% respectively.

4.2.3.2 Development Agencies

Approximately 45 of the 97 programmes and initiatives offered by the Development Agencies are accredited, of which eight are HETAC accredited and the remaining 37 programmes are accredited under FETAC. Limited information was available on the specific accreditation level under the NQAI framework, however further information where available can be found in Appendix 4.3.

4.2.4 Curriculum Focus

Consultation with industry indicates that it is important for students and employees to have strong 'T Shaped' skills (i.e. a deep specialism in a subject area coupled with a broad knowledge of the core skills required for the food industry or vice versa)[42]. Therefore, they noted it is important to have different ways of developing these 'T Shaped' skills, e.g. a broad undergraduate programme, followed by a specialist postgraduate programme or a specific undergraduate qualification followed by a broad postgraduate qualification.

[40] The NQAI level for programmes delivered in Northern Ireland was identified via the document in Appendix 4.6. Some of these programmes sit between levels under the NQAI framework accounting for all programmes classified as Level 6/7.
[41] In Section 4.3.1 the number of total programmes at third level was calculated based on programme title, i.e. programmes that offered two levels of qualification (e.g. a level 7 and level 8 qualifications) were counted as one programme. As a result, the total number of qualifications in Table 4.4 is higher than the total number of programmes as reported in Section 4.3.1.
[42] Further detail on T-Shaped Skills can be found in Appendix 4.7

To understand the extent to which both ways of developing 'T Shaped' skills are available to students at third level institutions in Ireland, a review of the curriculum focus of undergraduate, executive education and CPD and postgraduate food and beverage related programmes was undertaken. As part of this analysis, all programmes were categorised into five disciplines, and plotted on two graphs. The disciplines are as follows:

- Food science and technology (e.g. biotechnology, cereal processing, dairy, meat, beer and wine / fermenting, health & safety, etc);
- Food business (e.g. marketing, sales, finance, business, law, consumer insight and innovation, etc);
- Management (e.g. managing people and business, change management, etc);
- Operations (e.g. supply chain management, demand planning, etc); &
- Engineering (e.g. lean manufacturing, design engineering, process engineering, packaging, etc).

Findings are presented according to undergraduate and postgraduate programmes.

4.2.4.1 Undergraduate Programmes

Figure 4.1 summarises the curriculum focus of the undergraduate and executive education and continuing professional development programmes delivered at third level (as listed in Appendix 4.1) across the aforementioned disciplines.

Each of the 97 (existing and new programmes in development) undergraduate and executive education and CPD programmes in Appendix 4.1 are represented in Figure 4.1 by a grey, light blue or dark blue circle, which indicate the following:

- Light Blue: programmes address one discipline;
- Dark Blue: programmes address two disciplines; and
- Grey: programmes cover three or four disciplines.

The diagram highlights that the vast majority of the 97 programmes are focused on **one discipline** (approximately 70), of which the majority are dedicated food science and technology type programmes (covering areas such as biotechnology, bioscience, nutrition, food science, agricultural science, environmental science, etc), which typically do not offer students broader skills such as business, management, operations or engineering. 12 of these programmes are dedicated biotechnology and biosciences programmes.

Aside from science and technology focused programmes, a small selection of programmes were focused solely on 'operations', 'engineering' or 'food business' (approximately four undergraduate and 10 executive education and CPD programmes), e.g. Certificate and Diploma in Supply Chain Management, UCC and BSc Supply Management (Food), College of Agriculture, Food & Rural Enterprise (CAFRE). These programmes can offer students a bandwidth of skills that can be applied across most sub-sectors of the food industry, and indeed outside the food sector, to other manufacturing industries.

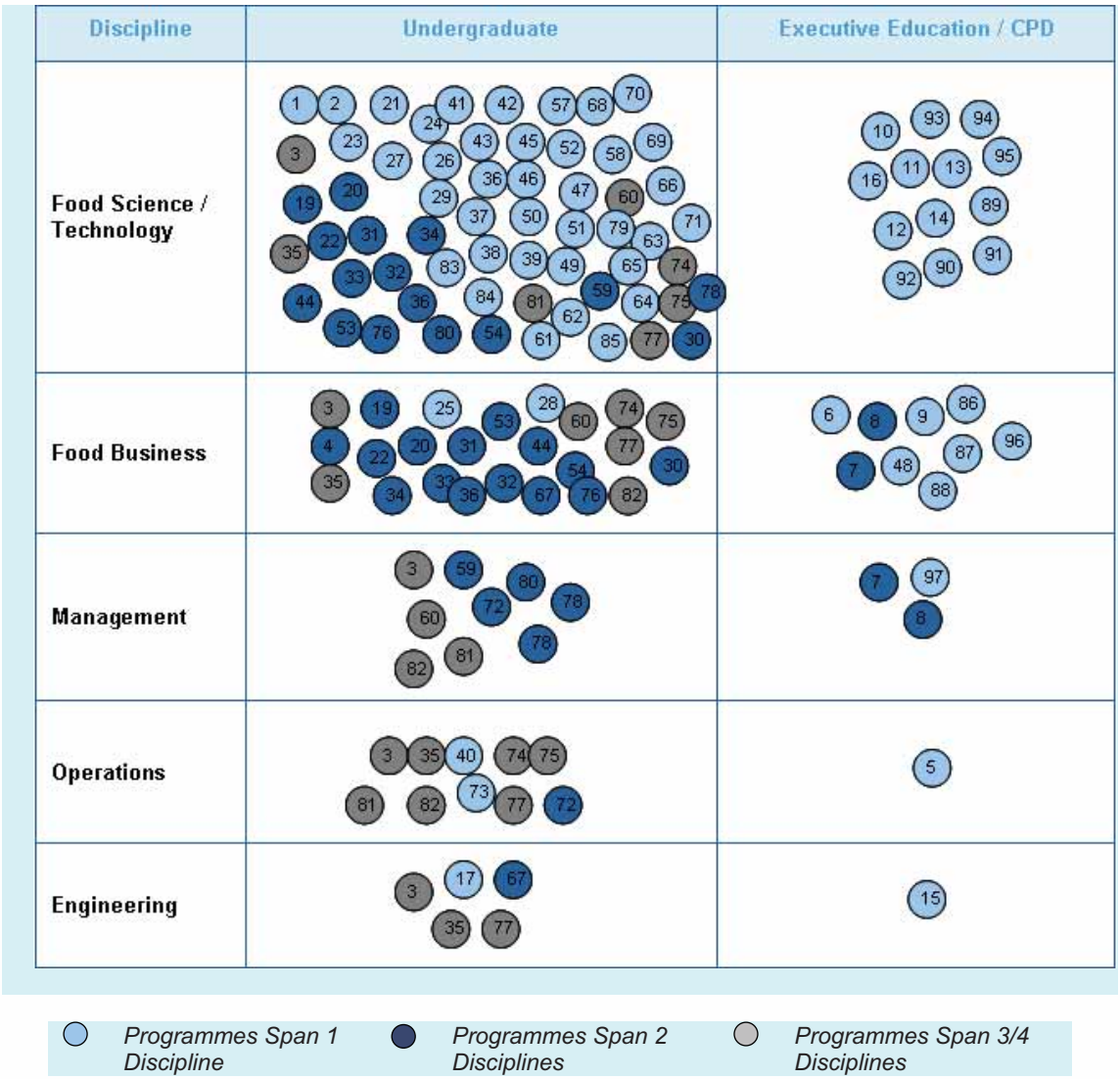
Approximately 20 programmes however have a broader focus covering **two disciplines**. This predominantly includes programmes which combine food science and technology with food business, e.g. BSc Food & Agribusiness Management in UCD and the BSc Food Science with Business, in WIT, however other combinations include food business and management (e.g. Diploma Business Management, FITU, UCC).

A small number of programmes cover **three or more disciplines** (approximately 8). Such programmes typically provide students with a mix of science and technology, business, operation and / or engineering modules, of which two are due to start in 2009. Such programmes include:

- BSc Food Innovation, DIT (replacing the BSc Food Technology & starting in 2009);
- BSc Food Marketing & Entrepreneurship, UCC (replacing the BSc Food Business & starting in 2009);
- BSc Food Technology, CAFRE; and
- BSc Food Manufacture, CAFRE.

The new 'broad' programmes in UCC and DIT were reportedly introduced as a result of industry feedback, which indicated a preference for 'well-rounded' students with a broad knowledge of the core skills required to work across all aspects of the food industry, rather than a deeply specialised graduate. As evident above, there are a limited number of programmes available in this area, and perhaps due consideration should be given at third level in increasing or enhancing programme provision in this area.

Figure 4.1 Curriculum Focus of Undergraduate & Executive education and CPD Programmes at Third Level[43]



The level of sector specialisation varies across the programmes offered. A small number of programmes are dedicated to various sub-sectors of the food industry such as meat, seafood, baking, etc. Such programmes include:

- Certificate and Diploma Meat Technology, Certificate Seafood Technology, Diploma Speciality Food Production, Food Industry Training Unit, UCC;
- BSc Baking & Pastry Arts Management, DIT;
- BA Culinary Arts (with a focus Pastry, Savoury, Gastronomy), LYIT;
- BBs and Diploma Wine & Beverage Management, Tallaght IT;
- Higher Certificate Fisheries Management, Sligo IT.

[43] The findings in Figure 4.1 are indicative only - analysis based on direct feedback from the colleges and / or from a high-level desk research review of programme curricula on college websites.

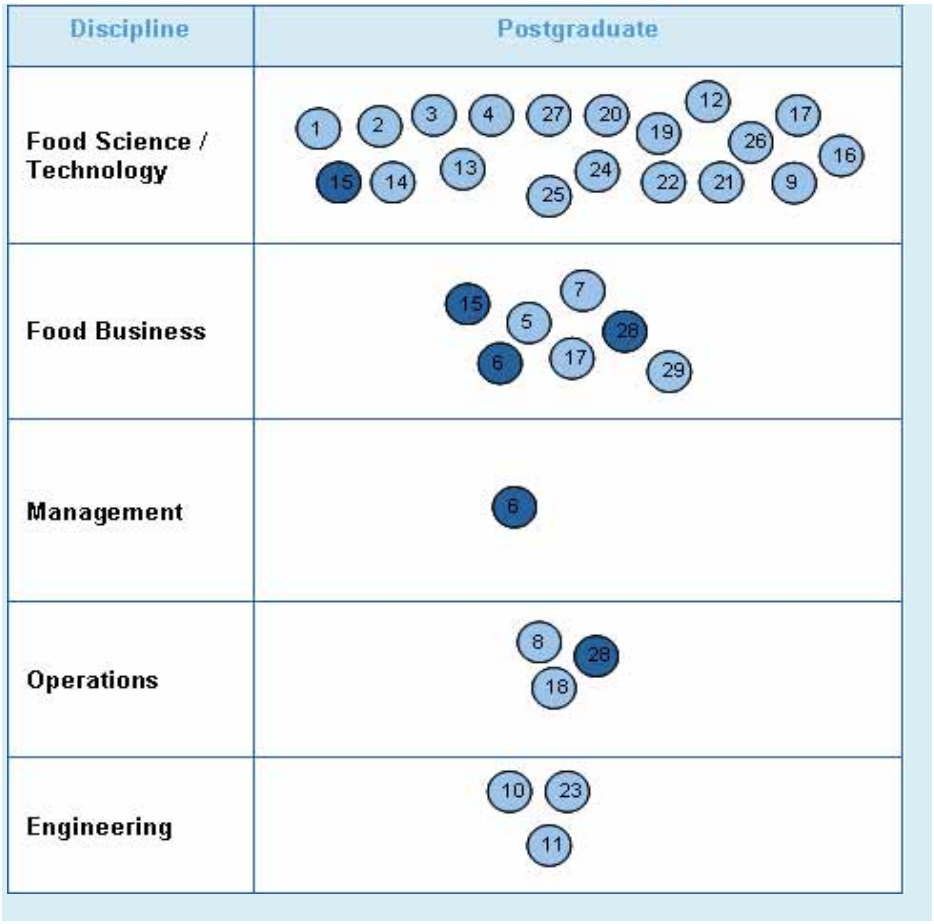
Of the undergraduate programmes currently available or in development across the colleges, a huge number are concentrated on one discipline, namely food science & technology. A smaller number of programmes cover more than one discipline, such as business, management, operation and / or engineering. Some colleges are in the process of designing a selection of new programmes which cover three or more disciplines, arising as a consequence of industry requests.

One would question the extent to which there is oversupply and overlap of food science and technology type programmes relative to demand. Given the current economic climate, it is possible that some consolidation may occur.

4.2.4.2 Postgraduate Programmes

Figure 4.2 illustrates the curriculum focus of the Food & Beverage related postgraduate programmes delivered by the third-level education providers. As per Figure 4.1, these insights were obtained from consultations with the colleges and from a review of programme curricula.

Figure 4.2 Curriculum Focus of Undergraduate & Executive education and CPD Programmes



Similar to the undergraduate programmes, Figure 4.2 indicates that the vast majority of the Food & Beverage related postgraduate programmes (approximately 18 out of 29) are **food science and technology** programmes providing students with a specialisation in areas such as food microbiology, food science, nutritional sciences, food safety and food quality and biotechnology. There is typically little or no focus on broader skills such as business, management, operations or engineering across these programmes. Six of these 18 programmes are dedicated biotechnology, biosciences or microbiology programmes. A further nine programmes are solely focused on either food business, operations or engineering.

It was found that a small selection of programmes (approximately three) appear to have a focus on **two or more disciplines**, which include a combination of business with either management, operations or food science and technology, e.g. MSc in Agri-Business Food Development in the University of Ulster; and MSc Culinary Innovation & Food Product Development in DIT. As a result, it is evident that programme choices for students to obtain a 'broad' set of food related skills at postgraduate level is relatively limited.

Approximately three programmes are **sector specific**. These include programmes dedicated to the hospitality and seafood sectors, e.g. MSc Culinary Innovation and Food Product Development, DIT; MSc and Graduate Diploma Sustainable Aquaculture & Inshore Fisheries, QUB; and the MSc and PhD Marine Science, GMIT.

At third level, there are a good variety of postgraduate programmes relevant to the Food & Beverage sector, however only three programmes span more than one discipline.

A significant number of programmes are concentrated on food science & technology, and consequently there appears to be a gap in relation to a broad postgraduate incorporating elements of other relevant programme spanning the various disciplines.

4.2.5 Gaps in Education Provision

During discussions with the education providers interviewed, interviewees were asked to identify any gaps in their current skills provision for the food and beverage sector. A number of core areas were identified which will be explored in this section.

4.2.5.1 Third Level Institutions

The 2003 study made a number of specific recommendations for third-level colleges in terms of their education and training content and provision. For example:

- Recommendation IX stated that "at undergraduate level, all food-related programmes include modules on food hygiene and food safety"; and
- Recommendation X noted that "consideration should be given by third level colleges, to supplying graduate intake into the food sector possessing general management skills, covering the three main functional areas of food science, business and engineering".

As seen in Section 4.2.1, significant progress has been made on the number and type of programmes available since the publication of the 2003 study. For example, based on feedback from consultations, undergraduate food related programmes now cover food safety. Furthermore some 'general management' type programmes have been developed spanning the three areas of food science, business and engineering (e.g. BSc Food Marketing and Entrepreneurship; BSc Food Innovation, DIT) both due to start until September 2009.

There is still a heavy emphasis on technology and science across many of the programmes delivered by the third level colleges (as noted in Section 4.3.4). Some of the colleges interviewed expressed a view however, that students should be given a strong foundation in science in the first two years of a science degree, and from second year there should be greater focus on industry relevant topics rather than traditional science subjects. For example in 2009, two science modules in the second year of the BSc Food Science in UCD (i.e. Principles of Crop Science; Principles of Animal Science) will be replaced with modules on Health and Safety and Marketing.

Despite evidence of strong developments in the choice of programmes and skills provided at third level, the following areas were identified as core gaps in current provision by the third-level education providers interviewed:

- Supply-chain management;
- Logistics and lean manufacturing;
- Packaging;
- Compulsory business, management, marketing and / or finance modules[44] in traditional food science programmes;
- Process engineering;
- Sales and negotiation skills;
- Existing or incremental product development; and
- Commercial awareness and basic business comprehension.

Each of these identified gaps are ranked as either high, medium or low in Table 4.4. Those highlighted in blue (namely sales and negotiation, commercial awareness, existing or incremental product development; packaging, supply chain and logistics and lean manufacturing) were considered by many of the colleges to be a 'high' lacuna in current education and training provision.

The colleges noted that they would like to address the identified gaps in their education provision, however issues such as a lack of resources or knowledge in-house, college recruitment freezes and limited funding were cited as barriers in expanding or changing the programme curricula.

[44] Currently those colleges operating under a modular system offer students the option of taking any module across the college. Colleges reported that some food science students opt to study business modules, however this is not compulsory.

Table 4.4 Summary of Key Gaps in Education Provision as Identified by the Third-Level Education Providers

Skill	Gap	H / M / L Gap
Food Business	Sales and negotiations	H
	Marketing	M / L
	Finance	M
	Management and general business	M
	Commercial Awareness	H
	Existing or incremental product development	H
Engineering	Packaging	H
Operations	Supply Chain	H
	Logistics and lean manufacturing	H

Source: PwC analysis / college feedback

4.2.5.2 Development Agencies

Views were also obtained from the development agencies on their perception of gaps in current training & interventions for the food sector, and the following areas were identified:

- Research & development, new product development and renovation for SMEs;
- Upskilling of operatives specifically in relation to basic numeracy and literacy, continuing performance improvement and lean and supply chain management skills;
- Commercial awareness and business skills for owner and managers in SMEs;
- Suite of relevant skills for dealing effectively with large multiples;
- Financial, commercial and business acumen across all functional areas; and
- Succession and second tier management development.

The development agencies noted that they are in the process of addressing most of these identified lacunae, and in some cases are at an advanced stage of discussions with potential industry partners to deliver and develop relevant programmes.

The colleges identified a number of core gaps in the current education and training provision at third-level. Although they expressed an interest in addressing these gaps through amending or enhancing their current programme offering, budgetary and significant resource constraints were cited as barriers to addressing these gaps.

The development agencies pointed towards additional lacunae and in some cases were in advanced stages of developing programmes and initiatives to address the identified skills needs.

4.2.6 Mode of Delivery

The education and training providers were also asked for feedback on the modes of programme delivery. Findings are presented under third-level institutions and development agencies.

4.2.6.1 Third-Level Institutions

At third-level the vast majority of programmes are delivered via the standard methods of classroom learning, supplemented with projects and / or work experience. Postgraduate programmes are typically more flexible with a number of programmes offering a part-time option, thus helping to facilitate those at work. Furthermore, the new MSc in Food Regulatory Affairs (a joint initiative between UCC, UCD and the University of Ulster introduced in 2008), is a programme which is delivered predominantly through e-learning.

Executive education and CPD programmes delivered in UCC and DIT (i.e. via the College of Business & Law, College of Science, Engineering & Food Science and the Food Industry Training Unit (FITU) in UCC; and the Food Product Development Centre (FPDC) in DIT) were reported to have a more flexible delivery than undergraduate or postgraduate programmes, through using a combination of classroom, seminar, e-learning and distance learning and / or projects as teaching methods. Such programmes may be offered during evenings, weekends or via short block-releases. For example:

- In the FITU for example, between 50% and 66% of programme material was delivered via distance learning in the Certificate in Food Science and Technology and Certificate in Meat Technology; and
- The Certificate & Diploma in Supply Chain Management are delivered through a variety of methods, including classroom (through two-day seminars or workshops), workplace and on-line learning. The Postgraduate Diploma in Supply Chain Management is offered through two delivery formats: a 'Blended Learning Approach' (combination of classroom and on-line) and a 'Distance Learning Approach' (on-line resources including tutorials, e-mentoring and discussion forums) with students free to change from one format to another.

Some of the colleges (e.g. DIT) offer bespoke CPD and executive education programmes designed to meet a specific company need. Such programmes are typically delivered in-company, and involve short intense periods of classroom learning designed to minimise disruption to the daily working routine. Some key points noted by the colleges should be taken into consideration when deciding upon modes of delivery for programmes, as follows:

- Distance learning or e-learning does allow for flexibility, however it may not be appropriate for all science or technology subjects due to their technical nature; and
- Distance-learning may be more appropriate in the second half of a programme, particularly when training lower-skilled workers – this allows time for student confidence to grow during the early stages of the programme.

4.2.6.2 Development Agencies

There are a myriad of different delivery formats and intervention styles deployed by development agencies ranging from block releases to attend programmes to in-company interventions with teams. The agencies are increasingly aware of the need to offer programmes and interventions on a more flexible basis, in terms of timing, modes of delivery and location, as significant time away from the work environment and the issue of backfilling are huge barriers to the up-take of training.

At third level, there appear to be more flexible modes of delivery offered on postgraduate and executive education and CPD programmes, with undergraduate programmes primarily conforming to classroom based activity, supplemented with work experience and projects. The development agencies are increasingly aware of the need to offer flexible modes of delivery for their programmes and interventions and currently use a range of different delivery formats and intervention styles.

4.2.7 Graduate Entry and Numbers of Graduates

Also analysed were the numbers of graduates from food and beverage related programmes and subsequently graduate entry into the sector. Findings are presented by third-level institutions and FETAC accredited programmes.

4.2.7.1 Third-Level Institutions

Information provided by third-level education providers, and data provided in the Higher Education Authority (HEA) study, on the 'First Destinations' of Graduates, "What do Graduates Do? The Class of 2006"[45] allows for an analysis of the:

- Numbers of graduates from food and beverage related programmes in the Republic of Ireland, where available;
- Percentage of food science & technology and agriculture science graduates which gain employment in the food and beverage sector; and
- Percentage of total graduates from *all disciplines* who gain employment in the food and beverage sector.

Firstly (based on the figures of 'numbers of graduates' listed in Appendix 4.1), it appears that in 2007 there were approximately 1,000 graduates available from food and beverage related programmes in the Republic of Ireland who could potentially enter the workforce. This is almost double the number of graduates found in the 2003 study (approximately 500-600). It should be noted however, that:

- Some new or enhanced programmes introduced over the past 2 / 3 years have not yet had a graduating class, therefore numbers were not available;
- Not all of these graduates seek employment in the food sector;
- The supply of graduates into the food and beverage sector is not limited to agriculture and food programmes; and

[45] The First Destination Report is based on an annual survey of graduates six to nine months after graduation. This survey presents a snap shot picture of the labour market or further study situation of students who graduated in the previous academic year, having completed a full-time programme of study.

- Some students from the Republic choose to attend colleges in Northern Ireland or abroad, but subsequently return to the Republic to enter the workforce.

To understand the number of students with a food and beverage related qualification that enter the sector, HEA data on the percentage of graduates from 'Food Science & Technology' and 'Agriculture Science' Faculties with a Level 8 Honours Bachelor Degree 2006 who found employment in the food & drink industries (see Table 4.5) was extracted from the graduate destinations survey.

In the case of **Food Science & Technology graduates**, during 2006, 25% of the survey respondents indicated they took up employment in the food & drink industries. The remaining graduates from this discipline were employed across a range of industry sectors with 'Pharmaceuticals & Other Chemical Products' manufacturing (12%), 'Distribution' (11%) and 'Personal & Recreational Services' (35%) all featuring strongly as employers of Food Science & Technology graduates.

13.6% of **Agriculture Science graduates** secured employment in the food & drinks industries. While agriculture degree programmes have a focus on the food industry, given its broad curriculum graduates tend to work across a wide range of food and agriculture related areas of work. For example, aside from food & drink, a significant number of graduates are employed each year in 'Business, Finance & Insurance Services' (27%), 'Non Market Services' (24%) (Includes social and charitable services and research, planning, etc), and the obvious choice 'Agriculture, Forestry & Fisheries' (22%).

Table 4.5 Key Employment Sectors for Agriculture Science and Food Science & Technology Faculties for Level 8 Bachelor Degree Graduates in the Republic of Ireland

Employment by Sector	2006	
	Agriculture Science	Food Science & Technology
Degree/Higher Degree Qualification	**% of Total Graduates**	
Agriculture, Forestry, Fisheries	**22.0%**	**0.0%**
Manufacturing Industries	**20.3%**	**38.2%**
Food and Drink Industries	*13.6%*	*25.0%*
Pharmaceutical & Other Chemical Products	*3.4%*	*11.8%*
Metals, Metal Products, Mechanical & Electrical Engineering	*0%*	*0%*
Computer & Electronic Office Equipment, Office Machinery, Instrument Eng	*0%*	*0.7%*
Other Industries	*3.4%*	*0.7%*
Electricity, Gas & Water Supply	**0.0%**	**0.0%**
Building & Construction	**3.4%**	**0.7%**
Distribution	**1.7%**	**11.0%**
Business, Finance & Insurance	**27.1%**	**4.4%**
Consultant Engineering & Architectural Services	*8.5%*	*0.0%*
Other Business Services	*15.3%*	*0.7%*
Computing & Software Applications	**0%**	**0.0%**
Transport, Communication & Storage	**0%**	**0.7%**
Non Market Services	**23.7%**	**3.7%**
Social & Charitable Services	*10.2%*	*0.7%*
Personal & Recreational Services	**1.7%**	**34.6%**
Professional Services	**0%**	**1.5%**
Other Industries	**0%**	**5.1%**
Total	**99.9%**	**99.9%**

Source: HEA, 'What do Graduates do? The Class of 2006'

Total Respondents (7,090), Response Rate (59%)

The HEA data also indicates the number of total graduates that found employment in the food and beverage sector. Table 4.6 outlines the percentage of 2006 graduates *from all disciplines* employed in the food & drink industries in the Republic of Ireland[46]. Similar data for 'Manufacturing Industries' (of which food & drinks industries is a sub-set) and 'Agriculture, Forestry & Fisheries' are also shown for comparison purposes.

Table 4.6 Graduate Entry into the Food & Drink Industries by Level of Award

Employment Sector Ireland	Level 6	Level 7	Level 8		Level 9			Level 10
	Advanced Higher / University Certificate	Ordinary Bachelor Degree / University Diploma	Honours Bachelor Degree	Higher Diploma	Postgrad Diploma	Masters Taught	Masters Research	PhD
Manufacturing Industries	10.2%	9.3%	10.9%	4.6%	6.0%	8.0%	20.7%	15.9%
Food & Drink Industries %	***0.0%***	***0.8%***	***1.5%***	***0.6%***	***0.5%***	***1.3%***	***2.6%***	***0.6%***
No. Graduates	***0***	***19***	***201***	***10***	***5***	***44***	***9***	***4***
Agriculture, Forestry & Fisheries	6.0%	2.1%	0.8%	0.9%	0.2%	0.4%	0.9%	0.9%
Total Respondents	167	526	7090	940	634	1879	116	327
Response Rate	24%	22%	53%	58%	61%	55%	35%	47%

Source: HEA, 'What do Graduates do? The Class of 2006'

Of the 23,566 graduates in 2006 with a Level 6 to Level 10 qualification, circa 292 (or 1.2%) entered the food & drink industries. 62 of these held a Level 9 or Level 10 qualification and the remaining 230 graduates had a Level 8 qualification or lower, with the majority (201 graduates or 69%) holding a Level 8 Honours Bachelor Degree. It was found in the 2003 study that *"280 recipients of higher education awards across all disciplines entered the food, drink & tobacco sector in 2000"*, indicating an increase of 12 graduates over the past six years.

Across the groups of graduates with a Level 6 to Level 10 qualification, between zero and 2.6% entered the food & drink industries. Specifically, the survey results indicated that:

- 2.6% and 1.3% of all Research and Taught Masters students or 44 and 9 graduates (Level 9) respectively, entered the food and drinks industries and 1.5% or 201 of all Honours Bachelor Degree graduates (Level 8);
- Thereafter, less than 1% of all graduates (ranging from none at Level 6 to 19 at Level 7) across the remaining Level 6-10 Awards were employed in the food and drink industries.

By comparison, the manufacturing industries as a whole attracted between 4.6% and 21% of graduates in 2006, with 20.7% and 15.9% of all Masters Research and PhD graduates respectively entering this sector. When compared with the agriculture, forestry and fisheries sector, the food & drinks industries attract a higher percentage of graduates with a Masters or PhD, while a greater proportion of Level 6 and 7 Award graduates enter the agriculture sector.

[46] The NFQ was introduced in 2003 as a system of 10 Levels. The 10 Levels capture all learning, from the very initial stages to the most advanced. More detail on the NQF can be found in Table 4.2 and Appendix 4.1.

4.2.7.2 FETAC Accredited Programmes

FETAC data is available by award, award type, and award level for the years 2006 and 2007[47] (full detail listed Appendix 4.5). Table 4.7 summarises this data by award type and the topic (i.e. beef, sheepmeat, seafood and fish, and food hygiene, preparation, safety and science).

Four classes of awards are made by FETAC, three of which are relevant to the food sector: major, minor and special purpose awards, as follows:

- **Major Awards** are the principal class of award made at each level and represent a significant volume of learning outcomes. A major award will prepare learners for employment, participation in society and community and access to higher levels of education and training;
- **Minor Awards** are derived from and linked to at least one major award. Minor awards are smaller than their parent major award(s). Achievement of a minor award provides for recognition of learning that has relevance and value in its own right e.g. Word Processing, Health and Safety at Work; and
- **Special Purpose Awards** are made for specific relatively narrow purposes and don't have to link to a major award e.g. Environmental Inspection Skills.

Table 4.7 illustrates that between 2,200 and 2,830 food and beverage related FETAC awards were made in 2006 and 2007. This represents a small number of total FETAC awards made over 2006 and 2007 (1.2% and 1.3% respectively). The data indicates a significant rise in food and beverage related awards over this period, by approximately 600 awards or 28%. The levels of awards granted range from Level 3 to Level 6 under the National Qualifications Framework.

Table 4.7 Level of FETAC Awards for Food & Beverage Related Training, 2006 and 2007

Award Type	Topic	2006	2007
Major	Beef	40	3
	Sheepmeat	0	11
	Seafood / Fish	0	0
	Hygiene / Preparation / Safety / Science	5	5
	Total	**45**	**19**
Minor	Beef	279	91
	Sheepmeat	0	30
	Seafood / Fish	85	25
	Hygiene / Preparation / Safety / Science	1550	2429
	Total	**1,914**	**2,575**
Special Purpose	Beef	0	0
	Sheepmeat	0	0
	Seafood / Fish	0	0
	Hygiene / Preparation / Safety / Science	259	237
	Total	**259**	**237**
Total Food & Bevarage Related Awards		**2,218**	**2,831**
Total Awards		**189,497**	**223,237**

Source: FÁS / FETAC

[47] FETAC do not collect enrolment data. Data at award level is not available by provider. A list of programme providers is available on the FETAC website.

The types of training vary from a range of beef, sheepmeat and fish & seafood specific programmes to food hygiene, safety, processing and preparation and science programmes. Between 2006 and 2007:

- The number of 'major' awards granted declined by circa 58%. The types of awards also varied over this period, with beef representing the majority of awards (40 out of 45) in 2006, while this dropped to 3 out of 19 in 2007;
- The number of 'minor' awards increased by 35%, with food hygiene, preparation, safety or science type programmes comprising the vast majority of awards over these years; and
- 'Special purpose' awards declined by circa 8%, and all were related to food hygiene, preparation, safety or science (see Appendix 4.3 for further detail).

- Although a significant number of graduates with relevant food skills are available each year (circa 1,000), the results indicate that a significant proportion are seeking employment in other sectors aside from Food & Beverage, such as pharmaceuticals, business, etc.
- Furthermore, of the 23,566 total graduates in 2006, only 292 or 1.2% entered the food & drink industries, an increase of 12 graduates between 2000 and 2006.
- These results suggest the food and beverage sector is not attractive to graduates in terms of career progression and opportunities.
- The number of food related FETAC awards increased by approximately 600 awards or 28%, to 2, 831, between 2006 and 2007.

4.3 Programme Development and Update

The second aspect of the training profile related to 'Programme Development and Update' incorporates details of: the mechanisms used to update programmes materials; the level of industry involvement in determining programme content; and the ability of the programmes to reflect content changes on a timely basis. Each of these aspects is considered below, based on the feedback provided from the consultations with education, training and research providers, as listed in Table 4.1.

4.3.1 Flexibility of Programme and Module Update

To understand the level of programme development and update by the education and training providers interviewed, the colleges and development agencies were asked to describe their level of flexibility to update existing programmes or modules, or introduce a new programme or module. Findings are presented by third-level institutions and the development agencies.

4.3.1.1 Third-Level Institutions

In relation to the introduction of a new programme, the universities and IoTs consulted indicated that a programme can usually take between one and two years to develop and introduce, usually requiring several layers of internal approval. Undergraduate programmes typically require one to two years, whereas postgraduate programmes can be introduced within a shorter timeframe.

At one university, the process of introducing a new programme requires several stages of approval, including Department approval, Faculty approval and approval from the Academic Council. These Boards typically only meet periodically during the year, resulting in what was reported by some colleges to be a lengthy and time-consuming process.

While it is recognised that the programme approval process can be time consuming, a further factor to the speed and likelihood of introducing a new programme are "budgetry and resource constraints".

In terms of modifying existing programmes and modules, many of the universities and IoTs consulted indicated that 'minor' changes to existing programme content and modules can be made as required, without seeking formal approval. A 'minor' change however, was reported to be narrowly defined and allowed for little changes to programme content during the academic year. A 'major' change requires formal approval from the various college and faculty boards.

The introduction of a new module can typically take nine months to a year, from development and approval to introduction. In UCD for example, it was reported that applications for new modules have to be made by February in a year, to be included as part of the programme curriculum for the following September.

4.3.1.2 Development Agencies

In relation to **new programme development** in the development agencies, indications from consultations suggest that the development of a new programme can take circa 12 months.

The majority of programmes are typically developed in conjunction with other industry partners such as industry representative bodies and / or other development agencies. In FÁS for example, a 'Working Group' is typically established for a new programme which has responsibility for overseeing programme development, evaluation and establishment. Such groups comprise industry representatives and development agency members. In addition to internal approval requirements, the FETAC approval process was also reported by the development agencies to be quite time consuming.

At third level, a shorter timeframe is required to update modules than introducing an entirely new programme; however the approval process through various college and faculty boards is quite timely for both. Typically, lecturers have little flexibility to change module content without going through the formal approval process. The approval processes both internally in the development agencies and with FETAC were also reported to be quite time consuming.

4.3.2 Frequency of Programme and Module Update

The frequency of programme or module update by education providers and the drivers of module and programme change were also explored during the consultation programme. Again, findings are presented by third-level Institutions and the development agencies.

4.3.2.1 Third-Level Institutions

Across the third-level institutions, a number of mechanisms are adopted to **review programme content** and **provision** and to ensure programme materials remain relevant and up-to-date. These mechanisms include:

- Periodic college-wide review;
- Formal annual reviews;
- Informal annual review; and
- On-going review of programme content.

The periodic college-wide review is typically conducted every five years, and involves a review of all programmes and modules offered by an education provider. This presents an opportunity to fundamentally re-appraise the programme and make major modifications if necessary. For example, in DIT they are officially required to review a programme at the end of its life cycle (e.g. in the fifth year after a four year programme). Currently in the middle of a review process, the Chairpersons of all programmes meet to review and discuss programmes, while feedback from the 'teaching teams' (comprising programme lecturers) is fed back through this mechanism.

Thereafter, the third-level institutions interviewed review programme content formally and / or informally annually. In terms of the formal annual review, this consists of a review of programme content by Programme Boards. For example, in UL, an internal programme team is in place, which discusses potential changes to a programme and its modules. In UCC, modules delivered by the College of Business & Law are reviewed annually by the Programme Board, and subsequently 'minor' or 'major' changes are introduced.

Programme content may also be informally reviewed based on feedback from external examiners, feedback from industry via work placements, research, etc and / or feedback from the students. Individual lecturers may also change or tweak programme content as needed throughout the year. For example, some of the third-level institutions report that a selection of lecture topics may change, or guest lecturers may be invited to deliver a new topic, based on the latest trends or developments in industry.

Based on feedback received, the **drivers of module** and **programme change** are predominantly:

- Emerging industry & market trends and industry feedback (including new skills requirements from industry); and
- Developments in international and national education and training.

Each of the education providers interviewed noted that industry trends or feedback are a significant driver in changing programme content or introducing new modules. For example, DIT has re-developed or created a number of new food related programmes over the past 3/4 years, each of which was as result of direct industry feedback and / or requirements. In support of this, UCC spent two years consulting with industry to develop its new BSc Food Marketing & Entrepreneurship (launching in September 2009).

DIT noted that during the development of the BSc Nutraceuticals for Health & Nutrition programme, staff visited MIT in the USA to meet staff from a comparable programme for ideas on future programme content.

Other factors which drive changes to programmes and modules, include regulatory and policy changes, staff research interests, feedback from external examiners, exam results and student feedback. For example, a number of the education providers formally survey industry for their feedback and insight on the latest sectoral trends. UCD in particular reported that industry is surveyed every two to three years for their feedback on students. Although these surveys were reported as useful in providing official statistics, it is often more beneficial in talking directly to industry.

It was found that the education providers also survey graduates from their programmes who have been working in industry for a number of years. UCD for example survey those who have graduated five years previously. This mechanism was reported as being particularly useful in identifying the applicability and relevance of the topics and skills provided in their Food & Beverage related programmes in their career to date.

4.3.2.2 Development Agencies

In terms of reviewing **existing programmes** and **modules,** many of the development agencies noted that working groups or programme boards established to oversee the programmes continuously evaluate programme content (once established), in terms of their value-add to participating companies. This is typically based on feedback from programme participants and companies. For those that are delivered via the train-the-trainer model, it was noted that the quality of programme delivery is periodically checked by the relevant development agency to ensure consistency in quality of delivery.

For example, for the new 'Food Innovator' programme, FÁS has established a working group to oversee programme development, which mainly comprises industry representatives (see Section 4.4.1.2 for further detail).

Based on feedback received during consultations, the **key drivers of the introduction of new programmes** and **changing programmes content** include:

- Interest shown by industry;

- Requests from industry representative bodies to cover a particular topic;
- Requests from development agencies to develop a specific programme;
- Regulatory changes;
- Industry and policy Reports (e.g. 2003 Forfás / EGFSN study; national skills audit, etc); and
- Surveys which identify gaps and demand for training.

Teagasc for example, noted that they typically run a number of seminars throughout the year on specific food related topics which are attended by industry. Following these seminars, industry may express a significant interest in a particular topic, and a programme may be developed in collaboration with industry or industry representative bodies to meet that demand.

FÁS noted that industry and policy reports are significant drivers in the type of training they provide, for example: 'Tomorrow's Skills – Towards a National Skills Strategy 2006-2020' by EGFSN and 'Anticipating Tomorrow – Report on Shaping the Future of the Irish Food & Drink Market' by Bord Bia. Based on recommendations in these reports, FÁS may take the initiative and contact interest groups, trade associations and leading companies to identify interest for a new programme.

Several mechanisms are employed at third level to ensure programmes remain relevant and up-to-date including: periodic college wide reviews; formal annual reviews of programme content; informal annual reviews; and on-going reviews of programme content during the year.

Key drivers of module and programme change were noted to be emerging industry and marketing trends, feedback from industry on programme content and developments in international education and training. The colleges interviewed, appeared to be placing an added emphasis on ensuring programmes were developed in line with industry skills requirements.

In the development agencies, programme boards are typically established to oversee the relevance of programme content. The development of new programmes are driven by the identification of skills gaps in industry, interest expressed by industry in a particular topic, requirements or regulatory changes.

4.4 Industry Linkages

Finally, to identify the linkages education and training providers have established with industry, providers were asked for their experience of and views on: industry input in the design of programme content; industry delivery of programme content; work placements with industry and internships; and other evidence of industry participation and interaction. Details of each are provided in the following sections.

4.4.1 Industry Design and Delivery of Programme Content

Firstly, consultations with education and training providers highlighted the level of industry input into the design and the delivery of food & beverage related programmes in the education institutions interviewed. Findings are summarised into responses from third-level institutions and development agencies and are presented below.

4.4.1.1 Third-Level Institutions

In relation to industry's input into the **design of programmes**, this involvement is typically conducted via informal discussions and meetings between staff in third-level institutions and industry representatives. However, the frequency and level of interaction appears to vary by individual lecturer and by programme.

Informal feedback from industry is typically developed through linkages with industry as a result of:

- Research activity;
- Student work placements;
- University alumni;
- External examiners; and
- Staff's personal industry contacts.

There was some evidence of formal processes to include industry in the design of programme content, however examples of this were quite limited. For example, a 'Food Industry Partnership Board' was established in UCC, comprising high-profile industry representatives, as well as academia. This Board offers direction to all food related departments on potential research, programme content and recruitment of staff. Views as to the level of use and effectiveness of this Board varied across the different Departments interviewed.

Steering Groups are in place for a selection of programmes run by the FITU in UCC, containing a mix of academia and industry representatives. The Unit also works closely with a number of government departments, state agencies and representative bodies to develop programme content, e.g. FÁS, EI, FSAI, the Irish Co-operative Organisation Society, the Food Safety Promotion Board, The Irish Farmhouse Cheese Association (CAIS), the Local Authority Veterinary Service, Department of Agriculture, Fisheries & Forestry, Teagasc, etc, all of which offer insights into industry requirements.

A Strategic Development Group has been established for the School of Agriculture, Food Science and Veterinary in UCD. This Group comprises a cross section of companies which meets quarterly to advise on all aspects of education in the School (programmes, teaching, research, etc). New modules and programmes are typically passed to this Group for their feedback (however formal approval is not compulsory). Although it was reported as a useful source of *"insight into the bigger picture"*, other more informal mechanisms are more useful in ensuring programme content meets industry requirements.

Other third-level institutions reported that industry is formally asked to review programme content. UCD for example, reported that they regularly contact HR Directors in major food companies (e.g. Diageo, IAWS, Kerry Group, Fyffes, Batchelors, etc) when changing programme content. DIT also reported that industry are typically surveyed during the development of new programmes to indicate support, get direction and validate new programme content.

When it comes to **delivering programme content**, it appears that the principal method of industry delivery of programme content is through the use of guest lecturers and speakers. Although they were considered by the education providers to be of benefit to the students, they are typically not a formal requirement of a programme or college. Instead they are typically used on an ad hoc basis and are introduced to supplement programme content or when an education provider lacks the expertise on a specific topic.

UCD for example, makes reference to the use of industry representatives as guest speakers to deliver lectures on topics related to food quality and food ingredients. The FITU in UCC regularly use industry representatives who are staff from regulatory and development bodies to deliver programme content, e.g. Department of Agriculture, Fisheries and Forestry; Food Safety Authority of Ireland (FSAI); and the Environmental Health Officers' Association (EHOA). This is generally used when the institutions don't have the in-house expertise.

Some interviewees felt that industry representatives should be used more regularly to deliver modules, particularly when a college has a gap in their food-related education provision (such as those identified in section 4.3.6) and do not have the in-house expertise or knowledge to deliver such content effectively.

4.4.1.2 Development Agencies

There was strong evidence across the development agencies interviewed of industry representatives and representative bodies formally **designing programme content.**

FÁS noted that industry is typically very actively involved in the design of new programmes. The new 'Food Innovator' programme, the working group established to oversee the development of the programme is comprised mainly of industry representatives. They noted that this was particularly important to ensure industry buy-in and the relevance of programme content. For this programme, industry was actively involved in writing the outline specification for the programme (which informed the detailed write-up of the programme). Teagasc has also established a number of 'Food Industry Advisory Groups' which comment and provide advice to Ashtown and Moorepark on their research, technology requirements and their education and training provision.

Compared with the third-level institutions, there appears to be a greater use of industry representatives to **deliver modules** or deliver individual lectures.

At third-level, industry design of course content is typically incorporated through informal discussions with industry representatives. The level and effectiveness of industry interaction varied however depending on the programme co-ordinator, programme and / or lecturer, although the colleges interviewed broadly placed a strong emphasis on involving industry in the design of new programmes. Guest lecturers from industry were used on an ad-hoc basis. The development agencies reported strong involvement of industry in the design of course content and the industry representatives appeared to be used on a more regular basis to deliver programme content when compared with third-level.

4.4.2 Work Placements and Internships

Also explored during the consultation programme was the use of **work placements and internships** amongst the third-level education providers interviewed[48]. Across the third-level institutions interviewed approximately 66 of the 126 food and beverage related programmes include work placements as part of their curriculum. 59 are offered at undergraduate level, while the remaining seven are available at post-graduate level (refer to Appendix 4.1 and 4.2 for details of work placements by programme).

Recommendation XI from the 2003 study recommended that *"a structured, formally defined programme of activities for work placements should be developed as a central examinable element of certain undergraduate programmes"*. It was suggested this should include:

- A code of practice for work placements;
- Domestic and overseas work placements; and
- Grading and examination of work placements.

Our consultations with third-level providers indicated that some positive developments have emerged since the publication of the 2003 study. It was found that the majority of work placements are six months or longer in duration, have formal codes of practice and guidelines in place, are well regulated and organised, and are assessed and graded.

Taking into consideration the difficulty in assessing student performance, a combination of review methods are used, namely: feedback from employers; formal interviews with employers; on-site visit to the student; development of a reflective journal or report by the student; and / or student presentation to a panel of college staff. Across all the education providers interviewed, students are either awarded a 'pass' or 'fail' grade and it is compulsory for students to pass the work placement in order to graduate. DIT however, are planning to award students a specific grade for a selection of their work placements from 2009 / 2010 academic year onwards.

[48] None of the development agencies interviewed include work placements as part of their programmes. Some programmes are delivered in-company however.

For those education providers that had placements of less than six months in duration (e.g. from five weeks to three months), they either recognised that placements were too short, and were looking at increasing their length, or had plans to increase the duration of work placements in the next year.

- For example, in 2009, UCD are planning to increase the duration of work placements from three months to six months. This is due to feedback from industry which noted that a longer placement was more valuable to the student as they could be given greater responsibility and more exposure to the business. Of the food and beverage related programmes, the agriculture focused programmes (e.g. BSc Food and Agribusiness Management, BSC Agricultural Science, UCD) tend to have a greater proportion of students that go abroad for work placements, when compared with science focused programmes.
- Of the universities interviewed, the vast majority of students tend to complete work placements in Ireland. Typical companies include placements with the large food companies such as Kerry, Glanbia, Dairygold, Dawn, Coca-cola and Musgraves, SME's such as Shannon Minerals, retailers such as Tesco and Superquinn and regulatory bodies such as the FSAI.
- The types of positions also vary, ranging from food safety, food product development, marketing, to retailing.

Work placements with industry were considered by the third-level providers interviewed to be both beneficial for the student and for industry. In addition to providing a student with insight and practical experience of the industry, it providers industry with "cheap resources" and can be "an excellent source of future employees". No major problems in finding appropriate work placements for students were reported by any of the colleges interviewed.

Positive developments have taken place at third level in relation to the standard to work placement offered to students. The majority of work placements are now six months or longer in duration, have formal codes of practice and guidelines in place, are well regulated and organised, and are assessed and graded.

4.4.3 Other Industry Participation

Consultations with the third-level education providers also identified a number of further linkages with industry, including:

- Agreements with industry to use their university and institute facilities, e.g. classrooms, technical equipment, swapping samples etc;
- Funding from industry for equipment and facilities;
- Funding from industry through research;
- Site visits;
- Research conferences attended by industry; and
- Sponsorship of student prizes and student events.

For example, UL reported that final year students in the BSc Food Science and Health programme present their research project to a group of representatives from Kerry Ingredients, who sponsor the event and award prizes to students. UL also noted that they regularly engage with industry by:

- Offering industry access to their laboratories;
- The provision of research materials by industry;
- Research funding from industry;
- Interaction with industry via Food Institution Research Measure (FIRM) or EI research initiatives; and / or
- Through swapping samples.

The Food Industry Training Unit in UCC organise a number of research conferences or training workshops annually, which are attended by Irish and international academia and researchers, and representatives from industry, including retailers, entrepreneurs, R&D staff, quality personnel, etc. Examples of these include:

- 'First International Symposium on Gluten-Free Cereal Produces and Beverages' (2007);
- 'Ice Cream Science and Technology, An International Training Workshop' (2006); and
- 'Young Scientists and Technologists in Malting, Brewing and Distilling' (2008)

These workshops play a role in disseminating food and beverage related research, and provides participants with an opportunity to keep up-to-date with recent trends, developments and research.

UCD also reported that several food companies were very supportive in offering students site visits (e.g. Batchelors, Glanbia, etc).

4.5 Key Chapter Findings

1. The **third level institutions** and **colleges** (i.e. universities & IoTs) have been very active since 2003 and have introduced a significant number of new, amended or enhanced programmes (67 undergraduate, 25 executive education and CPD and 29 postgraduate programmes were on offer over 2008/09), with five new or enhanced programmes currently in development. The colleges are endeavouring to modify new and enhanced programmes in response to industry feedback and requirements.
2. The **development agencies and representative bodies** (i.e. Bord Bia, EI, FÁS, Skillnets, Teagasc, Bord Iascaigh Mhara, Irish Exporters Association) have been equally active and introduced a significant number of new dynamic programmes and initiatives since 2003 with 114 programmes and initiatives currently on offer to the food sector. A major development since 2003 is the extent to which EI, Skillnets and Bord Bia have entered the training, management and talent development space with a number of very relevant programmes and interventions now on offer.
3. In the colleges, the vast majority of programmes are concentrated on one **discipline**, namely food science & technology, with a smaller amount of programmes covering more than one

discipline (such as business, management, operations and / or engineering). Colleges are currently in the process of designing a selection of new programmes which cover three or more disciplines, arising as a consequence of industry requests. One would question the extent there is oversupply and overlap of food science and technology type programmes relative to demand. Given the current economic climate, some consolidation may therefore occur.

4. The colleges identified a number of core **gaps** in the current education and training provision at third-level (sales and negotiation; commercial awareness; existing or incremental product development; packaging; supply chain; and logistics and lean manufacturing), however budgetary and resource constraints were cited as significant barriers to addressing these gaps. The development agencies have identified additional lacunae and are in advanced stages of developing programmes and initiatives to address some of the identified skills needs.
5. In the colleges, there appears to be more flexible **modes of delivery** offered for postgraduate and executive education and CPD programmes (e.g. combination of e-learning and distance learning, classroom, seminar, projects delivered at weekends, evenings and / or block release), with undergraduate programmes primarily conforming to classroom based activity, supplemented with work experience and projects. The development agencies are increasingly aware of the need to offer flexible modes of delivery for their programmes and interventions and offer a myriad of different delivery formats and intervention styles.
6. Approximately 1,000 **graduates** with relevant food skills are available each year to enter the food and beverage workforce. However, it appears that a significant proportion of graduates are seeking employment in other sectors, such as pharmaceuticals, business, etc. Furthermore, of the 23,566 total graduates in 2006, only 292 or 1.2% entered the food & drink industries, an increase of 12 graduates compared to the year 2000. This suggests that the food and beverage sector is not attractive to graduates in terms of perceived career progression and opportunities. The number of food related **FETAC** awards increased by approximately 600 awards or 28%, to 2, 831 between 2006 and 2007.
7. A shorter timeframe is required to **update modules** at third level than introducing an **entirely new programme**; however the approval process through various college and faculty boards is quite time-consuming for both. Typically, lecturers have little flexibility to change module content without going through the formal approval process. The development agencies also reported quite a timely process for introducing new programmes.
8. **Mechanisms to ensure courses remain up-to-date** at third level include: periodic college wide reviews; formal annual reviews of programme content; informal annual reviews; and on-going reviews of programme content during the year, with evidence of an increased emphasis on developing programmes in line with industry skills requirements. Key **drivers of module** and **programme change** or **introduction** were emerging industry and marketing trends, industry feedback on programme content for the colleges and the identification of skills gaps in industry, interest expressed by industry and / or regulatory changes for the development agencies.
9. At third-level, **industry design of course content** is typically incorporated through informal discussions with industry representatives. The level and effectiveness of industry interaction varied however, depending on the programme co-ordinator, programme or lecturer, although the colleges interviewed placed a strong emphasis on involving industry in the design of new

programmes. The development agencies reported strong involvement of industry in the design of course content.

10. There have been positive developments in the standard of **work placements** offered at third level since the 2003 study. The majority of work placements are now six months or longer in duration, have formal codes of practice and guidelines in place, are well regulated and organised, and are assessed and graded.

5. Key Learnings from Education & Training Programmes in Leading Food & Beverage Countries

5.1 Introduction

The purpose of this section is to identify international best practice in relation to the provision of education and training in other leading agri-food countries, and the key lessons that might be applicable to the Irish food and beverage sector.

Five countries were reviewed as part of this study, namely: Australia; New Zealand; the UK; Finland; and Denmark. The countries were selected on the basis that they are considered some of the more progressive countries in this sector in terms of the provision of education and training.

Denmark and Finland were assessed as part of the 2003 study on the basis that Denmark had a strong reputation for building vocational skills and Finland was considered a leader in the development of novel food ingredients and functional foods. New Zealand was selected on the basis that it is a key international competitor in the dairy and meat markets and has a reputation for having a highly innovative research sector and a forward thinking approach to supply chain management. Australia was chosen for its reputation for innovative manufacturing and packaging technologies, whereas the UK is considered to be the closest comparator to the Irish market.

Key findings, at country level, are presented in Tables 5.2.1; 5.2.2; and 5.2.3. The level of education and training provision has been reviewed at the following employee levels:

- Graduates - Education and training programmes at university level;
- Operatives - Vocational education and upskilling programmes; and
- Middle and Senior Management – Short and long-term training courses.

5.2 Overview of Key Findings

Table 5.2.1 outlines the education and training provided at graduate; operative; and middle and senior management level in the countries studied. Shading in the table indicates those training programmes or aspects of training programmes which were considered innovative or progressive. This section of the report concludes by taking a more detailed look at these programmes drawing out any key lessons that are considered applicable to the Irish food and beverage sector.

Table 5.2.1: Graduate Level Education & Training

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
Graduates	University Level	50+ Food Diploma / Degree / Masters / PhD programmes. Common courses include: • Food Science; • Nutrition; • Food Technology; • Biotechnology; and • Agribusiness. Courses range from 9 months to 4 years - full or part-time. Some offer distance learning/ learning through research.	30+ Food Diploma / Degree / Masters / PhD programmes. Common courses include: • Food Science; • Nutrition; • Food Technology; and • Wine Science. Courses range from 1 to 4 years - full or part-time. Some include work placements e.g. BSc Food Technology at Massey University.	75+ Food Diploma / Degree / Masters/ PhD programmes. Common courses include: • Food Technology; • Food Science; • Food Management; • Microbiology; • Nutrition; • Food Marketing; • Food Design & Technology; • Sustainable Food Management; • Food and Culinary Arts; and • Food Innovation. Courses range from 1 to 4 years - full and part-time. Some (e.g. BSc Biotechnology at University of Reading) include an industrial placement.	Several Food Degree / Masters / PhD programmes. Common courses include: • Biotechnology and Food Engineering; • Agricultural and Rural Industries; • Biochemistry; • Biotechnology; • Food Chemistry; • Agricultural Engineering; • Meat Technology; • Food Technology; and • Dairy Technology. Courses range from 2 to 3 years.	Numerous Food Degree / Masters / PhD Programmes. Common courses include: Food Technology; Agriculture, Food and Environment; Biotechnology; Food Science; Human Nutrition; Cheese Technology; Dairy Product Technology; and Food Enzymes Applications. University of Aarhus offers five new degrees: BSc in Agriculture, Food and Environment; MSc in Agro-Environmental Management; MSc in Agrobiology; MSc in Biosystems Engineering; and MSc in Molecular Nutrition and Food Technology. Courses range from 1-4 years full-time with

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
						some involving company visits.

Table 5.2.2: Operative Level Education & Training

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
Operatives	Vocational Education	Agri-Food Training Package • Agri-food Skills Australia is responsible for the development & implementation of agri-food training programmes. • Private company with industry led board. • Funded by Department of Education, Employment and Work Relations. • Training Packages delivered by Registered Training Organisations (RTO) - territory training authorities / government department / private enterprise. • Nationally recognised qualifications range from Certificate I to Advanced Diploma. • Certificate IV & Diploma programmes specifically target employees entering a production management role from industry.	Agri-Food Industry Training Programmes • Developed by Industry Training Organisations (ITOs). • Government provides funding for training annually. • Employers can apply for training subsidies. • Training provided by private education institutes, universities, polytechnics, or government agencies. • Training provided outside workplace, in the workplace or both. • Qualifications from Certificate I (entry level workers) to Diploma (managerial staff). Training Programmes include: 1. Animal Product	National Skills Academy Programme • Aims to bridge the shortfall in operatives, managers/ supervisors, craft workers and technical operators. • Funded by the government via the Learning and Skills Council (LSC) and by employers. • The Food & Drink Academy is a joint venture between Improve (the Sector Skills Council for this sector) and the LSC. • Training provided through theoretical & practical learning via the web & approved Academy Centres. • Seven Academy Centres provide training - 9. Seafood Training Academy, Hull;	Vocational and Education Training • Primarily funded by Ministry of Education. • Ministry of Labour also contributes funding. • Central & local governments co-finance upper secondary vocational education & training. • No tuition fees. • Training provided by joint municipal authorities, local authorities, private institutions & state institutions. • Competency based qualifications designed for adults with previous work experience.	Vocational and Education Training (VET) • Comprises Basic VET & Main VET programmes. • Funded by Ministry of Education. Basic VET Programmes • Training is free to participants. • Duration depends on an individual's prior experience & qualifications - typically 20-25 weeks. • Agri-food training comprises 11 programmes: bakery & confectionery; butcher; nutrition; fresh goods merchandising; gastronomy;

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
Operatives	Vocational Education	• Packages developed with industry through consultation with industry bodies (e.g. Australian Pork Ltd) and industry stakeholders (e.g. Agri-Food Industry Skills Council). • Packages outline nationally recognised competencies to be achieved in each sector. Training providers must ensure their courses cover these competencies. Training Packages for the Food Industry: Food Processing Industry Training Package - areas of qualification include: dairy processing; honey processing; plant baking; and stock feed milling. Australian Meat Industry Training Package - covers: abattoirs and small goods i.e. cooked or dried meat products. Seafood Training Package -covers: fishing operations; seafood processing; and seafood sales and distribution. Sugar Milling Training Package - covers: processing; transport; and services. Rural Production Training Package - covers: rural operations; goat production; rural merchandising; and rural business management.	Examination Services; 2. Dairy Manufacturing; 3. Meat Processing; 4. Baking; 5. Food & related products processing; 6. Food Production; 7. Seafood; and 8. Quality Management. • Programmes can be block courses, correspondence or night courses. • Recognition given to current competencies & prior learning allowing exemptions from modules.	10. Reaseheath College, Nantwich (Dairy); 11. Johnson Diversey, Northampton (Food Hygiene); 12. Grimsby Institute of Further and Higher Education (Fish Manufacturing Processing); 13. Peter Rowley Ltd, Grimsby (Lean Manufacturing Techniques); 14. University of Lincoln, Holbeach Campus (Manufacturing Chilled Ready Meals); and 15. Poultec Training, Dereham, Norfolk (Meat & Poultry). • Aim to develop up to 25 centres and 200 registered training providers throughout UK. • On-site training included - content determined by employer's requirements & regional needs. Employers analyse their industry's training and skills needs and prioritise most important skills needed. • Employers providing funding work closely with the National Skills Academy to develop a	• Programmes include Vocational Qualifications in Agriculture; Horticulture; Fishery; Catering; and Food Production. • Initial Vocational Qualification is a credit based system - three years full-time. • Recognition given to current competencies & prior learning allowing exemptions from modules. • Minimum 15% of credits dedicated to on-the-job learning. • Qualifications are set and supervised by sector specific education and training committees.	catering; industrial butchery; dairy; gut cleanser; reception; and waiter/ waitress. Main VET Programme • Basic VET followed by main course. • 3 to 3.5 years but can be shorter. • 50-70% of training period on-the-job. • Remaining time spent in classroom. • Classroom training in blocks of 5 and 10 weeks. **Danish Meat Trade College Basic Education Programme** • 10 week training programme. • Introduction to basic elements in running an abattoir in accordance with EU standards. • Delivered by Danish Meat Trade College, Roskilde. • Subsidised by Danish government.

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
Operatives	Vocational Education	Hospitality Training Package - covers: operations; supervision; Asian cookery; commercial cookery; and Patisserie. • Assessment and training conducted: in the work place; off-the-job; at training organisation; during work experience; or work placements; work simulation; or a combination of these. • Recognition given to current competences & prior learning allowing exemptions from modules. • New websites to launch in 2009 to assist employers & employees on training courses www.yourtraining.gov.au; www.trainyourpeople.gov.au; www.yourRTO.gov.au.		curriculum for their sector or sub-sector. • Training provided by education institutions & trade unions. • Aimed at school & college leavers; adults; employees; new entrants to the workforce; and those wishing to change careers. • 164 courses offered - 71 online & 93 delivered at training centres or on-site. • Courses provided for bakery and confectionery; dairy; drinks; general food & drink; meat & poultry; and the seafood sector. • One day course, several day courses, and distance courses available. • Qualifications - NVQ, BTEC, HND, FD, HACCP. Train to Gain • Works with Sector Skills Councils (SSCs) to identify specific skills needs of business sector. • SSCs are charged with increasing productivity and skills in various sectors by working with employers, training		• Students pay €120 weekly to cover accommodation, use of raw materials, work clothes, etc. • Includes slaughtering, cutting, de-boning and further processing of pigs.

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
Operatives	Vocational Education			providers and government. • Government funded initiative managed by Learning & Skills Council. • Aimed at over 25's without a Level 2 qualification. • Skills broker, college or training provider identifies courses, provision & business support for employer. • Skills brokers help identify company's skills needs; create training packages and identify training providers for the company; identify available funding; and evaluate training delivered. • Training paid by employer - free use of skills broker.		
	Upskilling	**Productivity Places Programme** • Commonwealth funded programme. • Aim to deliver 701,000 training places over 5 years in areas of skills shortage. • Skills shortages within the agri-food industry identified as: mixed crop & livestock farmers; agricultural scientists; agricultural advisors; butchers; slaughter	**Upskilling Partnership Programme (UPP)** • New Zealand government initiative. • Aim to upskill numeracy and literacy levels in workforce. • Promoted in the workplace through a partnership approach. • Partnerships are with specific employers or	**Improve Ltd** • Drives skills in UK Food & Drink sector. • Deliver a Skills Sector Agreement and Skills Action Plan for the food and drink manufacturing industry. • Developed new qualifications & standards to meet industry needs. • Courses provided through		

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
Operatives	Upskilling	persons; bakers; pastry cooks; fishing hands; meat & fish process workers; chefs; cooks; and kitchen hands. • Training delivered by RTOs and supervised on-the-job training. • 392,000 training places allocated to existing workers ➢ Funded by State/ Territory Government (40%); Australian Government (50%); and employers (10%). • 309,000 training places allocated to job seekers - training is free. • Training accredited to Certificate II and above. • Course duration and timing vary. **Skills for the Future** • Series of government initiatives worth $837m (€421m) over 5 years. • Focus on continuous upgrading of skills through working life. • Includes focus on numeracy & literacy. • Financial incentives available to those taking up apprenticeships mid-career which include: • 6,300 Business Skills vouchers (worth up to $500 (€250)) available to apprentices/	Industry Training Organisations (ITO) & other industry bodies. • Focus on particular industries (e.g. meat processing, seafood, and manufacturing) & regions identified as high need for literacy, language and numeracy training. • Training providers: Institutes of Technology, Polytechnics, private training institutes, and adult and community education providers. • Access to funding for employers available through the Tertiary Education Commission for the provision of workplace numeracy and literacy training. • Training provided in the workplace. **Step4ward Programme** • 13 week programme. • Aim to raise foundation learning skills in literacy, numeracy and language in the workplace in the context of workplace health and safety.	third level institutions & further education colleges. • Launched the National / Scottish Vocational Qualification in Food Manufacture (N/ VSQ) undertaken in workplace. • This N / SVQ is available at Level 1 (entry) to Level 3 (supervisory / technical). • Level 1 is a foundation course providing an overview of the food manufacturing sector. • Level 2 course content includes: production control & improvement skills; craft & process bakery skills; butchery retail skills; and retail & service support skills. • Level 3 course content includes: specialist skills in craft bakery/ meat & poultry/ management; supply chain/ technical & improvement. • Level 4 NVQ Meat & Poultry for managerial level has also been developed. • Improve Ltd plan to launch Vocationally Linked Qualifications (VLQ) in 2009 - format		

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
Operatives	Upskilling	newly qualified trades-people annually as contribution towards accredited training programme. • Vouchers can be applied for any time from the end of the second year of the training programme until two years after completion of training. • 30,000 Work Skills vouchers (worth up to $3,000 (€1,500)) for those aged 25+ without high school/ equivalent qualification available annually. • Contribute to cost of high school/ equivalent qualification/ vocational & technical education at Certificate II+. • To cope with increasing demand for higher technical qualifications driven by technological changes and increased reliance on knowledge based jobs, incentives for Higher Technical Skills are available. These will help 24,800 workers over five years to attain Diplomas or Advanced Diplomas. Employers receive $1,500 (€750) incentive for each worker who commences training & $2,500 (€1,260) per worker on completion. • Vouchers can be redeemed at	• Organised & run by ITO Competenz (food & drinks sector). • Comprises 34 modules - go towards the National Certificate in Occupational Health & Safety (Workplace Safety) Level 1. • Training held in workplace.	still under development. • Foundation degrees funded in England & Northern Ireland. • Developed & awarded by university - facilitated by Further Education College. • 2 year full-time foundation degrees • 3 to 4 year part-time. • Foundation degree example: FdSc Food & Drink Manufacturing delivered by Hartpury College. ➢ Aimed at employees in food & drink sector. ➢ Can be completed at own pace. ➢ Modules include: food processing; food science; food nutrition; data management; and NPD. ➢ 2 year full-time or 3-4 years part-time. **Fundamentals of Brewing & Packaging** • Five day residential course. • Aims to provide a basic technical appreciation of brewing science and technology. • Two hour examination at end of course awarding		

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
Operatives	Upskilling	public, private or community training providers. • Training can be provided during or outside work hours. Programme open to all industries including agri-food.		participants with a certificate in the Fundamentals of Brewing and Beverage Packaging. • Provided by the Institute of Brewing & Distilling (IBD), a members organisation charged with advancing education and professional development in the science and technology of brewing, distilling and related industries. • Course fee is £825 (€885) for IBD members; £925 (€990) for non members • Suitable for those involved in the: production of cask beer; production of brewery conditioned beer; technical aspects of beer production; beer supply chain; and those with non technical roles in the industry (HR, sales, and logistics). • Lectures delivered by industry professionals. • Includes visits to breweries and allied industries. • Additional training programmes provided by IBC include: General Certificate in Brewing;		

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
				General Certificate in Distilling; and General Certificate in Packaging.		

Table 5.2.3: Middle/Senior Management Level Education & Training

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
Middle / Senior Management	Short Courses	**Manage budgets and financial plans within the work team** • Delivered by 'Response,' a registered training organisation. • Delivered by E-Learning unit. • Aimed at Supervisors in the Meat Industry. • Covers financial management fundamentals; financial performance management; monitor and control finance; and review, evaluation and presentation of financial management process improvements. **Short Courses for Frontline Leaders - Certificate IV in Meat Processing (Leadership)** • Delivered by 'Response.' • Aimed at new or existing team leaders; front line managers in the meat industry; and those in a junior leadership role. • Examples of topics covered	**Food & Beverage Management Executive Education** • Facilitated at Queenstown Resort College, Queenstown with industry guest lecturers. • Course fee: NZ$1,800 (€752) • Aimed at those with experience in food or beverage management or management experience in hospitality industry. • Combination of classroom led discussions, series of case studies, & group activity. Delivered over 2 days - divided into learning components e.g. role of food & beverage department; customer	**Managing Staff for High Productivity** • Provided by Harper Adams University College. • Course fee: £125 (€138). • Designed for farmers, farm managers, supervisors, advisors & academics. • One day course. • Includes: analysis of staff work situations; overview & application of motivation theory; and leadership skills. **Advanced Seafood Quality Assessment** • Provided by Campden BRI, (independent membership-based organisation). • Course funded by Seafish Authority. • Aimed at Seafood Quality Managers/ similar roles.	• Limited number of short courses for middle and senior management available. • Majority are sporadic in house training programmes. • Some universities, institutes & training providers offered regular courses in the past - cancelled due to insufficient numbers.	

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
		include: managing work performance; QA process; risk control process; leadership in the workplace; productive and effective workplace relations; fostering a learning culture in meat enterprise; and implementation and monitoring continuous improvements to systems and processes. • 12 month programme taught over three clusters of 3 months. • Includes work-based assessment projects, coaching and mentoring. **Trim the Excess - The Lean Management Way** • Delivered by 'Complete Lean Solutions' (a training provider), & University of Ballarat, Victoria. • One day workshop for Senior Managers. • Includes training on: implementing a lean culture; management's role in Lean; and how to successfully engage all employees. • Open to all industries including food processing & packaging sectors.	segmentation; discounting versus adding value; and cost effective ways to ensure sustainability.	• Covers principles of fish quality assessment. • Five day programme - 8 hours of theory & 20 hours of practical sessions. **Getting your Board to wake up to Risk Management** • One day course provided by Campden BRI & Razor (communications & risk specialist training organisation). • Course fee £395 (€435) for members of Campden BRI & £525 (€580) for non members. • Aimed at technical & operations decision makers in the food & drinks industry. • Includes: introduction to industry & legislative backdrop; product recall demands & FSA expectations; and key elements of good pre-emptive risk management in the food and drink industry. •		
	Long Courses	**The New Exporter Development Programme** • Delivered by Australian	**Food & Agribusiness Market Experience (FAME)** • Aimed at food &	**MBA Agribusiness or Food Business Management** • MBA for managers in agri-	**Diploma in Food Safety and Quality** • Part-time, 2 year	**Cranfield Fellowship in Manufacturing Management for the**

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
		government export agencies (Austrade and TradeStart). • Designed for SME's that are new to, or have limited experience in exporting. • Work with an assigned export advisor over an18 month period. • Receive assistance in: selecting export market(s); export coaching; and 20 hours of free advice/ support delivered through Austrade's overseas network in maximum of two markets. • Open to all industries including the agri-food sector. **Women in Manufacturing Stepping Up Programme** • 8 month programme. • Education training-based component and mentoring component. • Developed by NSW Department of State and Regional Development. • Delivered by 'The Australasian Production and Inventory Control Society.' • $3,000 (€1,510) per company. • Participants are female owners/ managers of SMEs/ women employed in production, manufacturing or supply chain roles.	agribusiness executives. • Facilitated by Otago, Lincoln & Massey universities. • Offered every two years for up to 20 people conducted over twelve months. • Delivered by industry professionals & academics. • Course fee - NZ$25,000 (€10,480). • Begins in New Zealand and extends to modules based abroad. • Divided into four modules. ➢ New Zealand Food & Agribusiness; ➢ Markets Overseas - China & Europe; ➢ Markets Overseas - USA, Southern Europe & Japan; and ➢ Review & Reflection. Key areas of focus across modules include: innovation and NPD; business strategy and competence development; consumer trends; complex supply chains; and cultural diversity's impact on food needs & values.	food industry. • Provided by Aberdeen University Business School & Scottish Agricultural College. • Full-time programme - £14,350 (€15,810). • Part-time programme - £11,098 (€12,220). • Participants choose between an MBA in Agribusiness or MBA in Food Business Management. • Designed to include business management modules & specialist agri-food industry modules. • 12 month full-time programme. • 36 month part-time distance learning programme online.	modular course delivered through lectures and seminars. • Delivered by University of Helsinki, Vikki Campus. • Aimed at food industry experts, researchers, instructors & supervisory authorities. • Includes: comprehensive presentation of risk management in the food industry; aspects of commercial potential through access to international markets; and updates on potential of new technology. • 5 core modules: ➢ Challenges facing food industry experts; ➢ Microbiology risks in food industry; ➢ Chemical & physical risks in food industry;	**Red Meat Industry** • Targets future industry leaders (senior executives, managers). • Stage one is a 9 month foundation part-time study & 4 residential periods of nine weeks. • Training at Cranfield University, Danish Meat Trade College, Roskilde and Cambridge University. • Second stage comprises a 6 month project phase. • Key modules include: business and manufacturing strategy; future challenges & trends in the European red meat industry; and value added processing. • Course fee - £20,000 (€22,000) covered by employers.

Staff Level	Level of Education	Australia	New Zealand	UK	Finland	Denmark
		• Includes 7 training workshops covering: forecasting and supply chain management; project management; lean manufacturing; and leadership through influence. • Mentors and mentees are required to meet at least once a month for 1-2 hours. Open to all sectors including food processing.			➢ New technology in food industry; and ➢ International food marketing.	

5.3 Key Lessons for Ireland

From the findings in the table above (Table 5.2.1), the following training and education programmes have been identified as being particularly innovative or forward thinking and as providing potential lessons for Ireland.

	Cranfield Fellowship in Manufacturing Management for the Red Meat Industry (Denmark)
Course Objective	To raise the skill base of the red meat processing industry via an accelerated learning programme for future industry leaders.
Course Content	The Fellowship programme targets future industry leaders (senior executives, managers). This course entails a nine month foundation period of study while participants remain in their current roles (Stage 1). There are four residential periods totalling nine weeks at Cranfield University, Danish Meat Trade College, Roskilde and Cambridge University. The second stage of the course is a six month project phase. Key modules include: business and manufacturing strategy; future challenges and trends in the European red meat industry; effective factories and value stream mapping; production planning and control and lean supply chain; manufacturing assessment and improvement; technology management and innovation; financial analysis and strategic drivers of value; personal mastery and shaping human interaction;

	optimisation of slaughtering, deboning and value added processing; and practical production techniques in the red meat industry. Successful participants will be eligible for membership of the Association of Manufacturing Managers. Course fees are £20,000 (€22,000) to be covered by employers.
Area of innovation	Targeted at future managers in the meat sector. Subjects covered provide understanding of current and future issues in the sector. Roskilde University positioned as a centre of excellence for meat industry training.
Lesson for Ireland	Recognise the need to provide adequate training programmes to prepare the next generation of managers and leaders.

	University of Aarhus new degree programmes (Denmark)
Course Objective	To cover all areas from primary production and the impact of the agricultural industry to handling and processing to the final product.
Course Content	BSc in Agriculture, Food and Environment MSc in Agro-Environmental Management MSc in Agro-biology MSc in Bio-systems Engineering MSc in Molecular Nutrition and Food Technology These degrees are the first of their kind at university level in Denmark and aim to educate a new generation of students on issues surrounding food quality in terms of: climate; nature; the environment;, agriculture; and animal science. The degrees are taught in the University of Aarhus with the possibility of writing a thesis or undertaking a project at specialised research centres in Denmark or abroad. The courses range from 1-4 years full-time.
Area of	Provision of modern programmes that prepare students for the agri-food industry today and in the future.

	University of Aarhus new degree programmes (Denmark)
innovation	
Lessons for Ireland	Provide attractive third level programmes that address future issues and potential areas of excellence in the Food & Beverages industry. Develop and market programmes that attract students to the agri-food sector which will contribute to the development of the sector in the longer term.

	Australian Websites - www.yourtraining.gov.au; www.trainyourpeople.gov.au; www.yourRTO.gov.au. (Australia)
Objective	To make information on training and educational programmes more accessible to everyone.
Course Content	New websites are being launched in 2009 to assist employers, and employees to find the best courses to suit them - www.yourtraining.gov.au; www.trainyourpeople.gov.au; www.yourRTO.gov.au. www.yourRTO.gov.au provides RTOs and training professional with information on available training packages and State-accredited training. www.trainyourpeople.gov.au provides employers and industry with information on the benefits of training, how to access training and assists them in finding the most suitable training providers and products. www.yourtraining.gov.au provides information on vocational education and training programmes available in Australia. The site is aimed at school leavers, those looking to upskill and those interested in training for a new career. It also features 'real life stories' of VET graduates and employers of VET graduates outlining their experiences.
Area of innovation	A 'one-stop-shop' for all information on training programmes and training providers.
Lessons for Ireland	One central source where employers, employees, school leavers, job seekers etc can find out details of vocational and other training programmes, including information on: where they are taught; costs; funding available; etc.; as well as case studies. Identification on skills requirements for professions could be highlighted and relevant courses identified.

	Upskilling Partnership Programme (New Zealand)
Course Objective	To up-skill numeracy and literacy levels in the workforce.
Course Content	UPP is a New Zealand government initiative. $168m (€70m) over four years has been made available to fund this training. Literacy and numeracy training is promoted in the workplace through a coordinated partnership approach. Some partnerships are with a specific employer and others have been established with Industry Training Organisations (ITO) and other industry bodies to deliver training across clusters of SMEs by industry. The partnerships focus on particular industries (e.g. meat processing, seafood, manufacturing) and regions identified as having a high need for literacy, language and numeracy training Training providers include Institutes of Technology, Polytechnics, private training institutes, and adult and community education providers Access to funding for employers is available through the Tertiary Education Commission The Upskilling Programme Office provides support for employers, information on courses, course providers and funding. Training is provided in the workplace.
Area of innovation	Upskilling of vulnerable employees in the area of basic literacy, numeracy, and language skills. Partnership approach enables a greater number of employees to receive training.
Lessons for Ireland	In-house provision of numeracy, literacy, basic IT, communications and interpersonal skills and where appropriate language skills. Partnership approach especially within regions or among SMEs will reach a greater audience and may reduce costs for employers.

	Skills for the Future (Australia)
Objective	Facilitate continuous upgrading of skills over the course of an individual's working life.

	Skills for the Future (Australia)
Course Content	Skills for the Future is a series of government initiatives worth $837m (€421m) over 5 years focusing on the need for continuous upgrading of skills over the course of an individual's working life. This includes a major investment in improving basic skills with a focus on numeracy and literacy Financial incentives are available to help those interested in taking up a trade apprenticeship in mid-career Business Skills vouchers worth up to $500 (€250) available to apprentices or newly qualified trades-people in traditional skills to contribute to training costs. 6,300 vouchers are made available each year. Vouchers can be applied for any time from the end of the second year of the training programme until two years after completion of training. Work Skills vouchers worth up to $3,000 (€1,500) for individuals over 25 years who do not have a high school or equivalent qualification. This funding is a contribution towards the cost of gaining a high school or equivalent qualification or vocational and technical education at Certificate II and above. 30,000 Work Skills vouchers are available each year. Priority will be given to: unskilled workers; income support recipients, i.e. parents or carers returning to the workforce; unemployed jobs seekers in receipt of income support and participating in the Job Network; people not currently in the work force either voluntarily or because of carer responsibilities, who intend to seek work after achieving their qualification. To cope with increasing demand for higher technical qualifications driven by technological changes and increased reliance on knowledge based jobs, incentives for Higher Technical Skills are available. These will help 24,800 workers over five years to attain Diploma or Advanced Diploma. Employers receive $1,500 (€750) incentive for each worker who commences training & $2,500 (€1,260) per worker on completion. Vouchers can be redeemed at public, private or community training providers. Training can be provided during or outside work hours.
Area of innovation	Voucher system for employers and employees as a contribution towards training. Encourages upskilling/education for mid-career workers - not just school leavers and younger workers.
Lessons for Ireland	Providing skills vouchers to contribute towards the cost of training may incentivise more people to train.

	Women in Manufacturing Stepping Up Programme (Australia)
Course Objective	To provide learning opportunities for women in manufacturing to foster best-practice and help increase competitiveness, growth and sustainability of manufacturing in NSW.
Course Content	8 month programme consisting of an education training-based component and a mentoring component. Developed by New South Wales (NSW) Department of State and Regional Development The programme is delivered by 'The Australasian Production and Inventory Control Society' (a not-for-profit organisation) whose remit is to foster professionalism in manufacturing and associated supply chain activities Participation on the programme costs $3,000 (€1,510) per company. To be eligible companies must be: involved in manufacturing in NSW; have more than one staff member; and have an annual turnover greater than $200,000 (€100,630). Participants are female owners and/or managers of SMEs or women employed in production, manufacturing or supply chain roles within companies. The programme provides learning opportunities for women in manufacturing to foster best-practice and help increase competitiveness, growth and sustainability of manufacturing in NSW. The programme includes 7 training workshops covering forecasting and supply chain management; manufacturing processes and ERP system fundamentals; project management; inventory management fundamentals; lean manufacturing; leadership through influence; putting your best foot forward. The program matches participants with more experienced, supply chain or manufacturing practitioners to mentor them. Mentors and mentees are required to meet at least once a month for 1-2 hours This programme is open to all sectors and would be of interest to those in food processing.
Area of innovation	Creating a network across sectors in one region of similar sized businesses to allow shared learning and experiences. Mentoring programme - supportive system. Provides skills training for women in roles traditionally filled by men.

	Training helps create a more competitive, sustainable manufacturing sector.
Lessons for Ireland	Introduction of company or individual mentoring and coaching from industry experts in place of traditional programmes Establish cross-industry networks can be beneficial to career development and skills training. Develop similar programmes in high potential or developing sectors to encourage competitiveness and sustainability.
	Food & Agribusiness Market Experience (FAME) (New Zealand)
Course Objective	To enable participants to develop their knowledge of foreign markets and customers' needs through contact with international markets and executives; production, processing and retail site visits; and by observing competitor offerings and supply chain best practice.
Course Content	FAME is a course aimed at food and agribusiness executives provided jointly by three New Zealand universities - Otago, Lincoln and Massey The course is offered every two years for up to 20 people at a time and runs over twelve months. The course is delivered by industry professionals and academics. Course fee is NZ$25,000 (€10,480) The course begins in New Zealand and extends to modules based abroad. The course is divided into four modules. Module 1: New Zealand Food & Agribusiness (takes place in New Zealand over a three day period). Module 2: Markets Overseas - China & Europe (takes place in China over two days and in Europe (Denmark and NL) over four days). Module 3: Markets Overseas - USA, Southern Europe, Japan (takes place over five days in the USA, over five days in Italy and five days in Japan). Module 4: Review and Reflection (takes place in New Zealand). Key areas discussed across the different modules include: Innovation and NPD Business strategy and competence development Consumer trends

	Changes in the food distribution channel Complex supply chains Magnitude of the food service industry globally - growth opportunities, trends, etc. Overview of the American, European, Chinese and Japanese economies Cultural diversity and the impact on food needs and values Competitive nature of the Food & Beverage industry - success factors Strategic marketing activities to create and maintain strong global brand Retail procurement patterns Trends in convenience and cost management Strategies of the mass merchandiser How do agri growers and producers understand the supply chain Important trends in the management of food safety issues and food business regulatory environment.
Area of innovation	Intensive learning opportunity with opportunity to visit and learn about potential target markets and competitor products.
Lessons for Ireland	Target market visits built into tailored food industry course allows for greater understanding of market issues, opportunities and possible obstacles when exporting. Provide education on international best practices within the food industry and create better understanding of global brand creation and management.

	National Skills Academy Programme (UK)
Course Objective	To bridge the gap in relation to the provision of operatives, managers, supervisors, craft workers and technical operators in the future.
Course Content	Employer sponsorship will fund about 50% of the capital costs of a National Skills Academy with about 35% coming from the Government

	National Skills Academy Programme (UK)
	and the remainder from other sources such as European funding. Training is provided through theoretical and practical learning via the web and approved Academy Centres. The Food & Drink Academy is a joint venture between Improve (the Sector Skills Council for this sector) and the LSC Initially a network of seven Academy Centres will provide training Seafood Training Academy, Hull; Reaseheath College, Nantwich (Dairy); Johnson Diversey, Northampton (Food Hygiene); Grimsby Institute of Further and Higher Education (Fish Manufacturing Processing); Peter Rowley Ltd, Grimsby (Lean Manufacturing Techniques); University of Lincoln, Holbeach Campus (Manufacturing Chilled Ready Meals); Poultec Training, Dereham, Norfolk (Meat & Poultry). Up to 25 centres and 200 registered training providers spread throughout the UK are planned for the future. On-site training is included and content is determined by employer's requirements & regional needs. Employers analyse the training and skills needs in their industry and prioritise most important skills needed. Employers providing funding and work closely with the National Skills Academy to develop a curriculum for their sector or sub-sector. Training providers are experts in their fields and come from education institutions and trade unions. The courses are aimed at school and college leavers, adults, employees, new entrants to the workforce, those changing careers. Course content is determined by a particular employer's needs and requirements. 164 courses are currently offered either online (71), at a training centre or on-site (93). Courses are provided for the following sectors - bakery and confectionery; dairy; drinks; general food & drink; meat & poultry; and seafood. Additional courses address: commercial skills; food innovation; leadership & management; lean manufacturing; regional & rural food;

	National Skills Academy Programme (UK)
	robotics & automation; and waste, energy and sustainability. Courses can take place over one day, a number of days, or through distance learning. Qualifications which can be achieved include NVQ, BTEC, HND, FD, and HACCP. The National Skills Academy will also provide free information and tools e.g. skills diagnostics, funding and training databases.
Area of innovation	Targeted training for specific sectors where skills gaps are predicted. Centres of Excellence for each sub-sector e.g. fish manufacturing processing. Employer involvement in determining curriculum and skills training required. Online learning courses allow for greater flexibility. Ensures availability of key skills within the particular region going forward.
Lessons for Ireland	Involvement of employers in identifying skills and training requirements to ensure future success of their business. Ensures only relevant training programmes are provided. Flexibility in training provision to encourage uptake.

	The New Exporter Development Programme (Australia)
Course Objective	To develop the skills and knowledge required, in small and medium sized Australian businesses, to seek out and be ready for export opportunities.
Course Content	The programme is delivered by Australian government export agencies (Austrade and TradeStart), Designed for SME's that are new to, or having limited experience in exporting. To be eligible the company must be: a registered company; have its main place of business in Australia; never previously signed on to this course; and not exported more than three times in the last three years In addition the company must have: export capability and potential; management commitment; growth strategy; marketing materials for

	target market; and capacity to build supply capability. Participants work with an assigned export advisor over an18 month period Participants receive assistance in selecting export market(s); export coaching tailored to the needs of the business; and 20 hours of free assistance delivered through Austrade's overseas network in a maximum of two markets. This programme is open to all industries including those in the agri-food sector wishing to acquire skills to grow their business.
Area of innovation	Export advisor - Provides support, mentoring and coaching during 18 month period
Lessons for Ireland	Greater use of mentors and advisors in training and development programmes aimed at the senior management team.

5.4 Key Chapter Findings

The key findings from this Chapter are:

- There is a wide variety of courses on offer at third level .with the UK leading in terms of quantity of courses offered and Denmark in terms of providing more advanced, future focused programmes;
- There would appear to be a focus on providing upskilling opportunities for operatives e.g. Productivity Places Programme in Australia, the Danish Meat Trade College Basic Education Programme and the upskilling partnership programme in New Zealand.
- There is an emphasis on the identification of future skills gaps in sectors, sub-sectors and by regions to tailor training programmes allowing for sustainable industries in both the UK and Australia;
- The research findings indicate a lack of short and long-term courses for middle and senior management in the industry to up-skill across all countries; and
- There is evidence of greater collaboration with industry in the development of education and training e.g. the development of the National Skills Academy Programme in the UK and the Agri-Food Training Package in Australia.

In light of this review, a number of potential key lessons for Ireland have been identified:

- The inclusion of business mentors into middle and senior management training programmes;
- Industry led identification of skills gaps in sectors, sub sectors and regions and tailor future training around these;
- Provision of 'one-stop-shop' website(s) with information on training programmes for prospective students, workers and employers with details on programmes offered, providers, costs and available funding options;
- Collaboration between education providers, training organisations, and similar institutions in the development of appropriate training courses; and
- Greater programme flexibility in terms of delivery of education and training e.g. through on-line, in-house, out-of-hours training etc.

A number of the international initiatives and approaches identified in this chapter have been taken on board in the development of our suggestions and recommendations for the sector as presented in Chapter 7.

6. Current & Future Skills Requirements of the Food & Beverage Sector

6.1 Introduction

A key part of this study is to hear from a cross section of CEOs in the sector and to understand the skill gaps and how these are likely to change going forward. We interviewed thirty companies, representing a range of food processing sectors both indigenous and multinational and ranging in size from artisan to small and large businesses.

Reflecting on the conversations with the CEOs, we have crystallised the skill issues under the following thematic areas:

- Internationalisation;
- Innovation;
- Operative and supervisory cohort;
- Lean manufacturing;
- Supply chain management
- Financial and commercial acumen; and
- Leadership.

A comparable exercise was done in 2003 and some of the issues that emerged then were as follows:

- R&D, NPD and Quality control skills;
- Processing skills;
- Sales & Marketing skills; and
- Support skills.

In 2003 there was a concern that a major skill deficit existed around commercialising NPD. There was a sense that companies lacked cohesion in co-ordinating the NPD function. Companies struggled to effectively project manage new product introductions, the process suffered from delayed product launches, overruns in development costs and low activity levels.

Sales and marketing skills were considered particularly weak in the 2003 study. The availability and penetration of marketing skills was low, while there was deep concern on the skill level in relation to key account management and sales negotiation.

Also the training of operatives and processing skills in 2003 was seen as weak. Several barriers were identified to training, companies considered training as a cost to the business while operatives showed resistance to training. Production supervisory and people management skills were seen as weak in the sector.

Our conversations in 2009 strongly reflect how the trading environment is now much more complex. Companies have made significant progress since 2003. Overall the businesses have become more sophisticated and have invested extensively in upskilling of staff. Notwithstanding the progress made, the food companies are now more aware of critical gaps and lacunae that remain and need to be addressed. In 2009 there is a sense that addressing skills issues will help to underpin the competitiveness of companies. There is a view that, to trade profitably on both the domestic and overseas markets, businesses need to be cost competitive.

The following are the key changes that were evident from speaking to the CEOs in 2009.

- There is now a greater awareness on the need for strong leadership. CEOs are very much in tune with the need to plan business development strategically. There is heightened awareness about the role of the CEO and the responsibility in providing leadership and moving the organisation forward. There is an appreciation that the leadership style needs to evolve through better engagement with the workforce. Succession planning and the need to fast-track the development of future leaders was also identified as a skills issue within the sector.
- There has been a lot of progress in the area of innovation. Companies now are much improved at taking market opportunities and through, cohesive cross-functional processes, are achieving high activity levels. However, CEOs are concerned that the return is lower than it should be. There is a feeling that while, activity levels are high, the end result is a lot of churn with few new products actually surviving long-term in the market. There is a challenge to strengthen the skills to improve and address the issue of churn and return on investment in R&D and innovation.
- The key development in 2009 was the extent to which a number of companies have engaged in lean and world class manufacturing as a basis to improve efficiency, drive down costs and regain competitiveness. The acquisition of lean skills is seen by CEOs as a major challenge. Training on continuous improvement and lean principles is regarded as a priority area. Many companies are speaking of transitioning towards the “super-skilled” operative. Also the Enterprise Ireland study tour to Japan on lean manufacturing was a welcomed initiative and had been significant in raising the awareness levels on lean skills. Nearly 40% of the companies on the study tour were food companies and a number of the companies interviewed in preparing this report had participated. CEOs had a good appreciation of the size of the challenge in embracing the lean agenda and the commitment required over the long time duration.
- Supply chain management did not feature as an identified issue in the 2003 report. It is now widely seen as a huge skills challenge. The standards facing the supply chain are now more exacting and the level of financial performance and control is more sophisticated. There is a focus on reducing inventory levels, managing working capital more effectively and building the skills required to deliver an efficient supply chain. In building the supply chain competency the food industry is looking to other industries for best-in-practice guidance.
- In 2003, there was a strong sense that training of operatives was not a pre-requisite for businesses and any training that occurred was task specific. Since 2003 there has been a re-appraisal of the operative role. The role of the operative has been elevated and is now seen as a valuable resource and much more meaningful to the business than would have previously been

the case. In the past the operative was valued for the manual input, now the cognitive skills input is recognised.

Recruiting of operatives is consequently becoming more formalised and rigorous. New recruits are coming through extensive screening programmes, including aptitude tests. This means new recruits are likely to be better educated than their predecessors. The other development has been the de-layering of layers and merging of roles. The development of skills among operatives and the move towards super-skilled operatives allows for a reduction in overall numbers at both operative and supervisory levels.

- Since 2003, there has been a realisation that emerging markets are providing opportunities for food companies. The more ambitious food companies have been expanding their global reach into new territories. These companies have been developing skills in international trade, international logistics. CEOs are conscious of the need to build multi-cultural and multi-lingual skills.

In addition to consulting with CEOs in the industry, the views of the development agencies and individuals that tend to have a more panoramic view of the food and beverage sector were also sought.

In sections 6.2 to 6.8 we discuss in detail the thematic areas and outline key skills issues. Also, we provide analysis on where the skills gaps are perceived to exist.

The chapter concludes with a summary of the skill requirements in section 6.9.

6.2 Internationalisation

6.2.1 Context

Over the last half century there has been a movement away from protectionist policy to free trade, which is acknowledged as facilitating economic development across both the developed and developing worlds. In parallel with trade liberalisation there has been a growing influence and presence of global branded companies across international territories. The leading food manufacturers have been to the fore in building global franchises for their brands.

EU membership has being hugely beneficial to the Irish agri-food sector. Irish companies have been successful at supplying food ingredients on a global scale to far reaching markets. The food ingredient customer base tends to be dominated by global food manufacturing companies.

The EU common agricultural policy was originally built on the premise of Europe achieving food security in the post World War II era. In recent years the issue of food security has re-emerged. This renewed concern was elevated during the recent surge in commodity prices which accompanied the shift in land use towards energy crops. Concerns for future food security are based on projections

for global population growth. The current population level of 6.7 billion will continue to expand over the next 40 years, reaching a level of 8.3 billion in 2030, at which stage farmers will be required to grow 30% more grain.

Such a demand for food will be positive for a country like Ireland with its small open economy and strong agricultural base. The other factor which will impact the local Irish food industry is the "business process transformation" taking place among both leading food manufacturers and retailers.

International food manufacturers are transitioning their business processes towards standardised global systems. Procurement is being streamlined from a structure of fragmented buying at individual factory and national level towards a centralised global purchasing centre. Consolidation of procurement is a simplification process leading to a reduction in the numbers of suppliers. These global buying functions will work with a short list of preferred suppliers based on a selection of criteria. In the case of supplying global food manufacturers a certain threshold of scale will be required. No longer will suppliers be able to supply individual factories, going forward suppliers will be required to supply material to a number of manufacturing locations.

Retailers are also going through business process change. Like the food manufacturers, retailers are moving towards regional procurement structures, allowing for the negotiation of listing conditions for larger territories. The implication for local suppliers is that negotiations and buying terms will be transferred from national level to multi-country cluster offices.

6.2.2 Challenges

The challenge for the Irish food industry is two-fold:

- Firstly how to capitalise on the global demand opportunity through supply and production capability; and
- Secondly, how to build the capability to manage and develop customer relationships with both retailers and food ingredients' customers.

The first challenge is for the larger food companies who have ambitions to export and diversify into new markets outside of Ireland and the UK. The second challenge impacts both large and small companies. It will mean that small companies are exposed to greater competition. Instead of negotiating locally for a product listing they will have to negotiate terms with a central buying team which covers a larger territory making it more difficult to exert influence especially if international negotiation skills are weak.

6.2.3 Key Skills

International supply

There are a number of specific skills associated with doing business globally. Success in global trade is greatly dependent on understanding the implications of trade policy and the mechanisms of various trading blocks. Competition, profit levels and market access in global supply are significantly determined by trade blocks, multi-lateral and bi-lateral trade agreements. Commercial success requires an approach to managing import tariffs and import quotas. Increasingly companies are establishing operations within trade blocks to maximise the advantages of such regions.

Establishing operations in new regions requires a depth of competency in understanding the local regulatory environment, the local culture, the costs of doing business locally and also the costs associated with exiting from such regions. Local employment law will also be a major consideration. Very often operations will be established through partnerships or joint ventures which will require effort at integrating different cultures and therefore an appreciation of and capacity to work effectively with cultural differences will be necessary.

These companies require strong competency in analysing trade policy and how institutions such as the WTO operate. Companies that operate internationally with global supply chains need to develop the necessary competencies. Other institutions associated with international trade include the Codex Alimentarius Commission and the World Organisation for Animal Health (OIE).

Therefore the decision to enter a new region will be informed by detailed analysis of a range of factors and developing such a skill base is seen as a key requirement. Companies that operate internationally considered it a prerequisite that graduates have knowledge of international trade and understand the rudiments of trade policy and trading blocs.

Customer management

The consolidation of buying power by food manufacturers, food service groups and retailers and their shift towards global procurement structures requires Irish food companies to build competency in better interfacing with customers. The level of engagement in customer management is being raised. Irish companies need to enrich their human talent pool in the area of key account management, brand management, and preparing and planning for negotiations. Retailers are increasingly becoming more engaged across the value chain and are proactive in driving sustainability initiatives and pursuing cost reductions with supply chain participants. Food companies need to begin to embrace joint business planning with customers. The CEOs of food companies have expressed their view that selling skills need to be significantly enhanced, so that teams are better able to understand the customers' business. Overall the direction is for selling teams to adopt a more analytical approach. CEOs are looking at measuring customer profitability, with increased focus on performance and commercial value.

Not alone is it a challenge to build skills at negotiating with global procurement centres but it is also necessary to do so with a greater depth of analysis around performance and commercial return.

6.2.4 Skill Gaps

Table 6.1 summarises the competency skills associated with the internationalisation theme and also outlines what is currently offered by both the third level colleges and the state agencies by way of addressing these skills. There seems to be limited coverage at building competencies in customer management and key account management across the food related courses in the third level colleges. Bord Bia, through the Vantage Programme, is helping companies overcome some of the challenges in key account management. Bord Bia runs a number of programmes which support companies grow internationally, an example being the "Export Preparation Programme for the USA" which provides information on the regulatory environment, mentoring on dealing with US retailers and managing brokers and distributors in the US market.

Key account management remains an area of weakness for companies. Bord Bia has provided a "National Account Management" programme since autumn 2007. Enterprise Ireland together with Bord Bia is proposing to offer a pilot National Account Management programme, with a significant focus on developing negotiation skills, later this year. There is limited skill-building available to companies that want to build international supply skills as described above.

Table 6.1 Summary of skill competencies required for internationalisation

	Current Provision		
Skill/ Competency	**3rd / 4th Level**	**Agencies**	**Gaps**
• International food trade & regulatory policy • Economics of tariffs and trade barriers • Understanding the structure and policies of international trade blocks (Commodity Credit Corporation, CAP etc.) • Implications of WTO agreements • The Codex Alimentarius' role in developing international standards and codes of practice • The role of institutions such as: The World Organisation for Animal Health (OIE); EFSA; USDA; USDA APHIS • International Key account management • Negotiating long term contracts and trade terms • Brand management • International finance (export credit insurance, currency hedging etc.) • Analysing international markets and customers • Language skills • Inter-cultural awareness • Logistics / distribution • International partnerships & co-operation • Legal requirements re recruitment of staff	Education providers offer modules on International Food Policy, CAP, etc. For example: - BSc Food & Agribusiness Management, UCD (module on International Food Policy) New Cert / Diploma / MSc in Food Regulatory Affairs (via e-learning), delivered by UCC, UCD & University of Ulster. Education providers interviewed noted that sales / negotiation skills were somewhat weak in their course provision. In Development BSc Food Marketing & Entrepreneurship, UCC (module on Food Policy) (2009) BSc Food Innovation, DIT (module on Food Product Regulatory Affairs) (2009)	General • International Selling Programme (EI) • Strategy for Export Programme (STEP) (EI) • First Flight Programme (international sales) (EI) • Masters (Management) International Business (EI) • Developing the Export Sales Team (EI) Food Specific • International Selling & Marketing for the Irish SME Pork Processing Sector (EI) • Bord Bia Brand Forum • Bord Bia Market Place Roadshow • Bord Bia UK retail / food service market entry / development programme • Bord Bia Export Preparation Programme for USA • Bord Bia Private Label Initiative Graduate programmes • Export Orientation Programme (IBEC/ EI) In Development National Account Management Programme & Negotiation Skills Development (EI / Bord Bia)	Commercial sales / negotiation Key account management Economic and regulatory aspects of international trade and globally traded commodities Brand management

Source: PwC derived

6.3 Innovation

6.3.1 Context

Since 2003 there has been a very significant investment by food companies in R&D and innovation. Companies have placed additional resources in R&D, through a combination of introducing new talent and developing the internal talent pool. Clearly companies have embraced the innovation process and many have committed significant effort towards resourcing innovation. Many have adopted a process based approach towards managing innovation within their organisations. In some instances companies have designed their innovation processes with guidance and input from external innovation experts.

In 2003 Food companies viewed innovation as representing new product development (NPD), however it is now defined in broader terms. In the current context, innovation is considered to include the following:

- Product innovation;
- Process innovation; and
- Packaging innovation.

Back in 2003 the sense was that the innovation process was weak due to a lack of co-ordination across the functional linkages, with the result that output levels were low. The current view from CEOs is that activity levels are high across all innovation areas. In recent years a new off-shoot has emerged termed “renovation”, this is where food companies have deployed resources into product reformulation to address issues such as artificial additives, salt levels, added sugar levels, saturated fat, fat levels and trans-fat. In some companies this is referred to as “Existing Product Development” (EPD). CEOs believe that this “product renovation” is extremely important as businesses need to retain consumer relevance through their products and maintain profitability, often referred to as managing the margins. Innovation has a role in recycling the existing business as well as creating new business through breakthrough work.

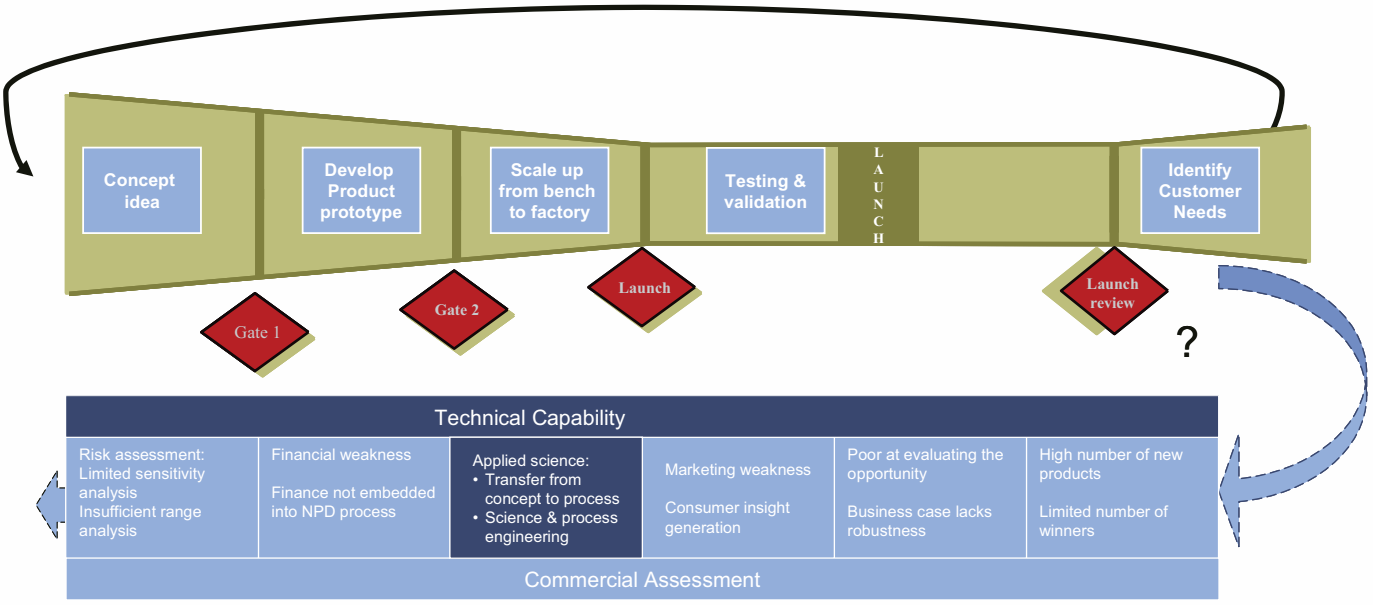
CEOs, while acknowledging that activity levels are high, are concerned that success levels are not where they should be. The view is that a lot of effort takes place with a large number of new products and line extensions, yet the number of new products that remain in the market for two years and longer is low.

6.3.2 Challenges

Many companies have adopted the stage gate process as illustrated in Figure 6.1. The challenge for companies is to increase the success rate. In meeting this challenge, companies need to address the skill weaknesses that presently exist in the innovation process. The view of the CEOs was that the following weaknesses exist:

- Poor evaluation of the business opportunity at the early stages of the process;
- Inadequate appraisal of the business case throughout the process;
- Difficulty in acquiring deep skills around "consumer insight generation";
- Weak engineering skills, especially in the area of design and packaging, leading to sub-optimal execution;
- Challenge in applying the science and scale-up from the pilot plant to the process plan; and
- Strength at running individual projects but weak at managing multiple projects and prioritisation.

Figure 6.1 Overview of the Innovation process and challenges towards improving the results



Source: PwC derived

6.3.3 Key Skills

Food companies are cognisant of the need to build competencies in relation to the commercial assessment of innovation projects. A challenge for food companies is to streamline the commercial appraisal of projects. The current view is that not enough projects are killed on the basis of commercial assessment. This means that the innovation pipeline functions more as a tunnel than as a funnel. In principle, projects should be filtered throughout the project duration on the basis of increasing information in relation to technical capability and market attractiveness. In terms of market attractiveness the view is that not enough effort is devoted to assessing the business case.

There needs to be a focus on building the skill level among both the gatekeepers and the functional teams driving projects. The functional teams need to embed financial metrics into the process. They need to expand the financial assessment beyond a single profit result to include sensitivity and scenario analysis. Also the innovation teams need to judge projects across a range of financial measures such as NPV, IRR, and expected commercial value. The finance function needs to support the innovation teams in developing evaluation matrices. The functional teams need to be trained and upskilled on using evaluation matrices and improving their competency at preparing business cases.

CEOs consider it essential to move from a situation of project management toward portfolio management. Evidence for this stems from the fact that organisations tend to have large numbers of projects in the pipeline. The implication is that, if companies selected a limited number of projects, then it would allow for a more focused approach with more successful results. CEOs believe that running a large number of projects results in a dilution of resources and results. A move towards a portfolio management approach requires building a new competency.

This is about building the capability to manage multiple projects in parallel and to rank and evaluate across projects. An ability to score across portfolios can be achieved through setting out criteria such that portfolios can be assessed with a balanced and objective approach. It is critical to move beyond the subjective approach. The requisite skills need to be raised to a level such that multiple projects can be prioritised based on informed assessments. Those leading individual projects need to understand the selection criteria and how projects are assessed within portfolios.

The disappointing performance of new product introductions indicates a failure to attract consumer interest. This challenges the consumer relevance of such launches and the existence of the consumer need in such NPD. Clearly many of these products fail to find a point of differentiation in the market. Finding a point of differentiation and meeting a real consumer need requires deep skills in generating consumer insights. CEOs admit that finding such a competency is difficult. Generally marketing teams rely on the market dynamics, and follow market trends which largely results in me-too products. The challenge is to actually build the competency that identifies the consumer need. The marketing team needs to start with the “user”, look at what the consumer does, how the consumer uses the product and what need is being solved. A greater emphasis on the “user” rather than the “market” will help generate consumer insights. Companies have a significant skills gap in relation to consumer insight generation.

There is merit in food companies building relationships with customers and investing time in better understanding the customers’ requirements. Retailers being close to the consumer, have deep knowledge and interaction with consumers. Increased collaboration between food companies and retailers can better unlock some of the insights that reside with the retailers. Therefore building the skills to foster collaborative relationships is a significant step.

Allied to this it is equally important for food companies to develop deeper consumer insights independently of the retailer so they are not a follower but a leader. It is important for food

companies to link research relating to psychological need states with marketing communication strategies.

The skills discussed above relate to commercial aspects of innovation. However there are also technical skills that require competency building. The view is that engineering skills and in particular design skills are weak among Irish companies. Design and industrial design capability is essential for good innovation and is an essential complement to the consumer insight piece. Design engineering skills are critical to executing the perfect solution that meets the consumer expectation.

It remains a challenge to develop the R&D absorptive capacity of food companies. A considerable level of publicly funded research is taking place in the third level colleges and research institutes. A key skill is the effective transfer of this research effort to industry, this requires a proactive approach on the part of the research institutes in engaging effectively with food companies and equally the food companies need the necessary skills to absorb and apply the research internally. EI has a role to play in this process insofar as it is the agency with responsibility for driving in-company R&D and innovation, and company and institutional collaboration and the commercialisation of research.

A complex aspect of food products is the packaging component. Food companies have a low level of skills in packaging both at the material, equipment and technology levels. Packaging is a major cost component and also has a big role within the sales presentation. Packaging technology offers the potential to deliver improved formats and solutions for consumers, reduced costs and better margin for food companies.

6.3.4 Skill Gaps

Table 6.2 summarises the skills requirements relevant to innovation and highlights the current provision of such skills by the education providers at 3rd and 4th level and also the training and support provided by agencies. Some good initiatives such as the "Channel Partners Programme" are currently running. Bord Bia's Foresight4food programme supports companies in performing consumer research and consumer testing new product concepts. The programmes provided by Bord Bia have a "learning by doing" element, where companies pilot actual innovations through the programmes. This enables the companies gain real experience in using consumer insights from the ideation phase through to concept testing and onto developing communication plans in launching a product. The "Next Level Drinks Innovation Programme" is a pilot programme between Enterprise Ireland and Bord Bia which aims to help SME drinks companies build the absorptive capacity for R&D. The programme interfaces SME companies with third level research expertise and resources. There are also a number of educational and training programmes currently in development which will address skills needs regarding innovation (see Table 6.2).

There are still gaps in terms of assisting companies develop "portfolio management" skills, build industrial design capability and deepen the skills required in consumer insight generation. In addition, support is required to include packaging design and packaging technology in the educational provision.

There is a view that new companies and start-ups have to overcome a steep learning curve with regard the regulatory requirements. It would be beneficial to have additional advisory capacity available to facilitate new start-ups understand the regulatory environment and its implications for their business.

Table 6.2 Summary of skills relating to Innovation

Current Provision			
Skill/ Competency	**3rd / 4th Level**	**Agencies**	**Gaps**
• A portfolio management approach to prioritising and evaluating multiple projects • A framework for preparing and assessing the business case throughout the duration of projects • Embed financial metrics into the innovation process e.g. NPV, Expected commercial value, IRR, sensitivity analysis. • Consumer insight generation • Principles of project management covering aspects such as project scope definition, outlining the business case, objectives etc. • Process engineering requirements in scale-up from lab / pilot to production and managing technology transfer • Principles of industrial design • Packaging design and technology • NPD / EPD • Continuous improvement • Awareness / understanding of the regulatory environment	Selection of 3rd & 4th Level courses: • BSc Food Innovation, Dundalk IT • Food Product Development, LYIT • Food Product Innovation, CAFRE • MSc Culinary Innovation & NPD, DIT Increased focus on NPD by a number of education providers, for example: • BSC Food Science, UCD	General I2p (Innovate to Profit) (EI) Food Specific • Entrepreneurship & innovation Skills for Consumer Foods (EI) • Strategic Innovation Programme (Superquinn/ EI/ Bord Bia - Pilot project) • The Channel Partners Programme (M&S/ EI/ BB/ IEA/ Welsh Development Agency - Pilot project) • Manufacturing New Products (Teagasc) • HACCP in NDP (Teagasc) • Ideas and Inspiration in PD (Teagasc) • Sensory Analysis (Teagasc) • Bord Bia Innovation & New product development • Bord Bia Foresight4food • Bord Bia Next Level Programme i.e. Drinks sector • Bord Bia Understanding Consumer Motivations • Bord Bia Consumer Lifestyle Trends Graduate -	Portfolio management – ability to evaluate and prioritise multiple projects Ability to understand when a product is not a runner •Awareness / understanding of the regulatory environment (particularly at SME / artisan level) Industrial design (products / packaging / process) Commercial/ business case assessment Ability to identify deep consumer/ market insights Focus on incremental / existing product development at third level
	In Development • BSc Food Innovation, DIT (2009) • BSc Food Marketing & Entrepreneurship, UCC (2009)	In Development • Food Innovator Programme (EI/ FAS). Modules include: Food innovation & creativity; managing the food innovation process; innovating with food ingredients; Market led innovation; innovating with food process/ packaging; commercialisation of food innovations; and developing the food innovator	

Source: PwC derived

6.4 Operative & Supervisory Cohort

6.4.1 Context

Over the last ten years there has been a significant shift in work practices, from an era of demarcation and old established work practices, and "restricted" skill sets towards a modern era with a focus on teamwork, team skills and cross skilling of operatives. In making this migration, companies have gone through extensive change management programmes.

There has been a mindset change towards the role and value of the operative. Companies increasingly recognise the impact and contribution the operative makes to the organisation. Traditionally the operative was valued for his or her manual work capacity. This is now evolving to include the non-manual capacity (or 'cognitive skills') that operatives can bring to the work place. This new direction recognises that the operative can contribute more richly to the workplace and can have the competence to take decisions and take on more responsibility.

These changes are beneficial to both the operative and the company. The operative benefits through performing a more fulfilling role, and achieving a higher level of self-esteem through a greater sense of being valued by the company. The company benefits through the possibility of de-layering levels within the organisation. In some areas, upskilling of operatives has resulted in a merging of traditional operative roles with supervisory roles.

The operative role and skills competency is being developed to a level that is commonly referred to as the "super-skilled operative". Some companies consider that the operative role is evolving into a "skilled technical operative" role.

Companies highlight the benefits of raising the skill levels and competency of operatives as being:

- Ensures operatives understand the science behind the process and the technology;
- Ensures operatives understand why the process works the way it does and why they take certain actions to control the process;
- Ensures operatives understand the impact of decisions taken on the production line;
- In modern production plants, decision making processes need to be speedy and responsive and requires operative input and action. It is no longer appropriate to delegate responsibility and actions upwards;
- Enables operatives to take decisions with a high degree of competency;
- Achieves a greater empowerment of operatives; and
- High competency, knowledge and skill levels among operatives results in more consistent process and product, higher quality of work and a higher conformity to product quality and performance.

Overall, there has been a significant step-change from viewing operatives as "simply pressing buttons" to developing a worker with a combination of skill sets and an understanding of the process and science involved.

6.4.2 Challenges

There is clear recognition of the benefits of upskilling operatives. The key challenges are to:

- motivate older workforce members to participate and embed best practice into the next generation of operatives;
- develop the skills and knowledge of operatives; and
- accredit the level of skills associated with the operative role and the training received.

The general view is that the attitude to upskilling is changing but needs to happen at a more accelerated pace. CEOs believe there is merit in promoting upskilling and encouraging the benefits of further training and personal development.

In terms of developing best practice among the next generation of operatives, companies are investing in the recruitment process. Food companies are moving from a situation where recruitment was done on an ad-hoc and informal basis, to a more measured scientific approach. The trend is for companies to set up recruitment centres and recruit people after a series of screening and interview steps. Increasingly companies are putting candidates through a series of aptitude tests. Significantly companies are

becoming more rigorous in the selection process and are choosing people who will most likely have a higher aptitude and level of skills than would previously have been the case.

The expectation among companies is that new recruits and operatives will pursue further formal education and training. This is the case particularly in the drinks industry where it is expected that new operatives will gain a certificate in brewing and distillation, with many progressing to diploma level. It is also planned that existing operatives in the drinks sector, with at least ten to fifteen years of service remaining, will achieve certificate level in brewing & distilling.

A major challenge for food companies is to accredit operatives. As mentioned, the drinks industry is proactive in building the knowledge level of operatives and has the advantage that, through the Institute of Brewing & Distilling, there is a certification programme in place. However other sectors such as the dairy industry, prepared convenience foods, bakery, and chocolate do not have a professional trade or craft body which facilitates the awarding of a certificate.

The view among CEOs is that a formal accreditation for operatives is essential and is required to recognise the informal workplace learning, it also helps to value and validate the skill level.

Some companies have taken steps as appropriate to develop courses in specific topics and competencies and work with FETAC to attain accreditation. Companies are increasingly engaging with FETAC in developing competency frameworks for operatives.

In terms of providing training to operatives the view is that a mix of in-house and off-site training is required. The experience is that in-house training works well when delivered and facilitated by external experts. Companies are using the classroom approach to raise the technical knowledge levels and deliver formal modules on food science and process technology. The classroom approach is complemented by developing computer-based tutorials where operatives can do the tutorials and take self assessment exams.

Operatives are being up-skilled in their knowledge and understanding of processes and plant technology. They are acquiring a wider range of skills across production processes, in response to a shift in the operative role from task specific to multi-tasking. Increasingly operatives will be challenged with the advance of lean operations and will need to develop the skills and behaviours associated with working in a lean manufacturing environment,

The Skillnets programme has been acknowledged by some CEOs as a positive development. The benefit seen in the Skillnets programme is that operatives and managers from different companies can meet and learn from each others' work practices. This sharing of experience encourages the participants to return to the work place and make improved changes.

Some sub-sectors, such as the meat industry, are highly dependent on skilled operatives. The meat sector operates at tight margins and consequently boning skills are critical to maintaining productivity levels. The meat sector has a preference to employ operatives already trained and proficient in boning,

rather than training staff on the job. In recent years the meat industry has become more dependent on a supply of operatives from Brazil already proficient in butchery and boning. In the event that these operatives decide to leave Ireland, there would be a significant shortage of experienced de-boners.

6.4.3 Key Skills

In terms of migrating operatives from "restricted skill sets" towards "multi-skilled roles", the competency set comprises knowledge of the following areas:

- food science;
- process controls and plant technology;
- front line maintenance;
- environmental licensing and standards;
- in-process quality checks; and
- basic laboratory instrumentation and analytical techniques.

Furthermore the key competencies that need to be developed for front line management are as follows:

- Group facilitation skills;
- Problem solving and analytical skills;
- Taking corrective action through setting out new Standard Operating Procedures (SOP);
- Writing SOPs;
- Training staff on new SOPs; and
- Performance management.

6.4.4 Skill Gaps

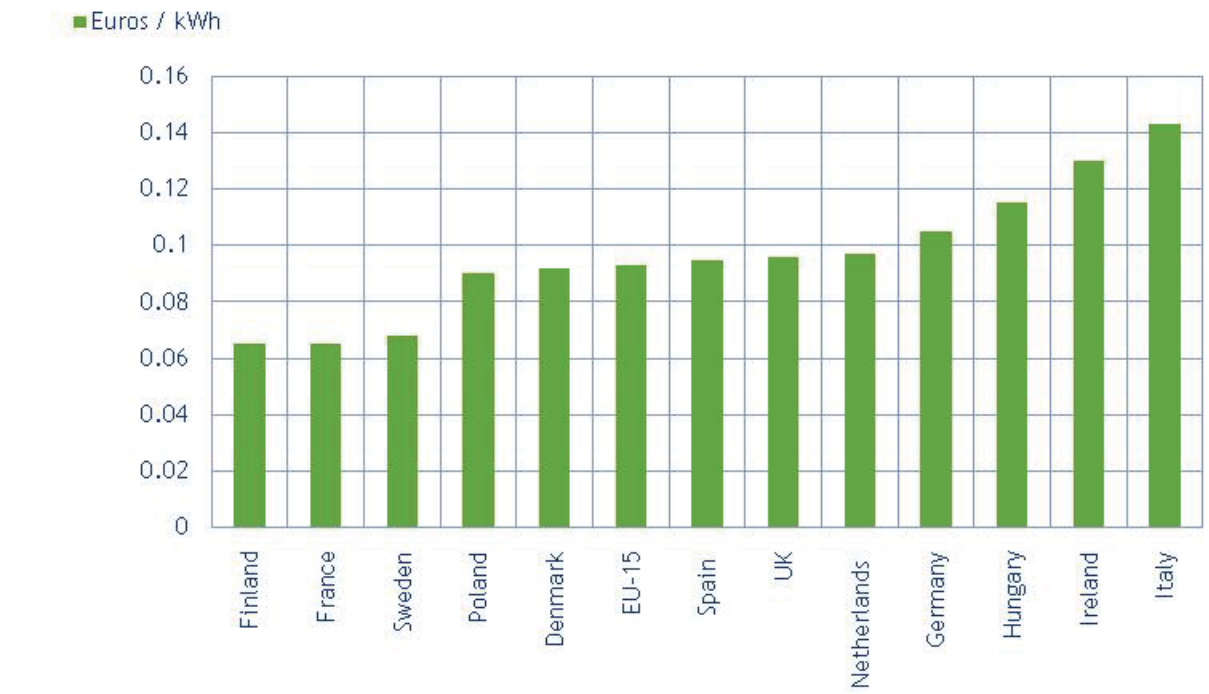
While companies are investing in training of operatives and front-line management, there is a belief that a formal accreditation for food industry operatives is essential. The view is that formal certification becomes evidence that operatives have attained a certain competency standard and therefore becomes transferable. In other countries such as the US, New Zealand operatives are required to have formal certification and licensing to work in the food processing sector.

6.5 Lean Operations

6.5.1 Context

Over the past decade the Irish food sector has experienced significant inflationary pressures. Food manufacturing units have experienced increasing costs in areas such as wages, energy, waste disposal, rental of industrial space and other services. Labour costs have increased by far more than the Euro-zone average. The average rate of wage inflation in Ireland between 2004 and 2008 was 50% above the EU-15 average. The National Competitiveness Council has highlighted a number of factors in respect of the costs of doing business in Ireland. A key cost for Irish manufacturing is energy and Ireland ranks as the second most expensive of the EU-15, as illustrated in Figure 6.2.

Figure 6.2 Industrial electricity prices 2008



Source: Eurostat

The recent weakening of the sterling / euro has further added to the cost pressures. Overall Irish food companies have experienced significant cost inflation and a loss of competitiveness.

6.5.2 Challenges

Food companies are acknowledging the loss in competitiveness and are actively seeking to regain this. There is a realisation that "high cost manufacture" is not sustainable and the challenge is to be a "cost-competitive manufacturer".

One approach to compensating for the high labour costs is to achieve operational excellence and maximise the output per employee, hence the focus is on increasing productivity levels.

Food companies have been looking to the "lean principles and lean manufacturing" techniques in pursuit of productivity gains and operational efficiency. Embracing the "lean agenda" and "lean principles" is a major challenge for companies and requires a mindset change across all levels in the organisation.

Implementing “lean manufacturing” requires a major effort in learning “lean skills”. Lean requires a cultural shift in the organisation as it is a continual process, with the benefits accruing over time. Given the scale of skill building and change involved, committing to lean manufacture is a long term initiative.

Lean requires everyone in the organisation to be involved, and it is based upon collective thinking. The focus is very much about teams and teams working as cells. Lean requires learning and using new analytical approaches to improve the process, which is known as applying Kaizen lessons to various aspects of the production line.

The basis of lean is that quality be improved and costs reduced. Aligned to this, are the six-sigma principles of eliminating waste and increasing line speed and output. Overall a key focus is to start eliminating all waste, such as non-conforming product, machine downtime, avoid breakdowns, minimise machine change-over times. Achieving lean is a challenge to the skills and competency of the individuals involved - they have to adopt a new way of working and have to take increased ownership of the production line.

Lean involves training at all levels in the organisation. Management levels need to acquire lean knowledge and need to develop and hone leadership styles best suited to a lean environment and lean principles. Typically a sub-set of the managerial team needs to undertake formal six sigma training, achieving black belt accreditation. This sub-set becomes central to the successful implementation of the lean programme and plays a pivotal role in embedding the lean principles across the organisation.

At operative level a significant investment is required in educating the employees on the lean principles. Operatives need training on new approaches towards reducing waste, taking ownership of the workplace, maintaining an organised workplace, tagging pieces of equipment, tagging machine parts, logging machine faults. It involves developing a new focus on product quality and raising the bar in terms of appreciation and approach to quality.

A key measure highlighted on lean programmes is the potential for the reduction in the number of accidents, as accidents can often be avoided by behavioural action and the focus in lean is to change behaviour. Likewise quality results can be improved through improved behaviours. Figure 6.3 shows some of the measures used on lean programmes.

Figure 6.3 Lean Key Performance Indicators (KPIs), a focus on quality and performance measurement

Source: PwC derived

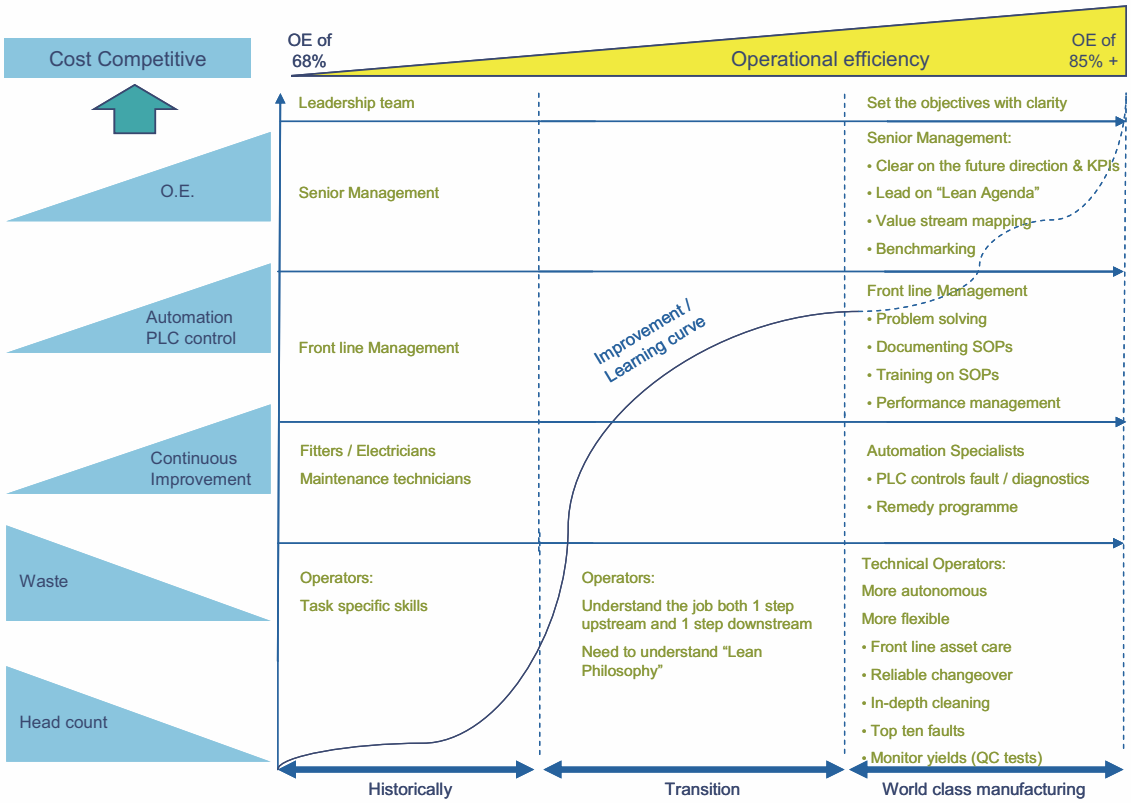
6.5.3 Key Skills

In lean manufacture the operatives acquire and perform the following skills:

- Reliable machine change-over;
- Front line machine maintenance checks & services;
- Deep cleaning off plant and equipment;
- Fault finding and diagnosis on machinery and equipment; and
- In-line quality control testing.

Figure 6.4 identifies the various levels across the organisation and highlights how the roles and skill requirements change in moving the "historical" context to the "world class manufacturing and lean" context. The traditional crafts i.e. electricians and fitters will become more skilled in the lean environment. Much of the traditional work done by the craft personnel will be carried out by the machine operators in lean, freeing up the traditional craft personnel to focus on more complex areas such as automation and PLC controllers. Figure 6.4 indicates that the craft personnel evolve into more skilled "automation specialists" in the lean workplace.

Figure 6.4 Lean Manufacturing – building additional skills competencies at all levels



Source: PwC derived

The senior management cohort will require skills in relation to value stream mapping and leading the direction and setting KPIs for the lean agenda. The leadership and management style in lean becomes based more on coaching people. Figure 6.3 highlights the net result that can be achieved through lean in raising the operational efficiency level resulting in a more cost-competitive outcome.

6.5.4 Skill Gaps

Table 6.3 summarises the skills requirements and the current provision in terms of supporting lean through formal education and vocational place support from the state agencies. The Enterprise Ireland study tour on lean manufacturing to Japan was acknowledged by several CEOs as being a valuable initiative. This study tour has had a significant response across a large number of food companies and has raised awareness on lean and the benefits. CEOs are fully aware that lean is a major skills initiative. On examining the range of 3rd and 4th level courses it was notable that lean operations did not feature with any prominence, and was only offered on a limited number of courses. There is a skill gap in developing automation expertise, and providing technicians with automation skills. There is a need for a basic IT technician with software engineering skills who can run diagnostics on PLC control units.

CEOs would like to see that "lean operations" feature on more graduate programmes.

Table 6.3 Summary of skills requirements for Lean Manufacturing

Skill/ Competency	Current Provision		Gaps
	3rd / 4th Level	Agencies	
• Principles of lean manufacture • Understanding business performance and key performance indicators • Developing problem solving competencies • Developing team dynamics and relationship building • Cross skilling of operatives • PLC diagnostics and technical skills required for modern process plant automation • How to apply learning and corrective actions through documentation of new SOPs and training and implementation of new SOPs • Understanding environmental / quality standards and the principles of IPPC licenses • Introduction to food science for operatives and process technicians • Accredited certification programme for food operatives • Awareness of contract manufacturing • Strategic vision at senior level • Coaching ability at middle management / team leaders	Limited supply of programmes which focus on lean: • Certificate Supply Chain Management, UCC (2003) • Diploma Supply Chain Management, UCC (2003) • PG Diploma Supply Chain Management, UCC (2008) • MSc Supply Chain Management, UCC (2008) Other colleges appear to have little focus on lean principles / techniques In Development Increased focus on lean techniques in UCC: • BSc Food Marketing & Entrepreneurship (2009)	General Selection of private training providers including: OpEx Business Partners, SQT Training, Lean Sigma Systems offering courses covering: • Lean Facilitator Training; • Lean Manufacturing; and • Lean Train-the-Trainer. Food Specific • Lean Techniques in the Food Industry (Teagasc) • Food lean initiative – company bespoke (EI – Richard Keegan) Graduate - In Development: UCC / EI Middle Management Lean Initiative	Lean / WCM / Six Sigma with food sector experience Process diagnostics and control/ super-skilled technicians/ crafts Lack of awareness/ insufficient knowledge/ awareness at graduate level

Source: PwC derived

6.6 Supply Chain Management

6.6.1 Context

Central distribution was first introduced to Ireland in 1999 by one of the retail multiple groups. Over the last decade the central distribution model has gained traction across several categories and has increasingly being deployed by retailers. For food manufacturing companies it has proved a significant milestone. Those established food manufacturers which operated direct delivery models to individual retail outlets found their distribution advantages gradually eroded. The direct delivery model describes the traditional distribution structure operated by food manufacturers, where warehousing was managed internally and delivery to retailers was via internal company owned vans. Over time fewer products were delivered direct, with the implication that delivery cost per case via the direct delivery model became uncompetitive.

Central distribution means the retailers now take ownership of the product for a longer portion of the product life cycle and hence efficiency and wastage levels are closely measured. In the direct delivery system, un-sold product was marked down as returns, with the cost borne by the food manufacturer. However with central distribution, unsold product is at the loss of the retailer. Also of significance is the fact that food manufacturers now have to meet a daily order frequency as opposed to a weekly order frequency previously. This means that the food manufacturer needs a flexible operation to respond to the demand requests of retail customers.

Increasingly retailers are more demanding in the level of performance they expect from their suppliers. The retailers are increasing their knowledge on the value chain and are pursuing opportunities to drive efficiencies. Retailers have a greater visibility on costs throughout the supply chain.

The other impact has been the increased focus on financial measures. Increasingly companies are looking at the return on overheads. There is a focus on managing working capital levels. Companies are looking at capacity utilisation and asset management. Companies now question whether it is better to manufacture in-house or to outsource to a third party that could achieve better capacity utilisation and asset management.

The electronics industry is recognised as setting a new level of efficiency surrounding order batching, inventory turns, cycle times, and just-in-time delivery. The electronics industry is considered the standard bearer as regards doing supply chain management well.

Historically food manufacturers have produced to stock and have carried large inventories to manage fluctuations in demand. Given the focus on working capital levels and cost efficiency, food manufacturers are now having to transition from “producing to stock” to “producing to order”.

6.6.2 Challenges

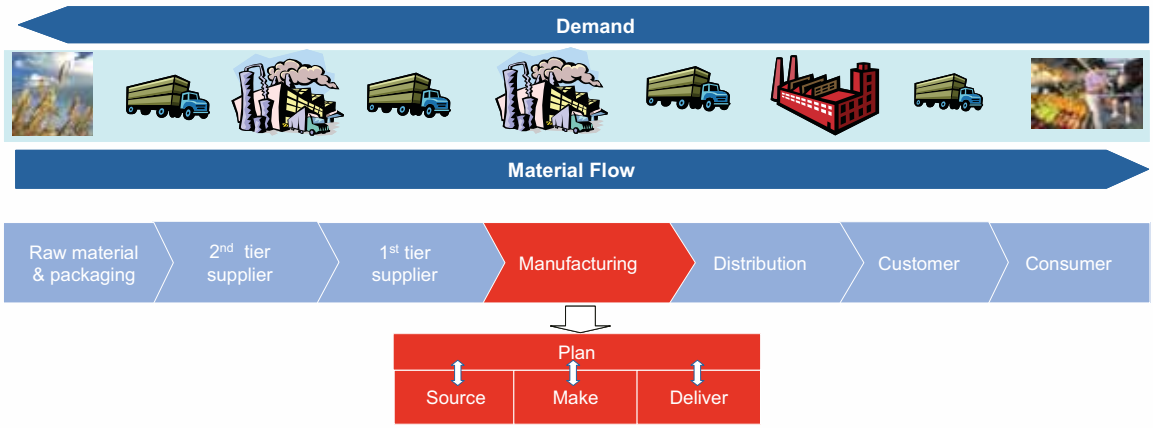
The challenge facing food manufacturers is to transition towards a supply chain management structure. Historically food manufacturing was a generalist role with the key focus on production. Over time, the focus centred on producing at least cost. Now the focus is to produce at least cost but also at the required time and in the required quantity. It is no longer financially acceptable to manage demand uncertainty through building physical inventories.

The challenge is to structure and build competencies within the supply chain to ensure that:

- Inventories are at minimum levels;
- Obsolete stock is avoided;
- Promotions and new product introductions are managed efficiently with minimum stock risk;
- Procurement costs are better than the competition;
- Asset utilisation is at optimal levels; and
- Customer service levels are met.

Figure 6.5 illustrates how the traditional role of manufacturing has been redefined by a series of specialist roles. The manufacturing role is now considered as being a planning function across a series of specialist roles.

Figure 6.5 Supply chain management



Source: PwC derived

The specialist roles include:

- At planning level decisions are made regarding asset utilisation and whether to manufacture in-house (make) or to have product produced on contract by a third party (source);
- "Sourcing and procurement", which involves purchasing raw materials and products which are produced on a contract basis;
- "Make" which represents the traditional manufacturing component; and
- "Deliver" which looks at optimising the delivered cost per case, maximise pallet fill, maximise container fill.

Overall the challenge in supply chain management is to build the skills to co-ordinate and plan the activity across the specialist roles. Also there is a challenge to build skills in the individual specialist roles. The "deliver" role requires key personnel that are logistically trained such that the company achieves a cost advantage over competitors in delivered costs to customers. It is necessary to build skills in understanding distribution networks and developing partnerships and collaboration throughout the supply chain. These specialist roles require staff to apply a scientific and logical approach to the supply chain. It is also necessary when building skills that people understand the key requirements both upstream and downstream. Also it is important that there is good communication across the linkages and those in the specialist roles need to develop skills in effective working across the linkages.

6.6.3 Key Skills

A key skill is the ability to develop collaborations and partnerships with other companies along the supply chain. The other key skill area is to embed financial measurement into supply chain management. A successful company needs to have supply chain teams with financial skills that ensure the supply chain cost structure is better than the competition.

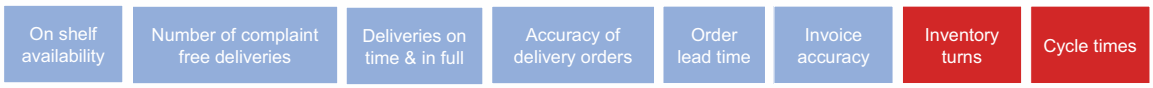
The company needs to have skills to develop benchmark data and continually push the targets such as reducing the stock cover days, improve inventory turns and cycle times.

Many organisations have deployed ERP (Enterprise Resource Planning) systems. Implementing ERP systems is a major undertaking for an organisation and requires change management and training across all levels. Introducing ERP systems literally impacts the entire organisation and it is a challenge to embed the system within the organisation. It is the users that make ERP effective and training the users is critical to successful ERP systems.

The people working in the supply chain need to apply lean principles and therefore need training in lean. The goal should be to achieve a lean supply chain and this requires building the lean and six sigma competency among the supply chain. Increasingly those working in the supply chain need to develop a customer focused competency, they need to understand the customers' requirements and have the skills to continually improve the customer service.

Everyone engaged in the supply chain needs to be trained on supply chain KPIs. Figure 6.6 shows some of the KPIs that could be in use. The staff should be competent in understanding the impact of the KPIs.

Figure 6.6 Performance measurement / customer service KPIs



Source: PwC derived

6.6.4 Skill Gaps

Table 6.4 summarises the skills required in supply chain management. There is limited coverage of the supply chain on 3rd and 4th level courses in the food area. Recently UCC has developed some courses which cover the supply chain. The industry view is that supply chain management is an area where skills are weak and in particular that there needs to be a greater focus on supply chain issues on graduate programmes. The skill base is so low that developing and building skills through on-the-job training would not be effective. An injection of deep knowledge and skills is required. A number of companies have bridged the gap by recruiting expertise from other industries such as the electronics sector.

Table 6.4 Summary of supply chain skills provision

Current Provision			
Skill/ Competency	**3rd / 4th Level**	**Agencies**	**Gaps**
• Principles of International food logistics • Introducing the principles of supply chain management and best practices in other industries • The implications of demand planning, performance measurement and understanding customer requirements • The financial implications of supply chain management • An approach to bench-marking and self assessment across key skill areas such as purchasing, inventory management, manufacture, co-packing, delivery. • Application of lean principles to supply chain management • Principles and benefits of collaborative relationships and network supply chains	Certificate / Diploma (2003) Supply Chain Management - Green belt (UCC). Modules include: • Application of lean principles to SCM / enhancing performance • IT & supply chain • Inventory & op's mgt • Purchasing, negotiating and relationship building • Change mgt • Leadership & team building • Quantitative methods • Supply chain configuration PG Diploma / MSc Supply Chain Management - Black belt (2008) (UCC). Modules include: • Strategic planning & implementation • Advanced lean tools & projects • Leadership change & innovation mgt. • Globalisation Selection of courses available in other 3rd level institutions related to SCM, for example: • BSc Logistics & SCM, DIT	General Supply Chain Management for SMEs (EI) National Institute for Transport & Logistics (NITL). Supported by NDP thorough EI and managed at DIT. Cert/ Diploma/ MSc in SCM. Modules include: • Marketing & SC integration • Introduction to SCM • IT in the SC • Partnerships in SCM • Financial mgt • Production planning & control • People mgt Supply Chain Logistics Administrator Traineeship (FÁS) Bord Bia Next Level Programme i.e. Drinks sector Food Specific Bord Bia – Vantage Plus workshops on Distribution Graduates -	Bespoke SCM in-service programmes tailored for food / drinks sector and delivered by specialist encompassing financial and performance measurement (green / black belts awarded) General lack of awareness/ understanding at graduate level

Source: PwC derived

6.7 Financial & Commercial Acumen

6.7.1 Context

In the industry consultations CEOs expressed concern regarding the lack of commercial acumen across the functions within the organisation. Companies suffer from the fact that functional groups have a low or poor appreciation of the commercial implications associated with their activities. A significant problem is that functional groups have a tendency to operate in silos and become isolated from the commercial issues. There is a failure to co-ordinate the various linkages across the organisation.

6.7.2 Challenges

The challenge is to get effective communication across the functional linkages and ensure that these are working towards common goals. This can be addressed by setting KPIs that are directed towards cross-functional goals. Historically in food companies a common goal was to avoid "out of stock" situations. In meeting such an objective people erred on the margin of safety, over-ordering raw material and packaging. Such an approach was flawed commercially with a risk that materials exceeded the expiry date, resulting in obsolete raw material stocks. Where products were discontinued there was a high risk of packaging stock write-offs.

There is a challenge to set out KPIs and measures which ensure functions work towards delivering outcomes that maximise the commercial results. Situations should be avoided where KPIs are set which result in functional groups pulling in different directions. As budget holders, the separate functions must be aware of the cost base and the commercial implications of all activity within the functional groups and its impact on the company profit and loss account. Figure 6.6 illustrates the various functional groups within the organisation. Each of the functional groups is accountable for expenditure.

Figure 6.7 Commercial acumen within the organisation

Source: PwC derived

Launching new products includes a level of commercial analysis regarding products being de-listed, risk of cannibalisation to sales for remaining products and sales projections for the new introductions. The commercial assessment needs to combine both margin and volume analysis. The key challenge for the NPD group is that the overall profit levels improve for the company. Therefore it is crucial that NPD teams do not select new products where the margin is lower than those being either delisted or those remaining products that may be cannibalised. It is important that NPD teams operate with a greater level of commercial acumen that ensures the commercial outcome is not impaired by decisions in relation to NPD.

Irish food companies, and especially those with branded businesses, have always faced difficult competition from larger multinational brands. It is challenging competing for a share of market against larger companies with significant marketing budgets. The local Irish branded businesses have to find innovative ways of connecting with consumers through cost effective promotional campaigns and consumer activations. The challenge is even greater given the current pressures in the market place. The growth of discounters, allied to increasing pressure from retailers for deep cut promotions, provides additional challenge to sustain brand equity against such a backdrop. Marketing and branding skills are always challenged to retain and build brand equity.

Sales and marketing areas need to develop commercial acumen skills. Sales manage large promotional budgets and with such discretion it is important that they are analytical in how they spend and invest the promotional budget. The sales group needs to ensure promotional spending drives customer profitability. They need to select the optimal promotional mechanics and generate the best return on investment. This requires working closely with marketing on agreeing promotional strategies.

The finance function has a key role in facilitating the non-finance functions to gain an appreciation of the financial measures and how the company measures profitability. The finance function needs to support the other functions with real time financial measurement. Finance needs to assists the non-finance functions in identifying appropriate KPIs. In essence the finance group needs to train the other groups on financial measurement and help the company build commercial competency across all levels.

6.7.3 Key Skills

A key requirement in Irish food companies is to have an understanding of the commercial dynamics of the business as appropriate at all levels. Building commercial acumen requires skill in communication to all individuals as to how the company operates, end-to-end, what activities produce profits and where the costs occur.

Developing commercial acumen relies on internal coaching of staff regarding the financial measurement and business financial reporting aspects. Coaching of the functional heads should build commercial logic into the decision-making process.

Equally the finance function needs to learn more about the functional areas which ensures financial metrics are relevant and effective. In this way the finance function can support non-finance managers deliver an enhanced commercial performance.

6.7.4 Skill Gaps

Table 6.5 summarises the skills associated with building commercial acumen across the non-finance functions. Currently there is limited support to companies in building commercial acumen competencies. Bord Bia through its Vantage Programme assists small business clients, develop the commercial skills required to support business development. The content of the Vantage Programme is variable and the programme focus reflects relevant and current themes. The focus on the Vantage Plus programme in 2009 is “Improving Financial Decisions”. CEOs expressed the view that all graduate programmes should include commercial modules, and that graduates should have an appreciation of finance and commercial skills.

Table 6.5 Summary of financial and commercial acumen skills provision

Skill/ Competency	Current Provision: 3rd / 4th Level	Agencies	Gaps
• Understanding what activities make profit for the business • Understanding how a business measures profitability • Understanding the costs within a business • Preparing a business case • Embed the need for commercial evaluation in decision making • Understanding the key financial metrics for the business • Understand how a functional area / roles relates to the businesses financial reporting • Understand the financial impacts both upstream and downstream of a functional area • Aware of the benefit of relevant financial metrics / measurement • Communication skills – coaching from within	Food Business programmes tend to include modules on finance / accounting: • MSc Food Business, UCC • BSc Food & Agribusiness, UCD Other programmes tend to remain focused on food science / technology and don't offer compulsory finance modules. In Development: BSc Food Innovation, DIT (module on Financial Management) Higher Cert Food Science & Management, DIT (module on Financial Management) BSc Food Marketing & Entrepreneurship, UCC (modules on accounting, business information systems)	Bord Biá National Account Management Programme Bord Biá Vantage Partner Bord Biá Foresight4food	Financial/ commercial and IT expertise to deliver insightful, financial information across the operations – to enable real-time decision making Finance modules at third level with a food industry slant

Source: PwC derived

6.8 Leadership

6.8.1 Context

CEOs expressed the view that they were searching to acquire the right leadership skills. The leadership function is being challenged due to the pace of change that is happening in the market. The retail landscape is changing at great pace, trade relationships are evolving. Costs have been escalating and companies are under pressure to manage their way through such changes. There is a sense that responding to change means engaging the people across the entire organisation through a new approach, which requires a new style of leadership.

The view is that companies need to begin to harness the knowledge of the entire organisation. This requires the leadership team to foster a team dynamic and move the organisation from the individual focus to the team perspective. The nature of such a shift calls for a behavioural change and cultural adaptation. Cultural changes can only occur through a strong directional leadership.

This cultural shift is very much required to underpin the other thematic areas already mentioned and discussed above. A team approach is essential to developing lean skills. A programme such as lean very much coincides with cultural changes in the organisation. This presents a big leadership challenge to bring the organisation forward and to embrace change. Leadership is required to encourage and promote upskilling at all levels in the organisation.

In addition to developing new leadership style there is also the need for succession planning. Many CEOs expressed the view that the current pressures in the market place will result in high attrition levels at leadership level and hence the next tier may be fast tracked into leadership positions. It is

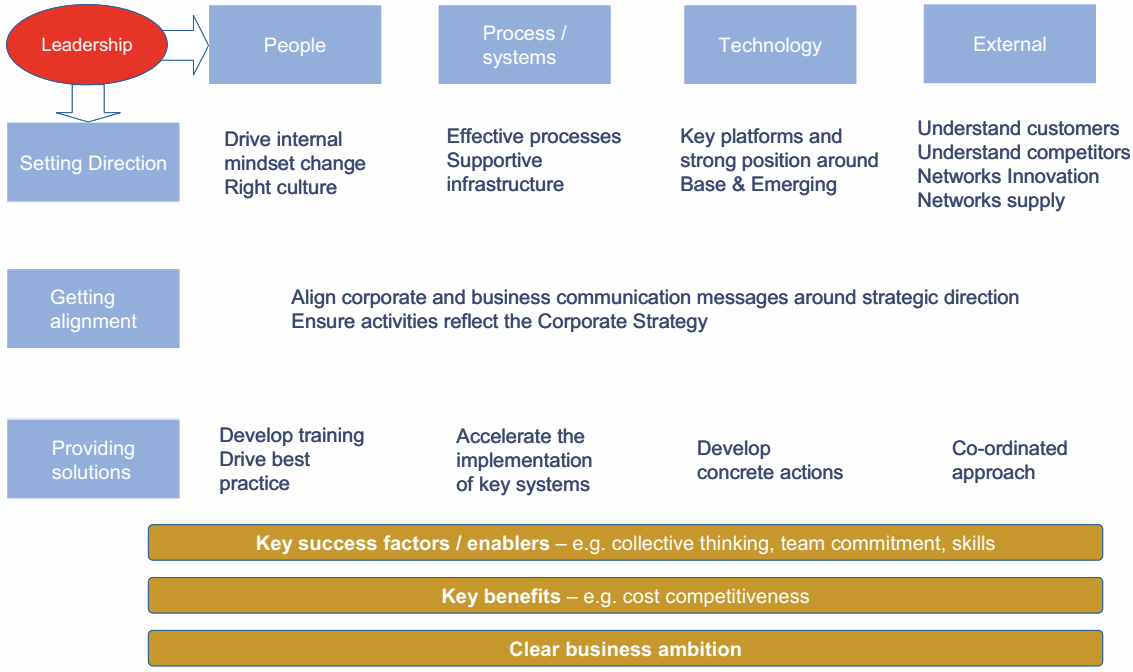
considered essential that individuals be identified early in their careers for leadership development. The view is that early intervention in preparing individuals for leadership roles is recommended.

6.8.2 Challenges

The challenge is for the leaders to deliver extensive change programmes. Leaders need to engage differently with the people within the organisation and need to harness their support. Essential to leading is communicating with clarity the objectives and aligning the various functions within the organisation towards one direction.

The other challenge is to prepare the next management tier and have in place succession planning.

Figure 6.8 Leadership – setting a clear direction for the business



Source: PwC derived

Figure 6.7 highlights the key challenges in leading the organisation. The starting point is looking both internally and externally to identify the key challenges and understand the competitive landscape. The leadership team needs to create the corporate objectives and strategy and from there develop the underlying work programmes. Successful leadership cascades the strategic objectives and work programmes throughout the organisation.

Given the current economic turbulence and global warming threats and challenges, the strategy for the food sector will never be static - it has to continually respond to emerging issues. Many of these issues have the potential to cause structural change to the sector and there is a significant leadership challenge to be aware of emerging issues and assess the impacts for the business.

Sustainability is one such issue driving change within the internal business operations, through reducing energy use, reducing waste, reducing resource use while driving productivity gains. Sustainability also has a role in communicating to external stakeholders on green and social values that can be associated with the brand and the business.

Increasingly companies will seek to ensure that the product and brand attributes reflect social issues that have resonance with consumers looking for positive sustainable impacts. The challenge is to resource the organisation through providing people with the appropriate skills and supporting the organisation with the right processes, systems and technology.

6.8.3 Key Skills

Strategic development is a key task for the leadership team. However implementing the strategy is the real skills challenge. Strategy is of little value unless it is successfully communicated and implemented across the organisation. The leadership team needs to develop the skills to make strategy happen and have to be able to communicate the strategic objectives throughout the organisation.

Introducing strategic change requires significant change management skills. It is important that leaders have the necessary change management skills.

6.8.4 Skill Gaps

Table 6.6 summarises the skill requirements associated with leadership. It also highlights the 3rd and 4th level courses and development agency provision that provide appropriate leadership modules. CEOs were of the opinion that succession planning was not perfect and that more effort and focus has to be assigned to developing the senior and middle management tiers.

Table 6.6 Summary of leadership skills

Skill/ Competency	Current Provision: 3rd / 4th Level	Current Provision: Agencies	Gaps
• Understanding drivers of change and competitive landscape. • Communicating the corporate strategic messages • Aligning the strategy to the organisation • Developing the corporate objectives and strategy and underlying work programmes • Aligning the organisation to the strategy • Continuous performance improvement through benchmarking • Organisational change & people management - Managing a cultural shift in values and behaviours • How to embed lean values among the whole work force • Develop and improve communications and co-ordination of activities across functional disciplines • Corporate governance • Business ethics • Regulatory environment • Sustainability planning (greenhouse gas emissions, branding)	Increased focus on business / marketing modules by some education providers. • MSc Co-operative Organisation, Food Marketing & Rural Development, UCC • MSc Food Business, UCC • BSc Food & Agribusiness, UCD • BSc Food Science, UCD Other programmes across the colleges (e.g. Food Science) remain very focused on science and don't offer compulsory business type modules. Little evidence of modules focusing on business strategy, change management, organisation development, etc In Development: •BSc Food Marketing & Entrepreneurship programme, UCC (2009)	General Leadership 4 Growth (EI – CEOs only – not currently offered to food sector) Transform (EI – for senior management teams but not offered to food sector) Management Development & Entrepreneurship (EI) Food Specific MBA for Seafood CEOs (EI) Vantage Partner – Business Development Programme (Bord Biá) Leadership Summit (Bord Biá) Starting & running a seafood business (BIM / Kerry County Enterprise Board) Graduate Graduate Development Programme – Diploma in Management Practice (EI)	Significant reported gaps at CEO, senior management and middle management/ Tier 2 Leadership/ entrepreneurship not sufficiently covered on graduate programmes Communication Skills

Source: PwC derived

6.9 Mapping Skill Requirements across Sectors

In this section we consider how the skills requirements as highlighted in the thematic areas detailed above relate to the various sectors within the food and beverage Industry. In particular we discuss and rank the degree of importance that each sub-sector attaches to these thematic areas and the extent to which specific skills are critical to a sub-sector.

The extent to which a skill is critical to a sub-sector is ranked across three levels. The three levels being: low; medium; and high.

Internationalisation in the context of market diversification and developing global supply chains is particularly relevant to companies in the dairy, beef and seafood (i.e. specifically pelagic fish which is sold to third country markets) sectors. These companies are proactively expanding their global footprints and increasingly are establishing overseas sales offices and building supply operations in new regions. Building global supply and overseas operations is less relevant for smaller companies operating in the prepared convenience foods sector. However such companies are impacted by "internationalisation" in the sense that increasingly the customer base is becoming more consolidated and dominated by international retail and food service companies.

The customer management dimension of internationalisation impacts all sectors. All sectors are impacted by customers migrating towards centralised procurement functions. In this context small consumer foods companies will be affected by internationalisation through a number of issues such as retail customers adopting international procurement strategies, the growing presence of international discounters which will further add to the internationalisation of the retail landscape.

Innovation is considered as being of critical importance to all sectors. Some sectors such as seafood will prioritise the introduction of new technology. There will be a focus on building the skills levels in new technology with significant investment in the absorption and transfer of new technology. Sectors such as prepared convenience foods and beverages attach a high priority to building competency in packaging technology, aiming to achieve product differentiation through packaging innovations. Portfolio management as an element within innovation will apply where a large number of projects are run in parallel. This will be the case for sectors such as prepared convenience foods where several innovations may run concurrently, or for larger organisations that engage in process as well as product innovations. Consumer insight generation is relevant for all sectors and particularly for companies with consumer brands.

The on-going development of the **operative & supervisory cohort** is a requirement across all sectors. All sectors are moving from an era of "restricted work practices" to a workplace where there is higher mobility among employees and cross skilling is becoming standard. Sectors which are characterised by a high level of process technology and complex operations have a desire that operatives be formally accredited. Some sectors, such as beverages, have been able to achieve more in terms of accrediting the skills of employees through links with the Institute of Brewing & Distilling. Other sectors, such as dairy processing, food ingredients, prepared convenience foods consider accreditation of operatives as being significantly important. In sectors such as meat and chocolate, craft accreditation are deemed important.

Lean operations is relevant across all sectors, large dairy companies as well as seafood companies are embracing the lean programme. The uptake of lean principles will vary within sectors, for example not all dairy companies are adopting lean principles. In a sector such as prepared convenience foods, lean manufacturing is more likely to be pursued by the larger companies. The small branded companies, where resources are limited, are most likely to strive for mobility and flexibility within the workforce without investing in introducing lean operations.

Supply chain management is a priority skill area for companies supplying the retail channel where customer service levels are continually measured. It is of key importance for the FMCG sector. Companies of all sizes, both small and large, are all impacted by the supply chain and need to find the correct skills and solutions for effective and efficient management.

Financial commercial acumen requires people in non-finance functions to have a greater awareness and understanding of profitability and the implications to profitability from the activities of functional groups. Hence financial acumen is relevant to all sectors and to businesses of all sizes.

Leadership is a challenge for all sectors and is relevant for all sizes of company.

Table 6.7 Mapping of thematic area skill elements to sub-sectors

Thematic Area	Skill Element	Dairy	Meat	Seafood	Prepared convenience foods	Animal Feed	Beverages
Internationalisation	Global supply	High	High	High	Low / Medium	Medium	High
	Customer management	High	High	High	High	High	High
Innovation	Commercial assessment / business case	High	High	High	High	High	High
	Portfolio management	Medium / High	Medium	Medium	High	Medium	Medium/High
	Consumer insights	High	Medium / High	Medium / High	High	Medium / High	High
	Technology / engineering	High	High	High	High	High	High
	Packaging technology	Medium / High	Medium / High	High	High	Medium	High
Operative & Supervisory cohort	Craft accreditation	Low [1]	High	n/a	Low [2]	n/a	n/a
	Operative accreditation	High	Medium	Medium	High	High	High
Lean operations	Lean Principles	High	High	High	High	High	High
Supply chain management	Inventory planning	Medium	Medium	Medium	High	High	Medium
	Promotional planning	Medium	Low	Medium	High	Medium	High
	Asset utilisation	High	High	High	High	High	High
	Deliver	High	High	High	High	High	High
Financial acumen	Finance for non-finance function	High	High	High	High	High	High
Leadership		High	High	High	High	High	High

1 Craft accreditation specifically applies to niche areas such as farm-house / speciality cheeses

2 Craft skills are relevant in areas such as chocolate making, pastry / confectionery

6.10 Key Chapter Findings

In conclusion, the industry research has revealed the following key skill gaps:

a) Internationalisation

- Skills development in customer management and key account management across graduate programmes
- **Build skills in international trade and supply management**

b) Innovation

- Develop skills in portfolio management to help further streamline the prioritisation & selection of innovation programmes
- Develop skills in consumer insight generation
- Develop skills in packaging technology
- Build skills in design engineering

c) Operative & Supervisory Cohort

- Formal accreditation of operatives in the food industry

d) Lean Operations

- Build competency in automation and PLC control diagnostics
- Train entire workforce on lean skills
- Include "lean operations" on graduate programmes

e) Supply Chain Management

- Include "supply chain management" on graduate programmes
- Build supply chain skills in the workplace

f) Commercial Acumen

- Include financial and commercial modules on graduate programmes
- Develop commercial skills for the non-finance functions

g) Leadership

- Hone current management leadership skills
- Develop the next tier of leaders

In Chapter 7 we present the recommendations to address these gaps.

7. Conclusions and Recommendations

7.1 Introduction

A number of key findings have emerged as a result of the research undertaken, namely:

- 62% of employees in the food and beverage sector have no formal qualification or only have a secondary education.
- There are an estimated 121 courses offered by the universities and colleges and a further 111 initiatives and programmes offered by the various development agencies.
- Notwithstanding this provision, discussions with CEOs have identified that skill gaps still prevail as identified in Chapter 6 under the 7 thematic areas of: Internationalisation; Innovation; Operative and Supervisory Cohort; Lean operations; Supply Chain Management; Leadership; Financial and Commercial Acumen; and Leadership.

Therefore, it would appear that there is a need for greater promotion of, and engagement in, the significant number of courses and programmes and initiatives currently provided, specifically:

1. companies need to become more aware of what is currently being provided by the third level institutions and development agencies and to engage with, and participate in, these courses, initiatives and programmes; and
2. Third level institutions and development agencies need to adopt a more readily accessible means of communicating and promoting their current service offerings so that there is greater traction with industry.

The purpose of this chapter is to outline:

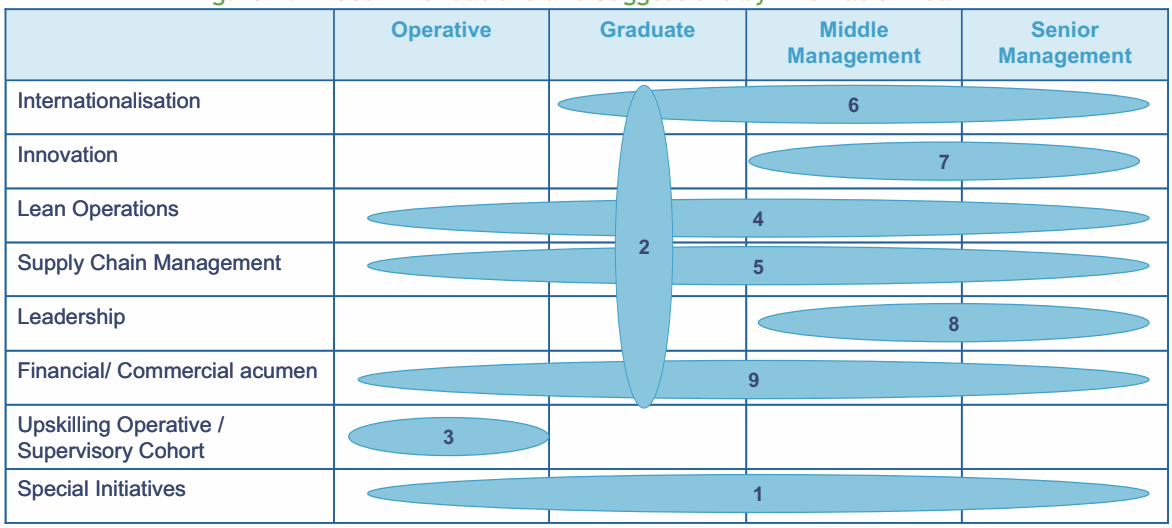
- In response to the skill gaps identified, new initiatives required to meet these needs form the essence of our 9 **recommendations**[49]. For differentiation purposes, recommendation boxes are shaded in blue.
- A total of 11 **suggestions**[50] that in light of the current environment are not specific recommendations but are for consideration by the various stakeholders;
- 11 **endorsements**[51] of relevant initiatives and programmes, provided by the development agencies, that we believe would benefit from the greater roll-out and penetration to the sector.

A number of the suggestions, endorsements and recommendations span more than one of the 7 thematic areas. Figure 7.1 illustrates this overlap across the thematic areas and details the employee level within organisations that they are aimed at (i.e. operative, graduate, middle

[49] A recommendation is the development / commencement of a new programme / initiative in response to an identified skill gaps and lacunae of the sector.
[50] A suggestion is a potential new initiative.
[51] An endorsement is in recognition of existing courses / programmes which we believe should be continued in the same or similar guise.

management and senior management). An additional thematic area 'Special initiatives' has been included to incorporate a number of non-thematic related suggestions and recommendations.

Figure 7.1 Recommendations and Suggestions by Thematic Area



1. More co-ordinated approach in course development / delivery & promotion by state agencies
2. Development of 'T' skills and addressing critical skill weaknesses at 3rd level
3. Up-skill operatives and develop accreditation programme for food industry operatives
4. Embed lean manufacturing principles
5. Build supply chain management capability to best in class standards
6. Roll-out internationalisation initiatives for executives and graduates
7. Hone innovation / NPD competencies to underpin greater success on NPD introductions in terms of financial returns and product performance
8. Address succession issues through the provision of a fast track programme for current and future leaders
9. Develop commercial acumen across the organisation through bespoke modularised programme

Tables 7.1, 7.2 and 7.3 provide a summary overview of the 9 recommendations, 11 suggestions and 11 endorsements, detail of which is provided later in this Chapter. In relation to the suggestions and endorsements the outcome of each and the responsible party or parties are detailed. As regards the recommendations, the outcome, agencies involved, priority, estimated budgetary implications, estimated timeframe for establishment and / or completion and principal driver have also been included.

Since the time of the last report (2003) the study findings suggest that while development agencies are offering a greater range of relevant programmes and initiatives, general awareness and promotion of these appear to be low across the sector. More needs to be done to promote and build greater awareness and appreciation of these initiatives to CEOs and the C-suite generally. In terms of third level provision, there are significant amendments to existing courses and new courses being introduced at all levels, however, the effectiveness of, and student interest in, these programmes remains to be seen. There are significant overlaps in food science and technology related programmes at third level and significant gaps still prevail in other areas. There is a greater recognition of the importance and benefit of management, staff and operative development and training at company level, however, in recessionary times training budgets can get squeezed. Therefore, there is need for companies to appreciate that human capital is an appreciating asset and requires investment and mentoring. Finally, employees also have a greater role to play in engaging in training initiatives to improve their skills and becoming more aware of their role in the success and growth of the company.

Our recommendations, suggestions and endorsements demonstrate the need for all these stakeholders to commit to and drive them forward, without which they simply will not happen.

Table 7.1 EGFSN Recommendations

#	Recommendation	Outcome	Stakeholders involved	Priority (High / Medium / Low)	Estimated budgetary implications[52]	Estimated timeframe for establishment / completion	Principal driver
1	Establishment of "inter-agency / university / Industry forum" (possibly an Agri-Vision 2015 'Development and Training Sub-Group') to discuss and address the ongoing skills, training and development needs of the industry	Less duplication of education and training provision. Better collaboration between agencies, third level and industry in the identification of training and the design and delivery of education and training programmes. (p.122)	DAFF / EI / Bord Bia / FÁS / Teagasc / Skillnets / BIM / HEA / Industry / Third Level Institutions	High	Using existing resources	Within 6 months	DAFF
2a	Operative and supervisor accredited upskilling programme	Enhanced career opportunities for low skilled operatives and supervisors through the provision of transferable skills (i.e. numeracy, literacy, basic IT, communication & interpersonal skills, team-working and English as a foreign language). (p.124)	FÁS / NALA / Skillnets / FETAC	Medium	Using existing resources	2010	FÁS (with support from FETAC and NALA)
2b	Develop and roll-out an Operative Technician Accreditation Programme	A FETAC accredited qualification for operatives recognising on-the-job skills and competencies and experience. (p.124)	FÁS / Teagasc / FETAC	High	Using existing resources	2010	FÁS (with support from FETAC)

[52] Possible from within existing resources / Additional resources would be required

#	Recommendation	Outcome	Stakeholders involved	Priority (High / Medium / Low)	Estimated budgetary implications[52]	Estimated timeframe for establishment / completion	Principal driver
3	Develop recognised and accredited 'Craft Accreditations' for operatives	A series of formal accreditations for specialised craft areas such as: deboning, chocolatiers, cheese-making and other kindred trades. (p.125)	FÁS / FETAC	High	Using existing resources	2010	FÁS (with support from FETAC)
4	EI SCM initiative to be tailored and promoted to the food sector	More effective supply chain management resulting in improved competiveness. (p.126)	EI	High	Within existing budgetary provisions[53]	Existing mechanisms allow support.[54]	EI
5	Pilot the development of 'Supply Partner Networks' comprising retailers (with Irish operations), FMCG, Logistics and warehousing companies	Maximise the efficiency of the value-chain through greater collaborative working thereby enhancing supply chain suppliers ability to meet ever increasing requirements of their multiples and larger food service customers. (p.127)	Bord Bia	Medium	Within existing budgets	2010	Bord Bia
6	Development of a pilot 'International Graduate Marketing and Management Programme' for SME's	Fast-track the development of graduates so that they are better positioned to take on 'head of function' roles earlier in their career. (p.128)	EI / FÁS	Medium	From existing resources	2011	EI / FÁS – possibly funded under the Labour Activation Measure
7	EI's 'Leadership 4 Growth' programme to be tailored and marketed to CEOs and MDs within Irish food	Enhance leadership and management competencies of CEOs and MDs – addressing succession issues. (p.131)	EI	High	Yes[55]	2011	EI

[53] These are subject to competing demands (i.e. Growth Fund and/or EI invest committee). EI can support SMEs through the SCM programme and Large companies in carrying out activities in the area of supply chain management, where these are part of an overall business plan, with defined business need and incentive effect, and in the context of value for money.
[54] Client proposals can be advanced on a case-by-case basis.
[55] There are a number of elements of cost – the assessment of feasibility and design of a potential programme coupled with the implementation (company support) cost. Further work would be required to accurately estimate cost basis.

#	Recommendation	Outcome	Stakeholders involved	Priority (High / Medium / Low)	Estimated budgetary implications[52]	Estimated timeframe for establishment / completion	Principal driver
	companies						
8	More widespread promotion and roll-out of programmes like EI's 'Transform Programme' to middle management in food and beverage sector	Enhance leadership and management competencies of the management team – addressing succession issues. (p.132)	EI	High	Yes[56]	TBD EI[57]	EI
9	Develop bespoke modularised interventions to improve commercial acumen of line managers, functional heads (e.g. SCM, NPD and Innovation, trade promotions and key account management) and operatives	Significantly strengthened commercial acumen focused on driving profitability. (p.133)	Bord Bia / EI / Teagasc	Low	Yes	On a needs basis	EI / Bord Bia

[56] Additional capacity on programme could be required.
[57] Targeting of client base within EI food division, recruitment of participants for next available programme, within the context of budgetary limitations.

Table 7.2 Suggestions for the EGFSN

Thematic Area	#	Suggestion	Outcome	Responsibility
Special Initiatives	1	Easier access to information on education and training courses and programmes. (p.122)	Greater awareness of the wide range of education and training programmes and initiatives delivered by third level institutions & development agency via greater connectivity and cross-referral between existing websites (i.e. Qualifax, Careersportal.ie and 'Food Ireland') resulting in a virtual repository of information on courses and programmes and interventions.	The EGFSN suggest that Qualifax could potentially act as champion for this initiative
	2	Promotion of benefit of Networks to the Food and Beverage sector. (p.123)	Improved sharing of knowledge and experience across company boundaries as a means of addressing specific skills and competency issues and increase capacity and capability within a company or organisation.	Skillnets
	3	Development of 'T-shaped' skills; address areas of critical skill gaps in third level programmes; and greater use of industry and state agency representatives in the delivery of courses and modules. (p.123)	Adequate provision of programmes at third level to enable the development of T-shaped skills. Changes to existing programmes or introduction of new modules to meet the identified areas of critical skill gaps i.e. lean manufacturing, SCM, sales, packaging, food marketing, international food policy, business writing skills, project management, finance and commercial acumen, governance & regulation and entrepreneurship. Through modifications or developments of existing programmes and modules. Where in-house capability is not available in these areas, industry and state agency representatives should deliver relevant modules.	Third Level Institutions
Lean Operations	4	Create awareness and communicate the benefits that can be realised through adopting the	Improve competitiveness by the greater adoption of lean principles by companies within the food	EI / Teagasc / Skillnets

Thematic Area	#	Suggestion	Outcome	Responsibility
		principles of lean. (p.125)	and beverage sector.	
	5	Expand and strengthen panel of 'Approved Lean Advisors' in food. (p.125)	Greater consultancy resource base assisting companies in driving lean principles within the organisation.	EI / Other
Supply Chain Management	6	Companies need to invest in the attainment of formal qualifications in SCM at senior levels to ensure an effective co-ordinated approach to SCM. (p.127)	Better promotion of third and fourth level courses pertaining to SCM. Companies to seek out appropriate courses and support and facilitate senior employees participation on such courses.	Third Level Institutions / Companies
Supply Chain Management	7	Promote the benefits of effective SCM, in particular the potential cost reduction opportunities. (p.127)	The greater adoption of SCM by companies within the food and beverage sector.	EI
Innovation	8	Foster research technology 'transfer' and 'absorption' capabilities between Irish food and beverage companies and Irish R&D teams (colleges and research institutions). (p.130)	Commercialisation of innovation and R&D to improve competitiveness and / or give competitive advantage.	Teagasc / EI (Both members of the 'Agri-Vision 2015 Research Sub-Group')
	9	Companies to sharpen and hone NPD teams' skills and effectiveness, leveraging EI and Bord Bia support as appropriate. (p.130)	More effective NPD endeavours and improved return on investment on NPD investment.	EI / Bord Bia
	10	Companies need to establish stronger links with Irish and International research institutions as a means of informing and accessing food related innovation & NPD. (p.130)	Research conducted to better meet the needs of industry. Industry led strategic research agendas developed for each sub-sector and co-ordinated through Agri-vision 2015 Research Sub Group.	Companies
Commercial and Financial Acumen	11	Third level institutions to increase the focus on commercial acumen at third level through offering dedicated modules. (p.133)	Provision of modules to develop and hone financial acumen as required in the performance of functional areas such as: procurement; logistics and SCM; inventory management and control; production and processing; NPD; marketing and promotion; sales; key account management etc.	Third Level Institutions

Table 7.3 Endorsements of Currently Available Development Agency Programmes and Initiatives

	#	Endorsement	Outcome	Responsibility
Lean Operations	1	Endorse EI's 'Lean Initiative' for food & Teagasc's 'Lean Techniques in the Food Industry'. (p.126)	Greater adoption of lean principles by industry to drive competiveness	EI / Teagasc
Internationalisation	2	Endorse the targeting of general EI courses to food and beverage companies: (p.128) International Selling Programme; and Masters in International Business.	Equip middle and senior management in food and beverage companies with the requisite skills to do business overseas.	EI
	3	Endorse EI's National Account Management and Negotiation Skills Development programme. (p.128)	Honing of key account management skills in dealing with multiples and large accounts focusing specifically on the area of negotiation skills.	EI
	4	Endorse the widespread roll-out of Bord Bia's interventions, such as: (p.129) UK Retail Market Entry Programme; UK Food Service Market Entry Programme; Export Preparation Programme (USA); and Brand Forum.	Equip middle and senior management in food and beverage companies with the requisite skills and relevant contacts to do business overseas. Focused on a specific retailer or geography.	Bord Bia
	5	Endorse the introduction of 'short sharp interventions' in response to topical issues and market opportunities for example Bord Bia's[58]: (p.129)	Equip middle and senior management in food and beverage companies with the requisite knowledge and relevant contacts to do business overseas.	Bord Bia

[58] It should be noted that while the above illustrative initiatives are not marketed as training / skill development interventions but instead are geared towards informing and facilitating market entry / penetration strategies, thought leadership and networking opportunities, they are nevertheless beneficial in that they help to hone business development and internationalisation capabilities

	#	Endorsement	Outcome	Responsibility
		Market Report and Alcoholic Beverage Sector Study Visit to Poland + Ukraine; and Market Report and Alcoholic Beverage Sector Study Visit to Mexico.	Focused on a specific geography and food category.	
Internationalisation	6	Endorse IBEC's Export Orientation Programme (EOP) (p.129)	Effective placement of graduates with companies	IBEC
Innovation	7	Endorse Bord Bia's 'Foresight 4 Food' programme. (p.130)	Provides greater consumer insights through the stimulation, ideation and validation of innovation and NPD	Bord Bia
	8	Endorse EI and Bord Bia model deployed in pilot projects such as ' Channel Partners Programme' and 'Strategic Innovation Programme' fostering closer and focused collaboration. (p.131)	Closer and more productive working relationships between retailers and Irish suppliers	EI / Bord Bia

Leadership	9	Endorse Bord Bia's Leadership Summit[59]. (p.132)	Conveys thought leadership and brings new thinking to the table for CEOs	Bord Bia
	10	Endorse BIM's 'Setting up a Seafood Business'. (p.132)	Initiative focused on the nuances of the seafood sector	BIM
Commercial and Financial Acumen	11	Endorse Bord Bia's National Account Management Programme. (p.133)	Honing of key account management skills in dealing with multiples and large accounts.	Bord Bia

Detail relating to the recommendations, suggestions and endorsements summarised in the above tables are provided in the subsequent pages.

[59] It should be noted that while the above illustrative initiatives are not marketed as training / skill development interventions but instead are geared towards informing and facilitating market entry / penetration strategies, thought leadership and networking opportunities, they are nevertheless beneficial in that they help to hone business development and internationalisation capabilities

7.2 Recommendations, Suggestions & Endorsements

7.2.1 More co-ordinated approach in course development, delivery and promotion by state agencies

A number of general themes emerged from the study findings relating specifically to the need for a more collaborative approach across development agencies and the greater promotion and awareness of education and training available to the sector. While the following do not have any direct implications for the skill requirements of the sector, they were nevertheless considered important by consultees as industry-wide issues to be addressed.

The need for greater inter-agency collaboration was raised as an issue, particularly the need for greater co-ordination and cohesion across the agencies with regard to the identification of emerging issues and skill gaps and the provision of solutions. While this appears to be currently happening to some extent, (for example Global Teams (EI & Bord Bia) and EI co-ordination with Teagasc in relation to R&D commercialisation, a more joined-up approach across all state development agencies and with industry and third level institutions would be considered beneficial.

Recommendation VIII in the 2003 report proposed the introduction of 'A National Innovation-in-Education-Exchange (IIEE)', comprising representatives from industry and third level education to ensure curricula met the needs of the sector. Although this particular recommendation was not adopted, the need for the development of such a forum still exists. In light of this, the following recommendation proposes the development of a forum which in addition to third-level institutions and industry would also include development agencies. It is anticipated that by incorporating the proposed forum into an existing committee group, for example the Agri-Vision 2015 Development and Training Sub-Group, it might have greater chance of adoption.

Recommendation 1 - Establishment of "inter-agency, third level institute and Industry forum" (possibly an Agri-Vision 2015 'Development and Training Sub-Group') to discuss and address the ongoing skills, training and development needs of the industry	
Outcome	Less duplication of education and training provision and better collaboration between agencies, third level and industry in the identification of training and the design and delivery of education and training programmes.
Priority	High
Budgetary implications	Using existing resources
Timeframe	Within 6 months
Principal driver	Department of Agriculture, Forestry and Food (DAFF)

Access to education & training information - There are a significant number of programmes and interventions available to the food and beverage sector. However, the general awareness and appreciation of such programmes on the part of industry is generally low. At present there is a very fragmented approach to the provision of information on the education and training programmes delivered by third level institutions, state agencies and private training providers.

A number of websites such as Qualifax, careersportal.ie and 'Food Ireland' (an initiative between UCC, UCD & UL) have been identified as providing this information in part, although one central repository of this information does not exist. In light of these existing sources, there would not appear to be a need for the development of a new separate dedicated education & training portal for the food and beverage sector. Greater connectivity and cross-referral between these websites should be encouraged and the promotion of these websites across the sector would improve the level of awareness of the wide range of programmes available. In light of this, we would suggest a means of easier access to available information.

Suggestion 1 - Easier access to information on education and training courses and programmes	
Outcome	Greater awareness of the wide range of education and training programmes and initiatives delivered by third level institutions & development agency via greater connectivity and cross-referral between existing websites (i.e. Qualifax, Careersportal.ie and 'Food Ireland') resulting in a virtual repository of information on courses and programmes and interventions.
Responsibility	The EGFSN suggest that Qualifax could potentially act as champion for this initiative

While there has been an increase in the number of Skillnets networks related to the food and beverage sector in recent years, the view was expressed that there was a need for greater promotion of the role of industry-led networks as vehicles to increase capacity and capability within a company or network through the sharing of knowledge and experience across company boundaries. In addition there may be an application for networks in relation to awareness-building of lean manufacturing principals and supply chain management (SCM) within the food and beverage sector. We suggest that Skillnets is promoted more to the food sector (see suggestion 2), however, as ever, controls and safeguards should be in place to ensure all networks operate to a sufficiently high standard.

Suggestion 2 – Promotion of benefit of Networks to the Food and Beverage sector	
Outcome	Improved sharing of knowledge and experience across company boundaries as a means of addressing specific skills and competency issues and increase capacity and capability within a company or organisation.
Responsibility	Skillnets

7.2.2 Development of 'T' shaped skills and addressing critical skill weaknesses at 3rd level

Since the 2003 report, third level institutions have made significant advancements in the provision of education appropriate to the needs of industry. Notwithstanding these gains, findings indicate that there is still a need to address the development of 'T' shaped skills via the provision of broad undergraduate courses combined with specialist postgraduate courses or vice versa, and that future programme development should take account of areas of critical skill weakness identified in the previous chapter which are not adequately addressed at present.

Development of 'T' shaped skills - The Expert Group has identified in a number of its reports the need for science and other specific higher education programmes to seek as far as possible, through the use of project work generally and participation in interdisciplinary projects, to expose students to both the need for, and development of; interpersonal skills and basic knowledge and awareness of the wider business functions involved in operating a successful company. The need for this approach applies equally to the food sector in order to provide better rounded individuals. In this regard, a number of the CEOs interviewed highlighted the need for undergraduate and postgraduate programmes that expose students to a wide base of food science, technical and management disciplines so that they have a good understanding of all aspects of the business and their inter-relationships.

Additionally, the need to address a number of areas of critical skill gaps in third level programmes was identified, namely in the areas of: lean manufacturing, supply chain management; sales; packaging; food marketing; international food policy; business writing skills, project management; finance and commercial acumen; governance and regulation; and entrepreneurship. Where third-level institutions don't have the expertise in-house to address the identified skills gaps, industry and state agency representatives could be used to deliver courses and modules. It is not suggested that additional programmes are required, rather new modules focusing on the above subject matters could be made available to students on existing food programmes (either through compulsory or optional modules) and the benefits of such modules to a career in the food sector should be actively promoted.

The EGFSN suggests that the development of 'T-shaped' skills and critical gaps should be addressed by third level institutions when designing and developing courses for the sector.

Suggestion 3 - Development of 'T-shaped' skills; address areas of critical skill gaps in third level programmes; and greater use of industry and state agency representatives in the delivery of courses and modules	
Outcome	Adequate provision of programmes at third level to enable the development of T-shaped skills. Changes to existing programmes or introduction of new modules to meet the identified areas of critical skill gaps i.e. lean manufacturing, SCM, sales, packaging, food marketing, international food policy, business writing skills, project management, finance and commercial acumen, governance & regulation and entrepreneurship. Through modifications or developments of existing programmes and modules. Where in-house capability is not available in these areas, industry and state agency representatives should deliver relevant modules.
Responsibility	Third Level Institutions

Further minor proposals include: more flexible modes of delivery for programmes at third level, particularly through offering more opportunities for part-time studies for undergraduate programmes; more timely accreditation process in some colleges to allow efficient and real-time responses to industry needs; and the enhancement of industry knowledge at third level via work experience initiatives for lecturers in Food & Beverage companies.

7.2.3 Up-skill Operatives and give due recognition and accreditation

The study findings indicate there are a significant proportion of low-skilled workers employed within the food and beverage sector particularly in the meat and poultry processing, seafood and horticulture sectors. Our research indicates that circa 14% of the 50,000 employed in the food and beverage sector have no formal or a primary school education and a further 48% have only a secondary school education, with the most prevalent age cohort being the over 50s. These individuals are considered a vulnerable group within the food and beverage sector, (particularly considering the current economic climate), and as such require special attention in relation to equipping them with transferable skills to increase their employment prospects.

In certain sectors and companies significant upskilling of operatives and supervisors has occurred, within those companies that have implemented Lean and WCM principles. In other countries, such as the US, operative accreditation and licensing is more prevalent and in some cases mandatory. This process of operative accreditation and licensing formally recognises the occupational skills, competencies and standards achieved by the operatives, rendering them more employable on the open market.

In response to this, the development of an accreditation programme for food industry operatives is recommended. The objective of this recommendation is to give recognition to the depth of knowledge associated with food operatives' positions through accredited qualifications such that the status of operatives becomes recognised as one of being a qualified technician. Certain building blocks need to be put in place to support the upskilling and accreditation of operatives, namely:

Recommendation 2a – Develop and roll-out an operative and supervisor accredited upskilling programme.	
Outcome	Enhanced career opportunities for low skilled operatives and supervisors through the provision of transferable skills (i.e. numeracy, literacy, basic IT, communication & interpersonal skills, team-working and English as a foreign language).
Priority	Medium
Budgetary implications	Using existing resources
Timeframe	2010
Principal driver	FÁS (with support from FETAC and NALA)

Recommendation 2b - Develop and roll-out an Operative Technician Accreditation Programme.	
Outcome	A FETAC accredited qualification for operatives recognising on-the-job skills and competencies and experience.
Priority	High
Budgetary implications	Using existing resources
Timeframe	2010
Principal driver	FÁS (with support from FETAC)

The objectives of recommendations 2a and 2b above are to ensure that operatives attain a recognised standard of knowledge that will enhance their performance, transferability and employment opportunities and progression within an organisation. It will be important that the mode of delivery of these proposed initiatives is flexible to suit the needs and preferences of the recipients e.g. a combination of in-house classroom based training and on-the-job training. Furthermore, there may be a role for the Institutes of Technology to facilitate the delivery of the above programmes.

As regards recommendation 3, FÁS currently offers a range of craft apprenticeships for other sectors e.g. construction, car mechanics and printing. In certain craft food areas such as: deboning; chocolatiers; cheese-making; and other artisan crafts, there is a technical and long learning process to acquire the necessary skill level on-the-job. Again, there is no formal recognised accreditation for these craft disciplines, hence our recommendation to develop recognised and accredited 'Craft Accreditations' for this group.

Recommendation 3 - Develop recognised and accredited 'Craft Accreditations' for operatives	
Outcome	A series of formal accreditations for specialised craft areas such as: deboning, chocolatiers, cheese-making and other kindred trades.
Priority	High
Budgetary implications	Using existing resources
Timeframe	2010
Principal driver	FÁS (with support from FETAC)

Recommendations 2b and 3 would probably to best addressed within the context of FETAC's 'Recognition of Prior Learning' scheme.

7.2.4 Embed lean manufacturing principles

The need for companies to embed lean manufacturing principles was highlighted as being important in order for companies to remain competitive in the marketplace. In light of this the following suggestions and endorsements are being made.

Findings from our discussion with CEOs highlighted the need, at industry level, to create awareness of and communicate the benefits that can be realised, through adopting the principles of lean. This might be addressed through seminars, case studies and / or best-in-class visits.

Furthermore, companies must recognise that the adoption of lean requires a cultural shift within an organisation and that senior and middle management will have a significant role in the implementation and roll-out at all levels. Companies will be tasked with training individuals within the organisation (to black and green belt level) as 'Lean Champions' who will in-turn deliver on-the-job training to embed lean principles throughout the organisation. To fully implement the following suggestion a team, not an individual approach, will be crucial.

Suggestion 4 - Create awareness and communicate the benefits that can be realised through adopting the principles of lean	
Outcome	Improve competitiveness by the greater adoption of lean principles by companies within the food and beverage sector.
Responsibility	Enterprise Ireland (EI) / Teagasc / Skillnets

There is a real need for other food companies – large and small – to drive continuous performance improvement programmes within their businesses. However, there is currently a shortage of suitably qualified Lean Advisors with the relevant food sector experience. The essence of our next suggestion is to put in place an adequate supply of Lean Advisors to accelerate adoption of lean manufacturing as the norm. However, the means by which a panel of Lean Advisors in food can be

quickly trained-up and approved and the benefits of adopting lean manufacturing promoted to the industry needs to be addressed.

Suggestion 5 - Expand and strengthen panel of 'Approved Lean Advisors' in food	
Outcome	Greater consultancy resource base assisting companies in driving lean principles within the organisation.
Responsibility	Enterprise Ireland (EI) / Other

Currently EI provide a bespoke in-company, hands-on 'Food Lean Initiative' to its SME clients. Unfortunately resources are somewhat constrained in this area, and the services are restricted to SMEs - large food companies are not able to access this particular initiative. We therefore endorse the approach being adopted by EI in the provision of its Food Lean Initiative to SME companies and feel that the some scaling-up of this value-adding service to this group warrants consideration by EI.

In addition, Teagasc delivers a two day external workshop on 'Lean Techniques in the Food Industry' which we also endorse.

Endorsement 1 - Endorse EI's 'Lean Initiative' for food & Teagasc's 'Lean Techniques in the Food Industry'	
Outcome	Greater adoption of lean principles by industry to drive competiveness
Responsibility	Enterprise Ireland (EI) / Teagasc

7.2.5 Build supply chain management capability to best-in-class standards

The study has found that building Supply Chain Management (SCM) capability to best-in- class standards will be crucial if companies are to offer a flexible and fast response to customer and consumer needs. In response to this we have developed a number of suggestions and recommendations with the aim of helping companies manage their supply chain through the co-ordination of demand planning, forecasting, procurement, scheduling and delivery to achieve better customer service at the least cost.

There would appear to be a number of courses available at third and fourth level pertaining to SCM, although none are currently focused on the food sector. We would encourage that such courses are marketed more pro-actively to food companies e.g. UCC provides a Diploma and MSc in Supply Chain Management.

Additionally, companies also have a role to play in seeking appropriate courses for senior level employees and to support and facilitate their participation on these courses.

In light of these points, the following recommendations and suggestions are being proposed.

Recommendation 4 comprises a number of key elements commencing with an initial company diagnostic and a development of a SCM road-map. Individuals within the organisation would then be trained in SCM (to green belt and black belt level). It is envisaged that this would be provided through external programmes offering a combination of classroom based and in-service training. These SCM Champions will subsequently be tasked with building capability throughout the organisation. It must be recognised by companies that full commitment from all levels within the organisation will be required if this recommendation is to be fully implemented.

A potential solution for SMEs in this regard could involve the adaptation of the EI 'Supply Chain Management Initiative' for the food sector. Large and multi-national companies will need to engage in a similar initiative but due to EI funding restrictions this cost must be borne by the companies themselves.

Recommendation 4 - EI SCM initiative to be tailored and promoted to the food sector	
Outcome	More effective supply chain management resulting in improved competiveness.
Priority	High
Budgetary implications	Within existing budgetary provisions[60]
Timeframe	Existing mechanisms allow support.[61]
Principal driver	Enterprise Ireland (EI)

The purpose of our next recommendation is to maximise the efficiency of the value chain through greater collaborative working. It is envisaged that such an initiative would be centred on one particular retailer, multiple or food service groups at a time, with the overarching objective of identifying and addressing the weak links along the supply chain.

Two similar pilots in the NPD area are underway with M&S and Superquinn, and initiated and supported by EI, Bord Bia and IEA. It is envisaged, therefore, that a similar approach could be adopted for the following proposal.

[60] These are subject to competing demands (i.e. Growth Fund and/or EI invest committee). EI can support SMEs through the SCM programme and Large companies in carrying out activities in the area of supply chain management, where these are part of an overall business plan, with defined business need and incentive effect, and in the context of value for money.
[61] Client proposals can be advanced on a case-by-case basis.

Recommendation 5 - Pilot the development of 'Supply Partner Networks' comprising retailers (with Irish operations), FMCG, Logistics and warehousing companies	
Outcome	Maximise the efficiency of the value-chain through greater collaborative working.
Priority	Medium
Budgetary implications	Within existing budgets
Timeframe	2010
Principal driver	Bord Bia

Another organisation, ECR Ireland, is also involved in promoting efficient consumer response and collaboration along the supply chain.

Suggestion 6 - Companies need to invest in the attainment of formal qualifications in SCM at senior levels to ensure an effective co-ordinated approach to SCM	
Outcome	Better promotion of third and fourth level courses pertaining to SCM. Companies to seek out appropriate courses and support and facilitate senior employees participation on such courses.
Responsibility	Third Level Institutions / Companies

Aside from the skill implications of building capability there is also a need to promote the benefits of effective SCM, in particular the potential cost benefits to be realised and as such we suggest greater promotion of this to companies in the sector.

Suggestion 7 - Promote the benefits of effective SCM, in particular the potential cost reduction opportunities	
Outcome	The greater adoption of SCM by companies within the food and beverage sector.
Responsibility	Enterprise Ireland (EI)

7.2.6 Roll-out internationalisation initiatives for executives and graduates

Findings indicate the need to equip graduates and indeed executives at all levels with the requisite skills to work effectively in international markets, particularly in the areas of commercial sales and negotiation; key account management; and economic and regulatory aspects of international trade and globally traded commodities.

Many large Irish food companies have developed their own graduate management development programmes. Some, such as the Kerry Group's programme, are very well regarded and recognised as providing the platform for the identification and development of key talent. SMEs, due to their small scale, are unable to support such a programme of their own accord. The proposed

'International Graduate Marketing and Management Programme for SMEs' is focused on establishing a comparable programme, which SMEs could collectively participate in and benefit from.

It is envisaged that such a programme would comprise:

- A two year programme for graduates recruited by Irish food and beverage companies – combining classroom based training, best-in-class international company visits and on-the-job experience.
- Training delivered on a block release basis e.g. 2 days per month.
- 'Year One' would focus on soft skills while 'Year Two' would focus on developing commercial skills and critical international marketing and commercial experience in areas such as food policy, negotiation, sales, lean, SCM etc.
- A formal accreditation would be awarded on completion of the two year programme and a company project.

The programme would be co-funded by industry and government. The recent budget, announced in April 2009, has made a provision for funding of training for un-employed, upskilling and training programmes as part of a Labour Activation Measure 'Work Experience Scheme'. It is suggested that there could be potential for the development of such a programme under this measure.

It is envisaged that this will be driven by FÁS, however, EI might have a role in the development and promotion of such a programme.

Recommendation 6 - Development of a pilot 'International Graduate Marketing and Management Programme' for SME's	
Outcome	Fast-track the development of graduates so that they are better positioned to take on 'head of function' roles earlier in their career
Priority	Medium
Budgetary implications	From existing resources
Timeframe	2011
Principal driver	FÁS to explore under the Labour Activation Measure 'Work Experience Scheme'

In addition to this proposed programme, we believe a number of existing programmes offered by EI, Bord Bia and IBEC provide opportunities for a wider application across the food and beverage sector. Companies also expressed a requirement for 'short sharp interventions' to address 'topical issues'. Endorsements relating to these are detailed in the subsequent paragraphs.

EI offers a range of initiatives for companies currently doing or interested in doing business overseas. We endorse the promotion of such programmes more specifically to food and beverage

companies. Given the complexities and nuances pertaining to the food industry it will be important that aspects of these programmes are tailored for the needs of the Food & Beverage sector.

Endorsement 2 - Endorse the targeting of general EI courses to food and beverage companies: International Selling Programme; and Masters in International Business.	
Outcome	Equip middle and senior management in food and beverage companies with the requisite skills to do business overseas.
Responsibility	Enterprise Ireland (EI)

We also endorse EI's pilot 'National Account Management and Negotiation Skills Development' programme, and recommend greater promotion of these to the sector as a means of 'internationalising' companies to do business overseas.

Endorsement 3 - Endorse EI's 'National Account Management and Negotiation Skills Development' Programme.	
Outcome	Honing of key account management skills in dealing with multiples and large accounts focusing specifically on the area of negotiation skills.
Responsibility	Enterprise Ireland (EI)

Bord Bia also offer a number of programmes designed to equip companies entering the UK market with the support, contacts and market intelligence needed to enter new channels (retail, food service and manufacturing) and open new accounts therein, namely the 'UK Retail Market Entry Programme', 'UK Food Service Market Entry Programme' and 'Export Preparation' programme (USA). These programmes are delivered via workshops, seminars and market visits as well as providing tailored research and mentoring support. We would suggest that these programmes have application for a wider-scale roll-out to other EU multiples, food service groups and large manufacturing and industrial companies.

Bord Bia has also recently launched a Marketing Fellowship Programme in association with the UCD Michael Smurfit Graduate Business School.

Where numbers are small, or interest in a particular geography is low, a more individual approach for example Bord Bia's 'Partner Account Plans' (an extension of its Market Place Road-show) could be considered. Furthermore, we endorse the 'Brand Forum' development programme which helps companies build their business through branding.

Endorsement 4 - Endorse the widespread roll-out of Bord Bia's interventions, such as: UK Retail Market Entry Programme; UK Food Service Market Entry Programme; Export Preparation Programme (USA); and Brand Forum	
Outcome	Equip middle and senior management in food and beverage companies with the requisite skills and relevant contacts to do business overseas. Focused on a specific retailer and geography.
Responsibility	Bord Bia

The ability to quickly develop and mobilise the delivery of short interventions to the food and beverage sector in response to topical or current issues and market opportunities would be considered of benefit. Such interventions could be delivered either in-house or externally by experts in the particular areas. Therefore, we endorse initiatives such as Bord Bia's Market Report and Study Visits.

Endorsement 5 - Endorse the introduction of 'short sharp interventions' in response to topical issues and market opportunities for example Bord Bia's: Market Report and Alcoholic Beverage Sector Study Visit to Poland and Ukraine; and Market Report and Alcoholic Beverage Sector Study Visit to Mexico[62]	
Outcome	Equip middle and senior management in food and beverage companies with the requisite knowledge and relevant contacts to do business overseas. Focused on a specific geography and food category.
Responsibility	Bord Bia

Finally, we endorse the IBEC Export Orientation Programme (EOP) as an effective means of placing graduates with companies. The 12 month graduate placement programme places graduates of all disciplines in Irish companies with a minimum of six months spent outside of Ireland honing their export skills. Typically, such placements are with large organisations with international operations. The retention rate of graduates with sponsor companies is 86% with the majority of the remaining 14% gaining employment in another company or returning to further education and training.

Endorsement 6 - Endorse IBEC's Export Orientation Programme (EOP)	
Outcome	Effective placement of graduates with companies
Responsibility	IBEC

62 It should be noted that while the above illustrative initiatives are not marketed as training / skill development interventions but instead are geared towards informing and facilitating market entry / penetration strategies, thought leadership and networking opportunities, they are nevertheless beneficial in that they help to hone internationalisation capabilities

7.2.7 Hone innovation and NPD competencies to underpin greater success on NPD introductions in terms of financial returns and product performance

The study findings suggest that there is a need to hone innovation and NPD competencies to underpin greater success on NPD introductions in terms of financial returns and product performance in particular portfolio management, industrial design, commercial business case assessment and identification and interpretation of consumer and market insights.

The following suggestions and endorsements have been developed with the objective to improve the skills of multi-disciplinary NPD teams so that they are better able to evaluate NPD projects and select winners, whether it is via incremental or breakthrough innovation or NPD.

Allied to this, the ability of companies to transpose technology know-how from an external party (i.e. via research institutions or under a licensing agreement) and absorb it into the business setting effectively is not without its challenges.

Our first suggestion relates to the transfer of research between Irish R&D teams and industry to improve competiveness.

Suggestion 8 - Foster research technology 'transfer' and 'absorption' capabilities between Irish food and beverage companies and Irish R&D teams (colleges and research institutions)	
Outcome	Commercialisation of innovation and R&D to improve competitiveness and / or give competitive advantage.
Responsibility	Teagasc / EI (Both members of the 'Agri-Vision 2015 Research Sub-Group')

Since the 2003 study, companies seem to have become more adept at developing and bringing new products to market – however, companies reported that they are often disappointed with the performance of such new products. There is a real need to sharpen and hone the NPD team's skills around: the research and interpretation of deep consumer and customer insights; the development and validation of market demand assumptions in relation to volume and pricing policy; and the evaluation and selection of winners so that NPD efforts result in greater success in the marketplace. Essentially, given the complexity involved, a successful intervention in this area may be best delivered by an experienced mentor, working closely with the NPD team over a period of time, or by working closely with EI. In this regard, it should be noted that EI is the agency with responsibility for driving in-company R&D and innovation, and company and institutional collaboration and the commercialisation of research.

Bord Bia also supports companies in the provision of market information and insights to better inform company NPD.

Suggestion 9 - Companies to sharpen and hone NPD teams' skills and effectiveness, leveraging EI and Bord Bia support as appropriate.	
Outcome	More effective NPD endeavours and improved return on investment on NPD investment.
Responsibility	EI / Bord Bia

In addition to the above two suggestions we would urge that the establishment of stronger links between academia and industry with Irish and international research institutions should also be considered.

Suggestion 10 - Companies need to establish stronger links with Irish and International research institutions as a means of informing and accessing food related innovation & NPD	
Outcome	Research conducted to better meet the needs of industry. Industry led strategic research agendas developed for each sub-sector and co-ordinated through Agri-vision 2015 Research Sub Group.
Responsibility	Companies

Our research has indicated the need for food companies to develop deeper consumer insights independently of the retailer so they are not a follower but a leader. Bord Bia's Foresight 4 Food' programme encourages food and drink companies to be more consumer focused in their NPD & innovation process and as such we are endorsing this programme.

Endorsement 7 - Endorse Bord Bia's 'Foresight 4 Food' programme	
Outcome	Provides greater consumer insights through the stimulation, ideation and validation of innovation and NPD
Responsibility	Bord Bia

EI and Bord Bia are currently piloting two innovation programmes involving Irish food companies, namely the 'Strategic Innovation Programme' with Superquinn and the 'Channel Partners Programme' with the Irish Exporters Association and the Welsh Development Agency with M&S. These programmes are considered an effective way of connecting retailer and consumer insights and needs with companies' innovation endeavours – leading to more successful product introductions. It is recommended that these models are further deployed across other product categories, involving the same and other multiples and food service companies (with existing relationships and business base in Ireland) and additional suppliers.

Endorsement 8 - Endorse EI and Bord Bia model deployed in pilot projects such as 'Channel Partners Programme' and 'Strategic Innovation Programme' fostering closer and focused collaboration	
Outcome	Closer and more productive working relationships between retailers and Irish suppliers
Responsibility	Enterprise Ireland (EI) / Bord Bia

In addition to the endorsements above, we feel the collaborative nature of EI and Teagasc Partner Networks and EI and Bord Bia's Global Teams and their derived benefits to companies involved in innovation and NPD, warrants greater promotion.

7.2.8 Address succession issues through the provision of a fast track programme for current and future leaders

During our interview programme, issues relating to leadership and succession planning were raised by many CEOs, with related questions centred around – "how can the leadership skills at CEO level be strengthened? and what kind of intervention is required to fast-track the development of the C-suite of Executives under CEO level and the management team below that level again?".

Allied to this, a number of CEOs expressed concern pertaining to the likely "burn-out impact" which the current recession is having, and that, post-recession, companies will need new management with the energy to drive the business forward. At the same time we are aware of the very high regard that EI's 'Leadership 4 Growth' programme (which is targeted at CEOs) has earned in other sectors (i.e. software, life-sciences, construction) and the reputation of EI's Transform Programme which is targeted at senior management.

In light of this we believe there is a need to provide a leadership development and senior management programme to current and future leaders with the objective of developing strong leaders in the Food & Beverage industry and to ensure a pipeline of business leaders for the future.

The following recommendations and endorsements have been developed to address these requirements.

The recommendations respond to the fact that the Leadership 4 Growth programme is not currently offered to the food and beverage sector and only a small number of companies from within food and beverage sector have undertaken the Transform programme in the last two years. Therefore we propose that these programmes be either tailored or require greater promotion or roll-out to the sector.

Recommendation 7 - EI's 'Leadership 4 Growth' programme to be tailored and marketed to CEOs and MDs within Irish food companies	
Outcome	Enhance leadership and management competencies of CEOs and MDs – addressing succession issues.
Priority	High
Budgetary implications	Yes[63]
Timeframe	2011
Principal driver	Enterprise Ireland (EI)

Recommendation 8 - More widespread promotion and roll-out of programmes like EI's 'Transform Programme' to middle management in Food and Beverage sector.	
Outcome	Enhance leadership and management competencies of the management team – addressing succession issues.
Priority	High
Budgetary implications	Yes[64]
Timeframe	TBD EI[65]
Principal driver	Enterprise Ireland (EI)

Furthermore, we endorse Bord Bia's 'Leadership Summit' for providing the forum to convey thought leadership and new thinking and BIM's 'Setting up a Seafood Business' which is aimed at potential owners and managers of companies in the Seafood sector.

Endorsement 9 - Endorse Bord Bia's 'Leadership Summit'[66]	
Outcome	Conveys thought leadership and brings new thinking to the table for CEOs
Responsibility	Bord Bia

Endorsement 10 - Endorse BIM's 'Setting up a Seafood Business'	
Outcome	Initiative focused on the nuances of the seafood sector
Responsibility	BIM

[63] There are a number of elements of cost – the assessment of feasibility and design of a potential programme coupled with the implementation (company support) cost. Further work would be required to accurately estimate cost basis.
[64] Additional capacity on programme could be required.
[65] Targeting of client base within EI food division, recruitment of participants for next available programme, within the context of budgetary limitations.
[66] It should be noted that while the above illustrative initiatives are not marketed as training / skill development interventions but instead are geared towards informing and facilitating market entry / penetration strategies, thought leadership and networking opportunities, they are nevertheless beneficial in that they help to hone internationalisation capabilities

Develop commercial acumen across the organisation through bespoke modularised programmes.

The profit margins within most sectors of the food and beverage industry are generally low with the difference between a satisfactory or poor operating profit being, to a large extent, reflective of the tightness of the management, financial and cost control regime in place.

Ireland is generally regarded, both nationally and internationally, as a good and reputable source of agri-food and food products, and as highlighted earlier in this report, the world demand for food is ever increasing. Against this backdrop, there is a real opportunity for Ireland to position itself as a competitive and sustainable source of food. However, management and staff across all functional areas need to be more acutely aware of the financial consequences and impact that their areas and the decisions that they make have on working capital and profit margins. As such, the commercial acumen of managers involved in areas such as: procurement; logistics and SCM; inventory management and control; production and processing; NPD; marketing and promotion; sales; key account management etc, needs to be significantly developed and honed.

Understanding the cost and profit drivers of the business should not just be the preserve of the financial, management and cost accountants. The objective for the proposed recommendation 9 is to significantly develop and hone the financial and commercial skills and competences of multi-functional teams within Food & Beverage companies such that their more informed decisions and actions have a direct and positive impact on the financial performance of the business.

While operatives are not typically party to financial decision-making, nevertheless their actions and decisions on-the-job may have financial and performance consequences. As such, the benefits of cascading down a culture and appreciation of commercial acumen to operative level should not be overlooked. Where appropriate, interventions to hone commercial acumen across the board should be inclusive of operatives. The following recommendation, suggestion and endorsements aim to address these requirements.

Our final recommendation relates to the development of bespoke modularised interventions by the relevant development agencies focusing on commercial acumen.

Recommendation 9 - Develop bespoke modularised interventions to improve commercial acumen of line managers, functional heads (e.g. SCM, NPD and Innovation, trade promotions and key account management) and operatives.	
Outcome	Significantly strengthened commercial acumen focused on driving profitability
Priority	Low
Budgetary implications	Yes[67]
Timeframe	On a needs basis
Principal driver	Enterprise Ireland (EI) / Bord Bia / Teagasc

[67] Provided on an identified needs basis within existing resources.

As identified in the research findings there is a need for graduates entering the sector to have a greater awareness and understanding of commercial and financial acumen skills in order to equip them to make more informed decisions. In light of this we suggest that universities and colleges should incorporate these into food and beverage courses by developing and introducing dedicated modules.

Suggestion 11 - Third level institutions to increase the focus on commercial acumen at third level through offering dedicated modules	
Outcome	Provision of modules to develop and hone financial acumen as required in the performance of functional areas such as: procurement; logistics and SCM; inventory management and control; production and processing; NPD; marketing and promotion; sales; key account management etc.
Responsibility	Third Level Institutions

Key account management continues to be a challenge with sales, marketing and promotions people coming under a new wave of pressure from the multiples. While we are aware of Bord Bia's 'National Account Management' programme, we recommend greater promotion of this to the sector as a means of building capability amongst Irish companies in dealing with the multiples.

Endorsement 11 - Endorse Bord Bia's National Account Management Programme	
Outcome	Honing of key account management skills in dealing with multiples and large accounts.
Responsibility	Bord Bia

Furthermore, we are aware that Bord Bia, under their Vantage Plus programme, are planning to roll-out a financial aspect to this programme later this year.

Appendices

Appendix 1.1 Progress Made on Issues & Recommendations in 2003 EGFSN Report

Employer Focused Initiatives

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
1. Management to adopt a strategic approach to HRD	The food industry needs to adopt a more strategic approach to its corporate development and accordingly, recognise the importance of strategic HRD in underpinning and delivering on business plans. Companies need to be better informed on the importance of the HRD – strategy link. This is a key role for the Enterprise Ireland Development Adviser. Executive programme for senior management, concentrating on strategic management in the food industry A communication programme needs to be developed to inform and convince management of the importance of training in moving the business forward	Individual company level, IBEC IMI EI/FÁS/IBEC EI/FÁS/IBEC	**Industry**[68]**:** Large companies tend to realise the benefits of training more so than SMEs - greater awareness of the need to have a HRD (Human Resources Development) Plan, but the current economic situation will have a bearing on levels of expenditure on HRD and training. **EI:** Enterprise Ireland Development Advisors have made good progress in this respect. Each company seeking funding from E.I. must submit a HRD plan.
2. Senior Management Training	Awareness campaign to promote the value of training at senior level	IBEC	**IBEC:** IBEC's human resource group actively promotes "life long learning".
3. Companies need to develop the HRD Function	Individual companies should work, in consultation with ICTU, to bring about: Greater resource commitment to the HR function. Formalisation of the recruitment process. Development of precise job specifications. Formalised induction programme. Continuous appraisal and assessment to facilitate career development	ICTU / Individual Companies	**Industry:** There would appear to be a greater focus by the larger companies in relation to the recruitment and selection process of operatives and staff.
4. Employer of Choice	IBEC, in conjunction with Teagasc and third level colleges, should initiate an image development programme for food sector communicating its attractiveness as a career opportunity. It should have a particular focus on attracting second level students into (a) relevant third level food courses and (b) attracting graduates into food sector employment	IBEC Teagasc Third Level Colleges	**Teagasc:** Active in promoting farming as an option and in the provision of training. Believe that this recommendation should really be the role of IBEC and the Food & Drink Federation. **IBEC:** IBEC believe their focus is as a policy maker as opposed to a promotion agency.

[68] Industry up-dates based on feedback from interviews with CEOs / Senior Management of food companies

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
			Issues continue to prevail with a high percentage of food graduates not entering the sector post qualification.
5. Graduate Food Fast Track Programme	Development and promotion of a Graduate Food Fast Track Training Programme, centred on in-company experience, complemented by formal, external modules on critical topics e.g. food safety, team-working, should be developed by the relevant education and training providers for the full range of food companies and sectors. The programme should highlight the benefits at employer level.	FÁS/EI/ Teagasc and relevant education and training provider(s)	**Teagasc:** No evidence to date of a course targeted at graduates working in the food industry. However, Food Graduate Development Programme (joint initiative by UCC, UCD & Teagasc, driven by DAFF) was introduced in 2008, which offers a series of relevant modules to food PhD students to broaden their knowledge. **FÁS:** FÁS in conjunction with UCC have developed a number of training programmes as follows: ➢ Diploma in Food Science & Technology ➢ Certificate in Meat Technology ➢ Diploma in Meat Technology ➢ Animal Welfare in Meat Processing ➢ Diploma in Business Management for the Food Sector All of the above programmes which are based on the needs of industry are promoted throughout the industry and are available to all companies in the food sector regardless of their size. All of the above programmes carry accreditation.

Employee Focused Initiatives

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
6. Partnership Approach	IBEC and ICTU should jointly undertake the promotion and encouragement of life-long learning to employees, better communication on training needs and expected benefits.	IBEC ICTU	**IBEC:** through its Human Resource group is active in promoting life long learning. **ICTU:** report implementation to some extent in relation to this recommendation.
7. Employee Focused Communication Initiative	A promotional campaign on the benefits of training and accreditation, targeting employees, should be undertaken by ICTU.	ICTU	**Industry:** Leading companies are suggesting that an accredited qualification would be a welcome development. An accredited course provides the employer with the confidence that the employees have attained a

			good standard. Increasingly the leading companies are looking at raising the knowledge level of employees. Employee participation is not a problem although some companies still believe a national campaign promoting up -skilling would be welcomed. **ICTU:** ICTU report implementation to some extent in relation to this recommendation

Third Level Education Initiatives

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
8. National Innovation in Education Exchange	A National Innovation-in-Education-Exchange (IIEE), consisting of members drawn from the third level sector and industry, should be established to ensure that college curricula development takes industry requirements more fully into account.		IIEE not established. Some colleges have their own Industry Advisory Boards which comprise industry representatives (generally from larger companies) and informally engage with industry through work placements, research, sponsorship, guest lecturers and individual lecturers linkages with industry.
9. New Undergraduate Approach	Third level colleges should ensure that: (a) At undergraduate level, all food-related courses include modules on food hygiene and food safety; and (b) In science and technology subjects, interpersonal/people/team-working skills should be enhanced via teaching methods used.	Third level colleges HEA HETAC	(a) Based on interviews with four leading third-level institutions all food related programmes would now appear to include modules on food safety and hygiene. (b) UCC and UCD courses focused on competencies. Interpersonal, people and team working skills enhanced through group projects, presentations, etc.
10. General Management Under graduate Course	Consideration should be given by third level colleges, to supplying graduate intake into the food sector possessing general management skills, covering the three main functional areas of food science, business and engineering.	Third level colleges HEA HETAC	Some evidence of programmes being delivered or in development at third-level which cover these three functional areas (e.g. UCC and DIT)
11. Formally Defined Work Placements	A structured, formally defined programme of activities for work placements should be developed as a central, examinable element of certain undergraduate programmes. The IIEE should initiate this recommendation. Elements of this would be: (a) A code of practice for work placements (b) Domestic and overseas work placements to be further developed, in partnership with industry, to enhance student experience (c) Grading/examination of such placements to be introduced, cognisant of the difficulties of validating in-company experience.	IIEE Third Level Colleges	**Third Level Institutions:** Significant progress since 2003. All third level institutions interviewed appear to be strong in this area. Grading (i.e. Pass or Fail) in place, compulsory to pass to attain degree. Several methods of reviewing student performance at end (employer feedback, student presentation, student report).

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
12. Specialist Postgraduate Programmes	(a) Existing postgraduate programmes, where appropriate, should be adapted by the third level colleges, to include core modules on commercialisation of Food NPD and Food Sales/Marketing. (b) A course should be developed in functional foods/nutrition/medicine	Third Level Colleges	**Third Level Institutions:** (a) Greater focus on these areas in recent years across the colleges interviewed in recent years. All have modules on NPD, innovation, marketing. Sales is still weak across the colleges interviewed. (b) Greater focus on nutrition. New BSc on Human Nutrition starting in UCD, BSc Nutritional Sciences is very popular in UCC.
13. Build advanced R&D capabilities and skills	Science Foundation Ireland (SFI) should be requested to explore a Food Technology/Biotechnology/ Medicine/Nutrition R&D programme – possibly as an element within the Biotechnology Programme.	SFI	SFI, under their 'Lifesciences Research Programme', provide funding for agri-food research (related to health areas) to a number of the colleges including UCC, UCD, NUIG and TCD. A number of programmes covering biotechnology or nutrition are available at third level [None however, appear to have been developed in conjunction with SFI].
14. Review R&D Dissemination	The Department of Agriculture and Food and Teagasc, in conjunction with IBEC, should review the approach and methods used to disseminate State and EU sponsored food industry research, with a view to improving communications with industry, technology transfer and industry responsiveness.	DAFF Teagasc IBEC	DAFF has initiated a program at PhD level which includes industry experience as part of a 3 / 4 year PhD program. EI and Teagasc meet in the form of Partner Networks re R&D projects with the aim of linking to industry. IBEC together with DAFF has established an "Industry lead research committee" with the purpose of informing the research agenda and having a more active role in the selection of projects at proposal stage. RELAY continues to disseminate information on publicly funded food research from 18 Irish research institutes and universities.
15. Development Options – Second Level	The IIEE should seek to stimulate debate on: (a) The introduction of a programme at Applied Leaving Cert level focusing on basic/elementary management principles; (b) Programme(s) focusing on food science/processing with significant practical focus.	IIEE	IIEE not established.

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
16. Third Level Development Options	The IIEE should seek to stimulate debate on the introduction programmes (cert/diploma) at IT level which would focus on the practical/theory/business skills associated with the craft sectors of the food industry, such as meat and dairy (cheese) processing.	IIEE	IIEE not established.

Training Initiatives

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
17. Critical Areas of Skills Weakness	In response to the skills gaps identified, the enterprise development agencies (FÁS, Enterprise Ireland) in conjunction with Teagasc and third level institutions, should, as appropriate: (i) Develop, expand and promote courses for beginner/intermediary/advanced companies on R&D Innovation Management, HACCP for HRD and Commercialisation of Ideas, such as those run by the various Teagasc Centres and UCC courses; (ii) Develop Best-in-Class Production Efficiency Programmes, particularly for commodity sectors. Dedicated sales, marketing food safety management and customer relationship management courses, specifically for SMEs should also be introduced; and (iii) Prioritise IT skills acquisition, in particular those skills underpinning supply chain management/ efficiency and logistics competencies.	FÁS EI Teagasc Third Level Institutions	**Third Level Institutions / Development Agencies:** (i) Appears to be increased supply of programmes dealing with innovation, HACCP and commercialisation of ideas across the development agencies and / or third-level institutions. (ii) Number of relevant marketing programmes at third-level however none are targeted at SME's. Bord Bia currently run a National Account Management programme, EI are piloting a similar programme this year. In relation to NPD and innovation Bord Bia provide two programmes, namely the 'Foresight 4 Food' and 'Next Level Programme'. (iii) Particular focus on SCM / logistics in UCC. Programmes targeted at those in work, and SCM modules are incorporated into some undergraduate programmes. EI also provide a SCM initiative to SMEs. **FÁS:** FÁS in conjunction with Teagasc deliver training and development to companies of all sizes covering food safety and HACCP. These programmes are available to the food sector and are delivered based on the needs of industry All of the above programmes carry accreditation. In addition, FÁS, in conjunction with the various stake holders such as EI, has developed a training and development programme for food innovators in the

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
			prepared consumer foods sector. This programme is targeted at food technologists.
18. Immigrant Induction Programmes	Specialist induction programmes for immigrant workers should be further developed by FÁS, in consultation with Enterprise Ireland and the FSAI, and delivered in various languages to immigrant workers.	FÁS EI FSAI	**Industry:** Typically in-company training. Some companies have promoted non-nationals into supervisory roles and the non-nationals are doing a lot of the skilled work, no great language barriers being experienced. **FÁS:** The industrial meat sector has a substantial number of non-nationals working in the various meat sub-sectors. FÁS in conjunction with the various stake -holders has developed a number of training and development programmes covering the following meat sub-sectors: - Beef; - Pig meat; and - Sheep meat. This training is delivered in-company by qualified company trainers and assessors and covers all the skill requirements for meat processing in both abattoirs and boning halls. All of the above programmes carry accreditation.
19. Expansion of "Train-the-Trainer" Model	The existing FÁS model for in-company training and accreditation, approved by regulatory bodies and industry, and currently operating in the industrial meat sectors, should be rolled out to other food sub sectors.		**Teagasc:** This is predominantly in the meat sector however this will be further investigated. **FÁS:** These programmes have been rolled out to all meat plants.

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
20. National Centres of Training Excellence	National Centres of Training Excellence should be developed for meat, dairy, consumer foods and biotechnology, building on current funding supports and the existing training and research centres such as Moorepark (dairy research and training); the National Food Centre (meat/consumer foods research and training) and the UCC Food Training Centre and Food Service Technology Faculty (food biotech research and training). These centres should work with Enterprise Ireland in the area of commercialisation of the results of the research.		Not developed.

Policy and Training Infrastructure Initiatives

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
21. Client Communications Campaign	The roles of the state agencies involved in training and company development need to be more clearly defined, in particular those of FÁS and Enterprise Ireland. Following from this, a focused trade communication campaign should be undertaken, to outline the roles of the various state agencies in this area and to explain various training/HRD supports available to companies.	FÁS EI	There still needs to be greater cohesion and clarity regarding services provided by agencies involved in training, development and skills interventions.
22. Further Development of FÁS/EI Executives on Skills Assessment	Within the context of the significant drivers-of-change, FÁS executives and Enterprise Ireland's Development Advisors should undergo a focused, specific training programme on identifying skills weaknesses and assessing training needs.	FÁS EI	**EI:** Company skills assessments carried out by the HRD teams in EI. **FÁS:** FÁS are currently in the process of carrying an ITN on the skill needs of the food industry within the areas categorised as low skilled. This process has been prompted by the current industrial environment.
23. National Centralised Database	A national, centralised data source of all accredited education and training information, including both accredited trainers and training programmes, should be established by FÁS and Enterprise Ireland, in consultation with Teagasc.	FÁS EI Teagasc	No central repository developed however there have been a number of separate initiatives since 2003. QualifaX currently developing a database for all programmes accredited under the National Qualifications Framework Careersportal.ie is another sourcesof advice. 'Food Ireland' is a food initiative between UCD, UCC & UL
24. Food Industry Induction	An induction qualification for the food industry should be introduced, to cover such areas as employee health and safety in the workplace, food safety, hygiene, basic numeracy, etc.	IBEC/FÁS EI	**FÁS:** FÁS have developed a training programme which acts as an introduction to food safety and hygiene for food handlers. This programme is available to all persons employed in the food sector with a recommendation that it should be completed as part of the employee's induction into the company. This programme carries accreditation.
25. Expansion of Skillnets	The Department of Enterprise, Trade and Employment should undertake that: (a) The Skillnets initiative, which it is considered a good example of a practical, company-focused solution to training needs, should be further expanded and promoted; (b) Better communication and promotion of the initiative to industry should also be undertaken.	DETE	**Industry:** Skillnets appear to be well received by industry – but could possibly do with further promotion within the food sector.

Proposed Strategy	Key Activities	Organisation Responsible	Progress Made
26. Evaluation of In-Service Training	Formal evaluation and publication of the effectiveness, relevance and quality of in-service training programmes provided using state grants, should be undertaken by FÁS and Enterprise Ireland, in conjunction with IBEC.	FÁS EI IBEC	**IBEC:** Not considered a core area for IBEC, however in other sectoral areas IBEC saw useful initiatives such as a "scholarship system" in the engineering sector. This scheme was demand driven by the industry where the company identified a set of needs and worked with FÁS in developing solutions. **EI:** EI evaluate the effectiveness of their training programmes. **FÁS:** FÁS in conjunction with the various food working parties develop, monitor and evaluate all training programmes before rolling them out to industry.
27. Review of HRD Grant Procedures	Enterprise Ireland should review the qualification criteria and application processes involved in its grant aid for HRD, with a view to both ensuring their relevance to the sector and streamlining of the application process.	EI	Update required from EI

Appendix 2.1 EGFSN Membership

Ms. Una Halligan, Director, Government & Public Affairs for Ireland, Hewlett Packard, Chairperson

Ms. Marie Bourke, Head of Human Capital and Labour Market Policy, Forfás (also Head of Secretariat)

Ms. Inez Bailey, Director, National Adult Literacy Agency

Mr. George Bennett, IDA Ireland

Ms. Liz Carroll, Training and Development Manager, ISME

Mr. Ned Costello, Chief Executive, Irish Universities Association

Ms. Margaret Cox, Managing Director, ICE Group

Mr. Tony Donohoe, Head of Education, Social and Innovation Policy, IBEC

Mr. Brendan Ellison, Principal Officer, Department of Finance

Ms. Anne Forde, Principal Officer, Department of Education and Science

Mr. Roger Fox, Director of Planning and Research, FÁS

Mr. Pat Hayden, Principal Officer, Department of Enterprise, Trade and Employment

Mr. David Hedigan, Manager, Sectoral Enterprise Development Policy, Enterprise Ireland

Mr. Gary Keegan, Director, Acumen

Mr. John Martin, Director for Employment, Labour & Social Affairs, OECD

Mr. Dermot Mulligan, Assistant Secretary, Department of Enterprise, Trade and Employment

Mr. Frank Mulvihill, Former President, Institute of Guidance Counsellors

Dr. Brendan Murphy, President, Cork Institute of Technology

Mr. Alan Nuzum, CEO, Skillnets

Mr. Muiris O'Connor, Higher Education Authority

Mr. Peter Rigney, Industrial Officer, ICTU

Mr. Martin Shanahan, Divisional Manager, Science Technology and Human Capital, Forfás

Ms. Jacinta Stewart, Chief Executive, City of Dublin VEC

Appendix 2.2 Steering Group Membership

Peter Rigney, Irish Congress of Trade Unions (Chair)

Alan Nuzum, Skillnets

John McGrath, Skills and Labour Market Research Unit, FAS

Mairead Dunne, Enterprise Ireland

Marian Byrne, Department of Agriculture, Fisheries and Food

Neil Cooney, Enterprise Ireland

Pat Daly, Teagasc

Paul Kelly, IBEC

Tara McCarthy, Bord Bia

Marie Bourke, Forfás

Ailish Forde, Forfás

Kay Hallahan, Forfás

Appendix 3.1 Publications by the Expert Group on Future Skills Needs

Report	Date of Publication
Skills in Creativity, Design and Innovation	November 2009
Monitoring Ireland's Skills Supply: Trends in Education/Training Outputs 2009	November 2009
National Skills Bulletin 2009	July 2009
A Quantitative Tool for Workforce Planning in Healthcare: Example Simulations	June 2009
The Expert Group on Future Skills Needs Statement of Activity 2008	June 2009
A Review of the Employment and Skills Needs of the Construction Industry in Ireland	December 2008
Statement on Raising National Mathematical Achievement	December 2008
National Skills Bulletin 2008	November 2008
All-Island Skills Study	October 2008
Monitoring Ireland's Skills Supply: Trends in Education/Training Outputs 2008	July 2008
The Expert Group on Future Skills Needs Statement of Activity 2007	June 2008
Future Requirement for High-Level ICT Skills in the ICT Sector	June 2008
Future Skills Needs of the Irish Medical Devices Sector	February 2008
Survey of Selected Multi-National Employers' Perceptions of Certain Graduates from Irish Higher Education	December 2007
The Future Skills and Research Needs of the International Financial Services Industry	December 2007
National Skills Bulletin 2007	November 2007
Monitoring Ireland's Skills Supply: Trends in Educational/Training Outputs	June 2007
Tomorrow's Skills: Towards a National Skills Strategy	March 2007
National Skills Bulletin 2006	December 2006
Future Skills Requirements of the International Digital Media Industry: Implications for Ireland	July 2006
Careers and Labour Market Information in Ireland	July 2006
Skills at Regional Level in Ireland	May 2006
SME Management Development in Ireland	May 2006
Monitoring Ireland's Skills Supply: Trends in Educational/Training Outputs	January 2006
Data Analysis of In-Employment Education and Training in Ireland	December 2005
National Skills Bulletin 2005	October 2005

Skills Needs in the Irish Economy: The Role of Migration	October 2005
Languages and Enterprise	May 2005
Skills Requirements of the Digital Content Industry in Ireland Phase I	February 2005
Innovate Market Sell	November 2004
The Supply and Demand for Researchers and Research Personnel	September 2004
Literature Review on Aspects of Training of those at Work in Ireland	June 2004
Financial Skills Monitoring Report	November 2003
Responding to Ireland's Growing Skills Needs - The Fourth Report of the Expert Group on Future Skills Needs	October 2003
The Demand and Supply of Skills in the Biotechnology Sector	September 2003
Skills Monitoring Report - Construction Industry 2003/10	July 2003
Benchmarking Education and Training for Economic Development in Ireland	July 2003
The Demand and Supply of Engineers and Engineering Technicians	June 2003
The Demand and Supply of Skills in the Food Processing Sector	April 2003
National Survey of Vacancies in the Private Non-Agricultural Sector 2001/2002	March 2003
National Survey of Vacancies in the Public Sector 2001/2002	March 2003
The Irish Labour Market: Prospects for 2002 and Beyond	January 2002
Labour Participation Rates of the over 55s in Ireland	December 2001
The Third Report of the Expert Group on Future Skills Needs - Responding to Ireland's Growing Skills Needs	August 2001
Benchmarking Mechanisms and Strategies to Attract Researchers to Ireland	July 2001
Report on E-Business Skills	August 2000
Report on In-Company Training	August 2000
The Second Report of the Expert Group on Future Skills Needs - Responding to Ireland's Growing Skills Needs	March 2000
Business Education and Training Partnership 2nd Forum, Dublin	March 2000
Business Education and Training Partnership Report on the Inaugural Forum, Royal Hospital Kilmainham	March 1999
The First Report of the Expert Group on Future Skills Needs - Responding to Ireland's Growing Skills Needs	December 1998

Appendix 4.1 Food & Beverage Related Undergraduate and CPD / Executive Education Programmes delivered at Third Level

College	Course		Qualification	NQAI Level	Duration	Executive Education /CPD	Work Placement	No. Graduates	
								'01	'07
UCC	Nutritional Sciences		BSc (H)	8	4yrs		*	39	32
	Food Science		BSc (H)	8	4yrs		*	34	19
	Food Marketing & Entrepreneurship		BSc (H)	8	4yrs		*	n/c	n/c
	International Development & Food Policy		BSc (H)	8	4yrs		*	n/c	n/c
	Supply Chain Management		Certificate	7	1yr	*		n/a	24
			Diploma	7	1yr add-on	*		n/a	19
	Food Retailing		Certificate	7	1yr	*		n/a	12
			Diploma	7	1yr add-on	*		n/a	13
	Food Industry Training Unit	Management Practice (Consumer Foods)	Diploma	8	1yr	*		~	~
		Business Management	Diploma	8	1yr	*		~	~
		Corporate Direction (Food Business)	Diploma	8	1yr	*		~	~
		Specialty Food Production	Diploma	8	1yr	*		~	~
		Food Science & Technology	Certificate	6	1yr	*		~	~
		Food Science & Technology	Diploma	8	1yr	*		~	~
		Meat Technology	Certificate	6	1yr	*		~	~
		Meat Technology	Diploma	8	1yr	*		~	~
		Food Packaging	Certificate	6	1yr	*		~	~
		Seafood Technology	Certificate	6	1yr	*		~	~
UCD	Engineering Technology		BAgrSc (H)	8	4yrs		*	8	6
	Food Science		BAgrSc (H)	8	4yrs		*	12	14
	Food & Agribusiness Management		BAgrSc (H)	8	4yrs		*	n/a	12
	Dairy Business[1]		BAgrSc (H)	8	4yrs		*	n/c	n/c
	Human Nutrition		BSc (H)	8	4yrs		*	n/c	n/c
	Horticulture		BAgrSc (H)	8	4yrs		*	n/a	20
NUIG	Marine Science		BSc (H)	8	4yrs			11	25
	Biotechnology		BSc (H)	8	4yrs		*	19	33
	Applied Science in Food & Consumer Studies[2]		BSc (H)	8	4yrs		*	~	n/c
NUIM	Biotechnology		BSc (H)	8	4yrs			17	12
DCU	Biotechnology		BSc (H)	8	4yrs			58	24
UL	Food Science & Health[3]		BSc (H)	8	4yrs		*	n/c	n/c
DIT	Food & Beverage Culinary Management		BSc (H)	8	4		*	n/c	n/c
	Culinary Arts		BA (H)	8	4		*	n/a	23
	Culinary Entrepreneurship		BSc (H)	8	4		*	n/c	n/c
	Baking & Pastry Arts Management		BSc	7	3			n/c	n/c
	Culinary Arts – Catering for Health		Higher Cert	6	3		*	n/a	20
	Food Innovation		BSc (H)	8	4yrs		*	n/c	n/c
	Food Science & Management		Higher Cert	6	2yrs			n/c	n/c
	Environmental Health		BSc (H)	8	4		*	n/a	33
	Nutraceuticals for Health & Nutrition		BSc (H)	8	4		*	n/a	21
	Human Nutrition & Dietetics[4]		BSc (H)	8	4		*	n/a	23
	Logistics & Supply Chain Management		BSc (H)	8	4yrs		*	n/a	43
	Food Product Development Centre	Sensory Analysis 'Train the Trainer'	~	~	2 days	*		~	~
		Principles of Sensory Evaluation	~	~	2 days	*		~	~
		How to set-up and train your own panel in-house	~	~	2 days	*		~	~
		Basic Food Hygiene	~	~	1 day	*		~	~
		Introduction to HACCP	~	~	1 day	*		~	~
		How to write a HACCP Plan for Catering Operations	~	~	1 day	*		~	~
		Introduction to Food Microbiology	~	~	1 day	*		~	~
		Product Styling Techniques	~	~	1 day	*		~	~
		Basic Sauce Preparation	~	~	1 day	*		~	~
		Basic Culinary Techniques	~	~	1 day	*		~	~
		Food Legislation and Labelling	~	~	1 day	*		~	~
		Management	~	~	1 day	*		~	~
		Marketing and Law	~	~	1 day	*		~	~
WIT	Agriculture[2]		Higher Cert	6	2yrs		*	n/a	27
			BSc	7	1yr add-on			n/a	14
	Agricultural Science[2]		Higher Cert	6	2yrs			25	5
			BSc	7	1yr add-on			n/a	10
	Horticulture[2]		BSc	7	3yrs		*	n/a	n/a
	Food Science with Business		BSc	7	3yrs		*	n/c	n/c
	Biotechnology		BSc	7	1yr add-on			n/a	10

College	Course	Qualification	NQAI Level	Duration	Executive Education /CPD	WP	No. Graduates	
							'01	'07
ITB	Horticulture[2]	BSc	7	3yrs			n/a	133
		BSc (H)	8	4yrs			n/a	15
CIT	Agriculture[2]	BSc	7	3yrs		*	n/a	4
	Food and Health Science	BSc	7	3yrs		*	n/a	19
	Applied Biosciences & Biotechnology	BSc	7	3yrs		*	n/a	18
	Applied Biosciences	BSc (H)	8	1yr add-on			n/a	55
	Biotechnology	BSc (H)	8	4yrs		n/a	n/a	18
GMIT	Agriculture & Environmental Management[2]	BSc	7	3yrs		*	n/a	9
	Rural Enterprise & Agribusiness[2]	BBs	7	3yrs		*	n/a	15
	Applied Freshwater & Marine Biology	BSc	7	3yrs			n/a	9
	Applied Freshwater & Marine Biology	BSc(H)	8	4yrs			n/a	10
LYIT	Food Science & Nutrition	BSc	7	3yrs		*	n/a	29
		BSc (H)	8	1yr add-on			n/a	4
	International Culinary Enterprise	BBs	7	3yrs		*	~	n/c
	Bioscience	BSc	7	3yrs			n/a	26
	Culinary Arts	BA	7	2/3yrs PT			n/a	10
	Food Product Development	Certificate	6	1yr FT/ 2yrs PT			n/c	n/c
LIT	Science (Biotechnology & Bioanalysis)	BSc(H)	8	1yr add-on		*	n/a	13
	Science (Environmental Analysis & Management)	BSc(H)	8	4yrs		*	n/c	n/c
		Higher Cert	6	2yrs			n/a	9
Dundalk IT	Food Science & Health	BSc	7	3yrs			n/a	6
	Food Innovation	BSc (H)	8	1yr add-on		*	n/a	6
	Agriculture[2]	Higher Cert	6	2yrs		*	n/a	22
		BSc	7	1yr add-on		*	n/a	12
AIT	Biotechnology	BSc	7	3yrs		*	n/a	7
		BSc(H)	8	1yr add-on			n/a	7
Carlow IT	Biosciences with biopharmaceuticals	BSc(H)	8	4yrs		*	n/a	10
	Biosciences	BSc	7	3yrs			n/a	10
Tallaght IT	Wine & Beverage Management	BBs	7	3yrs		*	n/a	4
		Diploma	7	2 yrs PT			~	n/c
	Culinary Arts	BA	7	2yrs PT		*	n/c	n/c
Sligo IT	Fisheries Management	Higher Cert	6	2yrs			n/a	14
QUB[6]	Agricultural Technology[5]	BSc (H)	8	3yrs		*	n/a	n/a
	Agricultural Technology w/ Professional Studies [5]	BSc (H)	8	4yrs		*	n/a	n/a
	Food Quality, Safety & Nutrition	BSc	7	3yrs		*	n/a	n/a
		BSc (H)	8	4yrs		*	n/a	n/a
CAFRE[6,7]	Food Technology	BSc (H)	8	3yrs		*	24	n/a
		BSc (H) (p/t)	8	Varies			n/a	n/a
		Nat Diploma	7	2yrs			16	n/a
		Nat Cert (p/t)	6	2-5yrs			n/a	n/a
	Food Studies	Foundation Degree	6/7	2yrs		*	n/a	n/a
		FdSc (p/t)	6/7	2-4yrs			n/a	n/a
		Cert HE (p/t)	6	1-2yrs			n/a	n/a
	Food, Nutrition & Health	Foundation Degree	6/7	2yrs			n/a	n/a
		FdSc (p/t)	6/7	2-4yrs			n/a	n/a
		Nat Diploma	7	2yrs		*	n/a	n/a
		Nat Cert (p/t)	6	2-5yrs		*	n/a	n/a
		Cert HE (p/t)	6	1-2yrs			n/a	n/a
	Food Product Innovation	Foundation Degree	6/7	2yrs		*	n/a	n/a
		FdSc (p/t)	6/7	2-4yrs			n/a	n/a
		Cert HE (p/t)	6	1-2yrs			n/a	n/a
	Food Manufacture	Foundation Degree	6/7	2yrs			n/a	n/a
		FdSc (p/t)	6/7	2-4yrs			n/a	n/a
		Cert HE (p/t)	6	1-2yrs			n/a	n/a
	Supply Management (Food)	Foundation Degree	6/7	2 yrs PT		*	n/a	n/a
		BSc (H)	8	3yrs FT		*	n/a	n/a
	Agricultural Technology[5]	BSc (H)	8	3yrs		*	n/a	n/a
	Agricultural Technology w/ Professional Studies[5]	BSc (H)	8	4yrs		*	n/a	n/a
	Agriculture	H. National Dip	6/7	3yrs		*	n/a	n/a
		H. National Cert	6/7	-		*	n/a	n/a
		Nat. Diploma	7	3yrs		*	n/a	n/a
		Nat. Cert.	6	1yr			n/a	n/a
University of Ulster[6]	Food and Nutrition with DIS/DAS	BSc (H)	8	4yrs		*	n/a	n/a
	Human Nutrition	BSc (H)	8	4yrs		*	n/a	n/a

New programme starting in 2009
New / revised / additional programme since 2003 Forfás Study

[1]Delivered in conjunction with Teagasc / Teagasc Colleges (including Mountbellew, Ballyhaise, Kildalton and Clonakilty)
[2] Delivered through St. Angela's College, a College of NUI, Galway in Co. Sligo
[3] Course replaced Food Technology programme in 2004, first graduates in 2008 (8)
[4] Delivered in DIT, Kevin Street – all remaining DIT courses delivered in the Cathal Brugha Street Campus
[5] Courses are jointly delivered between CAFRE and Queens University Belfast
[6] The NQAI level for programmes delivered in Northern Ireland are determined based on the framework provided in Appendix 4.6
[7] College of Agriculture, Food & Rural Enterprise. 3 campuses based at Enniskillen, Antrim (Greenmount Campus) and Cookstown (Loughry Campus).

n/a=information not available
n/c=new course / course in development, with no graduating class yet.
AQA=All Qualified Applicants (i.e. as long as they have the academic marks/ relevant experience, they will be accepted)

SOURCE: PwC Research, Universities and IOT's websites and feedback, HEA

Appendix 4.2 Food & Beverage Related Postgraduate Programmes delivered at Third Level

College	Course	Qualification	Mode of Delivery	NQAI Level	Duration	Dissertation/ Project	Work Placement	No. Places
UCC	Food Science & Technology	HDip	Taught	8	1yr FT/ 2yrs PT		*	15
		MSc	Research	9	1yr FT	*		n/a
		PhD	Research	10	3yrs FT	*		n/a
	Food Microbiology	MSc	Taught	9	2yrs	*	*	4
	Food & Nutritional Sciences	MSc	Research	9	2yrs	*	*	20
	(Applied Science) in Food Science	MSc	Taught	9	1yr	*		15
	Food Business	MSc	Taught/ Research	9	2yrs	*	*	n/a
	Co-operative Organisation, Food Marketing & Rural Development	PG Diploma	Taught	9	1yr		*	30
		MSc	Taught	9	1yr add-on	*	*	n/a
	Food Marketing	MBS	Taught	9	1yr	*		n/a
	Supply Chain Management	PG Diploma	Taught / e-learning	9	18mths			25
		MComm	Taught / e-learning	9	2yrs	*		n/a
	Food Regulatory Affairs[1]	PG Cert	e-learning	9	1yr			n/a
		PG Diploma	e-learning	9	1.5yrs			n/a
		MSc	e-learning	9	2yrs PT	*		n/a
	Food Graduate Development Programme[2]	~	Taught	~	Varies			n/a
UCD	Food Engineering	MEngSc	Taught	9	1yr	*		15-20
	Engineering Technology	MSc(Agr)	Taught	9	1yr	*		15-20
	Food Regulatory Affairs[1]	PG Cert	e-learning	9	1yr			n/a
		PG Diploma	e-learning	9	1.5yrs			n/a
		MSc	e-learning	9	2yrs PT	*		n/a
	Food Graduate Development Programme[2]	~	Taught	~	Varies			n/a
NUIG	Biotechnology	MSc	Taught	9	1yr FT/ 2yrs PT	*	*	8
	Marine Science	MSc	Research	9	n/a	*		n/a
		PhD	Research	10	n/a	*		n/a
DIT	Food Science, Technology and Nutrition	European MSc	Taught	9	2yrs PT	*		20
	Culinary Innovation & Food Product Development	MSc	Taught	9	1yr FT/ 2yrs PT	*		10
	Environmental Health & Safety Management	MSc	Taught	9	1yr FT/ 2yrs PT	*		20
	Food Safety Management	MSc	Taught	9	2yrs PT	*		20
	Supply Chain Management	MSc	Taught/ Research	9	1yr FT/3yrs PT	*		n/a
CIT	Applied Biosciences	MSc	Research	9	1yr			7
		PhD	Research	10	n/a	*		7
QUB	Biotechnology	Grad Dip	Taught	9	1yr FT/ 2yrs PT	*		20
		MSc	Taught	9	1yr FT/ 2yrs PT	*		20
	Sustainable Aquaculture & Inshore Fisheries	Grad Dip	Taught	9	1yr FT/ 2yrs PT			10
		MSc	Taught	9	1yr FT/ 2yrs PT	*		10
	Food Quality, Safety & Human Nutrition	MPhil	Research	9	1yr FT/ 2yrs PT	*		n/a
		PhD	Research	10	3yrs FT/ 6yrs PT	*		n/a
	Process Engineering (specialising in Food Engineering)	PG Diploma	Taught	9	9 mths FT			n/a
		MSc	Taught	9	1yr/FT	*		10
	Food Science	Grad Dip	Taught	9	1yr FT	*		10
University of Ulster[3]	Food Biotechnology	Grad Dip	Taught	9	1yr	*		n/a
		MSc	Taught	9	1.5yrs	*		n/a
	Biotechnology	Grad Dip	Taught	9	1yr FT/ 2yrs PT	*		n/a
		MSc	Taught	9	1.5yrs FT /3yrs PT	*		n/a
	Human Nutrition	PG Diploma	Taught	9	1yr FT/2yr PT			10
		MSc	Taught	9	1yr FT/3yr PT	*		10
	Food Regulatory Affairs[1]	PG Cert	e-learning	9	1yr			n/a
		PG Diploma	e-learning	9	1.5yrs			n/a
		MSc	e-learning	9	2yrs PT	*		n/a
	Agri-Business Food Development	PG Diploma	Taught	9	2yrs PT	*		n/a
		MSc	Taught	9	2.5yrs PT	*		n/a

New / revised / additional programme since 2003 Forfás Study

[1]Jointly delivered by UCC, UCD and the University of Ulster (led by UCD)
[2]Joint Initiative between Teagasc, UCC and UCD
[3] The University of Ulster and Queens University Belfast noted they do not have any class size restrictions on their postgraduate classes.
n/a=not available. FT=Full Time. PT=Part Time

SOURCE: PwC Research, Universities and IOT's websites and feedback

Appendix 4.3 Food & Beverage Related Programmes delivered by the Development Agencies

Development Agency	Skill Area	Course Title	FETAC / HETAC accredited
Enterprise Ireland	Food Specific	International selling and marketing for the Irish SME pork processing sector	~
		Strategic Capability Development Programme (Beef)	~
		Strategy Development Programme (Bakery)	~
		Advanced Management Dev Programme (Seafood)	~
		Seafood Management Development	~
		MBA for Seafood Sector	HETAC
		Dairy Director Programme	~
		Strategic Management Development for the Dairy Industry	~
		Graduate Development Programme (Diploma in Management Practice)	HETAC
		Strategic Innovation Programme (Superquinn / EI / Bord Bia)	~
		Development Agency)	~
		Entrepreneurship & Innovation Skills for Consumer Foods	~
		Food Lean Initiative	~
		The Food Innovator[1]	
	Non-Food Specific Courses	International Selling Programme	~
		Supply Chain Management	~
		Transform Programme	~
		Supplier Development Programme (First Sale)	~
		First Flight Programme	~
		i2p (Innovate to Profit)	~
		Market Aw areness Seminars	~
		Management Development & Entrepreneurship	~
		Developing the Export Sales Team	~
		Strategy for Export Programme (STEP)	~
		BA in Technology Management	HETAC
		Masters in Technology Management	HETAC
		Masters (Management) International Business	HETAC
		Trinity Msc in Business Studies	HETAC
		Export Orientation Programme (EI / IBEC)	~
		National Account Management Programme	~
		Leadership for Grow th	~
FÁS	All sub-sectors	Diploma in Meat Technology [2]	Level 7 (NUI Cork)
		Certificate in Food Packaging [2]	Level 6 (NUI Cork)
		The Food Innovator[1]	Pending HETAC Approval. Expected Level 7
	Meat	Abattoir Beef Operations	Level 5 (Major)
		Beef Deboning and Trimming	Level 5 (Major)
		Abattoir Pigmeat Operations	Level 5 (Major)
		Abattoir Sheepmeat Operations	Level 5 (Major)
		Pigmeat Deboning and Trimming	Level 5 (Major)
		Sheepmeat Deboning and Trimming	Level 5 (Major)
		Beef Abattoir Instruction	Level 6 (Special Purpose)
		Pigmeat Abattoir Instruction	Level 6 (Special Purpose)
		Sheepmeat Abattoir Instruction	Level 6 (Special Purpose)
		Beef Deboning Instruction	Level 6 (Special Purpose)
		Pigmeat Deboning Instruction	Level 6 (Special Purpose)
		Sheepmeat Deboning Instruction	Level 6 (Special Purpose)
		Animal Welfare in Meat Processing	Level 5 (Special Purpose)
	Seafood[4]	Seafood Processing Skills	Level 5 (Minor)
		Fish Processing Techniques	Level 5 (Minor)
		Shellfish Processing Techniques	Level 5 (Minor)
		Seafood Products	Level 5 (Minor)
		Seafood Handling Systems	Level 5 (Minor)
		Manual Fish Filleting	Level 5 (Minor)
		Foundation Hygiene for Food Handlers (Fish)	Level 5 (Minor)

Development Agency	Skill Area	Course Title	FETAC accredited
Teagasc	Food Safety	Understanding Requirements of British Retail Consortium (BRC)	FETAC
		Understanding Requirements of ISO/22000 – Food Sector	FETAC
		Hygienic Factory Design	~
		Hygiene Management of Food Safety	FETAC
		Hygiene Management of Food Safety – E-learning Option	FETAC
		HACCP in Food Safety	~
		Food Standards Auditing	FETAC
		Food Standards Workshop for SMEs	~
		Train the Trainer in Food Safety and Hygiene	FETAC
		Thermal Process Validation	FETAC
		Microbiology for Non-Microbiologists	~
		Microbiological Sampling of Fresh Meat	FETAC
		Complaints & Crisis Management	~
	Innovation	Manufacturing Meat Products	FETAC
		HACCP in New Product Development	FETAC
		Ideas & Inspiration in Product Development	~
		Lean Techniques in the Food Industry	~
		Sensory Analysis	~
		SME Technology Support Programme	
		NPD for SME's	
	Quality Management	Writing a Retail Specification	FETAC
		Food Standards Auditing	FETAC
		Complaints & Crisis Management	~
		Laboratory Auditing	FETAC
	Specialist Training	Legal Labels Ireland	~
		Microbiological Sampling of Fresh Meat, EC/2001/471	FETAC
		Train the Trainer in Food Safety & Hygiene	FETAC
		Manufacturing Meat Product	FETAC
	Dairy	Artisan Food Business	~
		Farmhouse Cheese Making	~
		Natural Cheese Making	~
		Processed and Substitute Cheese Products	~
		Spray Drying	~
		Evaporation	~
		Process Control and Management	~
		Plant and Process Hygiene	~
		Basic Milk Processing	~
	Other	Food Graduate Development Programme[3]	5 Credits Per Module under University System
		PhD	
Bord Bia	~	UK Retail Market Entry Programme	~
		UK Retail Market Development Programme	~
		UK Foodservice Market Entry Programme	~
		UK Foodservice Market Development Programme	~
		Export Preparation Programme (USA)	~
		Market report & Alcoholic Beverage Sector Study (Poland & Ukraine)	~
		Market report & Alcoholic Beverage Sector Study (Mexico)	~
		National Account Management Programme	~
		Next Level Drinks Innovation Programme	~
		Bakery Innovation Market Study Visit (UK)	~
		Consumer Lifestyle Trends Programme	~
		Foresight 4 Food	~
		Understanding Consumer Motivations	~
		Innovation and New Product Development	~
		Private Label Initiative	~
		Business Development Training Programme	~
		Quality Assurance Programmes	~
		Environmental Programme	~
		Bord Bia Vantage Programme (Point / Plus / Partners)	~
		Brand Forum	~
		Market Place Roadshow	~
		Partner Account Plans	~
		Marketing Fellowship Programme	~
		Leadership Summit	~
Bord Iasaigh Mhara	~	Starting / Running a Seafood Business	~
		Supervisory Management Training for the Seafood Industry	~
Irish Exporters Association	~	Channel Clusters Programme	~
		Celtic Recipes Programme	~
		Food Development Channels Programme	~

New / revised / additional programme since 2003 Forfás Study
New programme starting in 2009/ in development

[1] *Developed jointly between FÁS, EI and IMI*
[2] *Delivered via the Food Industry Training Unit in UCC - see Appendix 4.1 for further detail*
[3] *Joint initiative between Teagasc, UCC and UCD*
[4] *Developed in conjunction with EI and BIM*

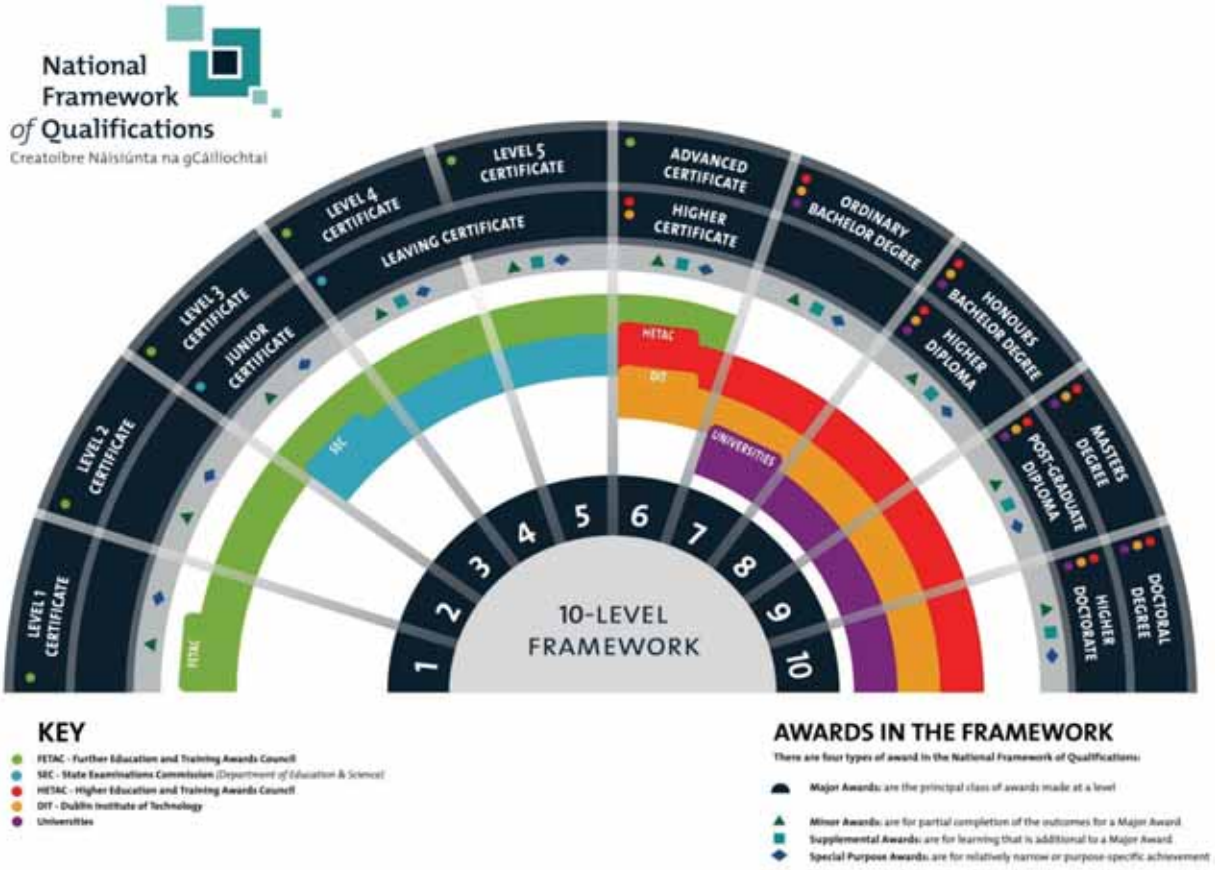
Source: Interviews with Development Agencies / Development Agency websites

Appendix 4.4 List of FETAC Awards, 2006 and 2007

Award Type	Source Year	NQAI Level	Award Title	Number of Awards
Major	2007	5	Abattoir Beef Operations	3
		5	Abattoir Sheepmeat Operations	8
		5	Food Science	5
		5	Sheepmeat Deboning and Trimming	3
	2006	5	Abattoir Beef Operations	2
		5	Beef Deboning and Trimming	38
		5	Food Science	5
TOTAL				**64**
Minor	2007	3	Food Preparation	187
		3	Sandwich Making	122
		3	Science	25
		3	Using Convenience Foods	173
		4	Food Hygiene	42
		4	Food Safety and Hygiene	35
		4	Foundation Hygiene for Food Handlers	675
		4	Principles of Hygiene, Safety and Security	390
		4	Professional Food Preparation and Related Hygiene	105
		5	Beef Abattoir Skills	6
		5	Beef Brisket Saw	1
		5	Beef Carcase Bunging	1
		5	Beef Carcase Chilling	1
		5	Beef Carcase Dressing	6
		5	Beef Carcase Evisceration	1
		5	Beef Carcase Flanking and Breasting	4
		5	Beef Carcase Head and SRM Removal	2
		5	Beef Carcase Hide Pulling	3
		5	Beef Carcase Inspection	6
		5	Beef Carcase Pluck Removal	6
		5	Beef Carcase Rodding	1
		5	Beef Carcase Rump Flaying	5
		5	Beef Carcase Skinning Forefeet	1
		5	Beef Carcase Skinning Hind Legs	1
		5	Beef Carcase Sticking and Bleeding	1
		5	Beef Carcase Washing	4
		5	Beef Offal Preparation	1
		5	Food Hygiene	12
		5	Food Preparation	542
		5	Food preparation and Service	52
		5	Food Preservation and Processing	2
		5	Food Processing	1
		5	Food Safety and Hygiene	23
		5	Food Safety Training Skills	34
		5	Manual Fish Filleting	12
		5	Meat Operations	25
		5	Meat Products	15
		5	Science	2
		5	Science	3
		5	Seafood Hygiene Management	7
		5	Sheep Shearing	12
		5	Sheepmeat Abattoir Skills	3
		5	Sheepmeat Boning and Trimming Skills	2
		5	Sheepmeat Carcase Inspection	1
		5	Sheepmeat Carcase Splitting	1
		5	Sheepmeat Chump Boneless	1
		5	Sheepmeat Double Loin less Chump	1
		5	Sheepmeat Intake and Inspection	1
		5	Sheepmeat Intake and Lairage	1
		5	Sheepmeat Leg less Aitch-bone and Tail	1
		5	Sheepmeat Neck Fillet Boneless	1
		5	Sheepmeat Pre-breaking and Band-sawing	1
		5	Sheepmeat Scales Operation	1
		5	Sheepmeat Spinal Cord Removal	1
		5	Sheepmeat Square Cut Shoulder Bone-in	1
		5	Sheepmeat Tenderloin	1
		5	Shellfish Ongrowing Operations	6
		6	Food Hygiene Management	4

Minor	2006	5	Beef Abattoir Skills	37
		5	Beef Boning Forequarter on Line	11
		5	Beef Boning Forequarter on Table	16
		5	Beef Boning Hindquarter on Line	7
		5	Beef Boning Hindquarter on Table	11
		5	Beef Brisket Saw	2
		5	Beef Carcase Bunging	4
		5	Beef Carcase Chilling	6
		5	Beef Carcase Dressing	7
		5	Beef Carcase Evisceration	2
		5	Beef Carcase Flanking and Breasting	3
		5	Beef Carcase Head and SRM Removal	2
		5	Beef Carcase Hide Pulling	5
		5	Beef Carcase Inspection	6
		5	Beef Carcase Pluck Removal	11
		5	Beef Carcase Rodding	4
		5	Beef Carcase Skinning Forefeet	2
		5	Beef Carcase Skinning Hind Legs	2
		5	Beef Carcase Splitting	3
		5	Beef Carcase Stunning and Shackling	3
		5	Beef Carcase Washing	6
		5	Beef Deboning and Trimming Skills	43
		5	Beef Offal Preparation	14
		5	Beef Pre-breaking Forequarter on Line	2
		5	Beef Pre-breaking Hindquarter on Line	1
		5	Beef Trimming Forequarter Cuts to Specification	44
		5	Beef Trimming Hindquarter Cuts to Specification	25
		5	Finfish Ongrowing Operations	3
		5	Fishing Gear Construction	1
		5	Fishing Gear Maintenance	4
		5	Food Chemistry	1
		5	Food Crops	36
		4	Food Hygiene	12
		6	Food Hygiene Management	2
		5	Food Preparation	218
		3	Food Preparation	65
		5	Food Preservation and Processing	4
		5	Food Processing	2
		5	Food Safety and Hygiene	4
		5	Food Safety and Hygiene	24
		4	Food Safety and Hygiene	28
		5	Food Safety and Hygiene Trainer	30
		5	Food Safety Training Skills	95
		3	Food Service	43
		5	Hatchery Production of Fish	3
		5	Manual Fish Filleting	17
		5	Principles of Hygiene & Safety	591
		4	Principles of Hygiene, Safety and Security	164
		4	Product Packaging and Assembly	3
		5	Professional Food Preparation and Related Hygiene	4
		5	Professional Food Preparation and Related Hygiene	58
		5	Risk Based HACCP for Seafood	6
		3	Sandwich Making	51
		5	Science	2
		3	Science	15
		5	Seafood Hygiene Management	26
		6	Seafood Safety Management	9
		5	Seaweed Ongrowing Operations	14
		5	Shellfish Ongrowing Operations	8
		3	Using Convenience Foods	92
TOTAL				**4489**
Special Purpose	2007	4	Food Hygiene	93
		4	Food Safety	47
		6	Food Standards Auditing	17
		6	HACCP in Food Safety Management	58
		6	Hygiene Management in Food Safety	6
		6	Labelling of Foodstuffs	16
	2006	4	Dairy Processing	8
		6	Food Legislation	3
		4	Food Safety	76
		4	Food Safety	161
		6	Labelling of Foodstuffs	11
TOTAL				**496**

Appendix 4.5 National Qualifications Framework



KEY

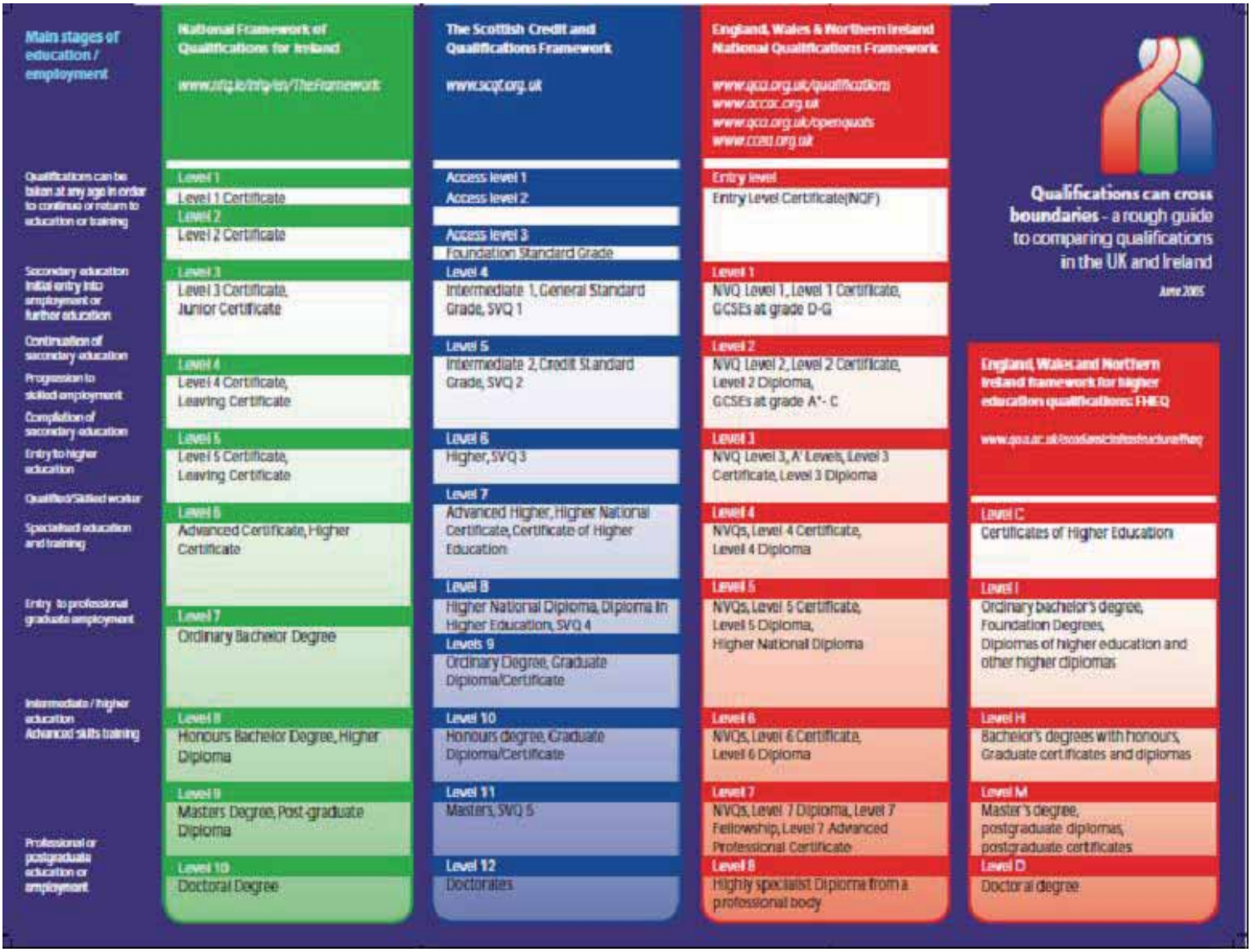
- FETAC - Further Education and Training Awards Council
- SEC - State Examinations Commission (Department of Education & Science)
- HETAC - Higher Education and Training Awards Council
- DIT - Dublin Institute of Technology
- Universities

AWARDS IN THE FRAMEWORK

There are four types of award in the National Framework of Qualifications:

- **Major Awards:** are the principal class of awards made at a level
- **Minor Awards:** are for partial completion of the outcomes for a Major Award
- **Supplemental Awards:** are for learning that is additional to a Major Award
- **Special Purpose Awards:** are for relatively narrow or purpose-specific achievement

Appendix 4.6 Qualifications Levels across the UK and Ireland

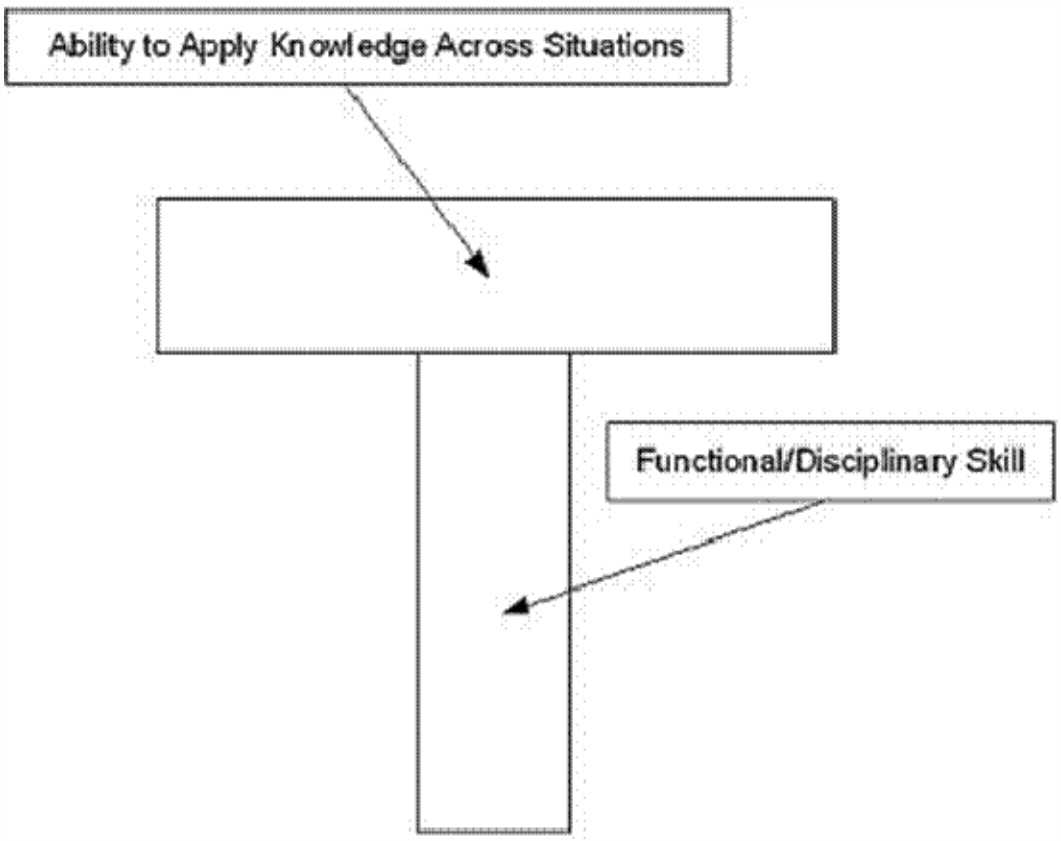


Appendix 4.7 T-Shaped Skills

T-Shaped people are people who are deep or expert in one particular skill set and also have a number of complementary or tangential skills that they are shallower in.

"Such people are extremely valuable for managing the integration of very diverse knowledge sets because they speak two or more professional "languages" and can see the world from two or more different perspectives".

"The need for T-shaped skills surfaces anywhere problem solving is required across deep functional knowledge bases at the juncture of such deep knowledge with an application area. People possessing these skills are able to shape their knowledge to fit the problem at hand rather than insist the problem that the problem appear in a particular recognisable form"



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Notes

Notes

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