cogent | Skills for Science Based Industries

# Skills Oracle 2010

## *The Science Based Industries*

**May 2010**

# Cogent Sector Skills Council
# Skills Oracle 2010

**Skills Oracle Report for the Science Based Industries**

**Prepared by: Julie Plumbley (Research Advisor)**

**May 2010**

Note that in some instances responses apply to a single site rather than as the company as a whole.

## 1.0 Executive Summary

This report reproduces some of the industry wide findings from the Skills Oracle survey for 2009, and follows the broad format of the individualized reports supplied to participating employers, but without the benchmarked company data.

**The headline findings for the Science based industries are:**

1. Annual average company turnover in employment is approximately 15%.

2. 57% of Cogent employers report professional scientists and engineers vacancies are 'hard to fill'.

3. Annual training budgets average was £930 per employee. In addition to this companies may incur additional cost such as travel, subsistence, internal training and mentoring, the maintenance cost of training facilities as well as maintaining productivity during training.

4. Cogent employers were satisfied with the coverage of qualifications across the sector. Satisfaction ratings were highest for 'Academic' qualifications, 'Competence Based' qualifications and 'Flexibility' of provision.

5. Health, Safety and Environment (HSE) training was the most frequently reported training undertaken, when viewed across both internal and external training requirements. Cogent companies tended to resource externally for specialist training, such as, 'Professional', 'Technical' and 'Health, Safety and Environment'.

6. 94% of Cogent employers use 'Private Training' providers; 80% use 'FE' providers; and 51% use 'HE' providers.

7. For private training providers, satisfaction levels tended to be extremely high (ranging between 76% and 97%) in all areas of; 'Cost', 'Relevance', 'Flexibility', 'Location' and 'Quality' of provision. This reflects the highly tailored provision offer by private training providers.

8. The satisfaction ratings for FE and HE were also very high (ranging between 60% and 85%), with the lower of these ratings referring to relevance, flexibility and location of provision. This suggests that while Cogent employers value such provision, there is scope for FE and HE to innovate in flexible and accessible provision, and that there is a role for the Sector Skills Council in facilitating this.

9. The majority of Cogent employers (83% and 78% respectively) place a high level of importance on the supply of Apprentices and Graduates to their workforce (8% of the skills supply recruited were Apprentices; 11% of the skills supply recruited were Graduates).

10. 81% and 74% (respectively) of Cogent employers invest in 'Competence Based' and 'Technical' training of the existing workforce, with 64% of employers investing in 'Professional/Higher Level' training.

11. 83% of Cogent employers report skills gaps and shortages had some, or significant impact.

12. 65% of Cogent employers report that competence based skills needs have increased in the 12 months preceding the survey. 72% of employers expected the demand for both competence based and management level skills to increase in the 12 months following the survey.

13. Looking ahead, Cogent employers were split in concluding that the economic situation for their businesses would 'improve' (39%), 'remain static' (26%), or 'worsen' (26%) within the year (8% of employers were undecided).

14. Most Cogent employers predicted 'no significant change' in employment in the short term (2 years ahead).

15. Securing funding, improving access to training courses and encouraging young people into the sector, are viewed by Cogent employers as the highest priorities for a Sector Skills Council.

**Should you wish to take part in the next Skills Oracle survey 2010 please email Julie Plumbley at:** julie.plumbley@cogent-ssc.com

## 2.0 "Skills Oracle": Primary Labour Market Intelligence (LMI)

During 2009 Cogent implemented 'Skills Oracle', a unique, online project surveying, over time, a significant and consistent sample of employers in each of the Cogent industries. The project collates annual returns from a large employer panel, via a web based questionnaire, to generate primary Labour Market Intelligence (LMI).

This in turn will lead to:

- a **skills 'ftse'** – an index that is a barometer of skills in the sector
- a **skills benchmark** – a collective measure against which employers can assess their skills position in relation to other companies
- a **skills voice** – a report of measures and opinions, supported by a body of evidence from a substantial and consistent expert panel of employers

The survey generates two distinct outputs. Firstly, it provides Cogent with valuable LMI not captured by national data sources, which will provide sector skills data through factsheets and extended reports. Secondly, those completing the survey receive a bespoke benchmarked analysis against returns for their industry. This will then enable companies to:

- identify 'Hot Spot' areas – for example, of excellence or, conversely, under provision
- identify areas of similarity and difference within the industry, and across the Cogent footprint
- identify areas where new and improved business processes can be implemented

## 3.0 The Cogent Sector

This section portrays the results for the Cogent sector, based on data collected during quarter 4 2009. A 40% return delivered 69 respondents from companies across the five Cogent sectors[1] (figure 1).

### 3.1 Industry and Employment

Cogent sites in the main were large with 250 employees or over (figure 2). The 69 companies represent a wider network of 280 industrial sites across the UK. The same companies are part of a global network of 920 sites worldwide.

The UK sites collectively employ 40,000 people and 420,000 people worldwide. By this employee measure, the survey represents of the order of 7% of the 550,000 employees in the 5 Cogent sectors responding to the survey. The measure also underlines the global reach of these sectors, as reflected in the 1:9 ratio of UK: worldwide employment. On average, each site employs 580 people, with a maximum of 10,000 and a minimum of 10.

Several companies operate multiple sites; the average employment per company is 6,600, while the maximum employed is 100,000.

[1] Chemicals, Pharmaceuticals, Nuclear, Petroleum and Polymers – not including Oil & Gas or Petroleum Forecourt Retail

*Figure 1: Respondents by Industry*

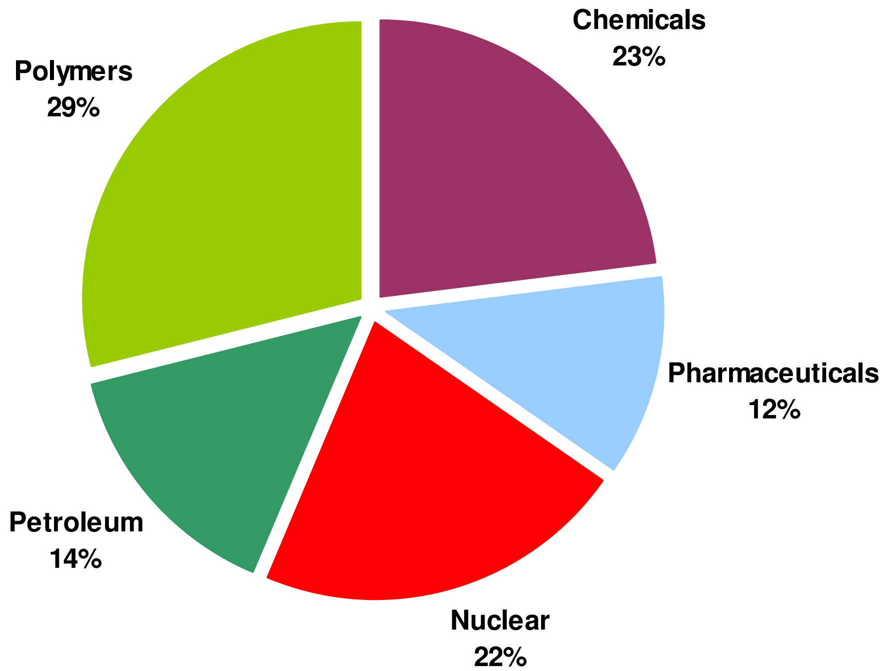
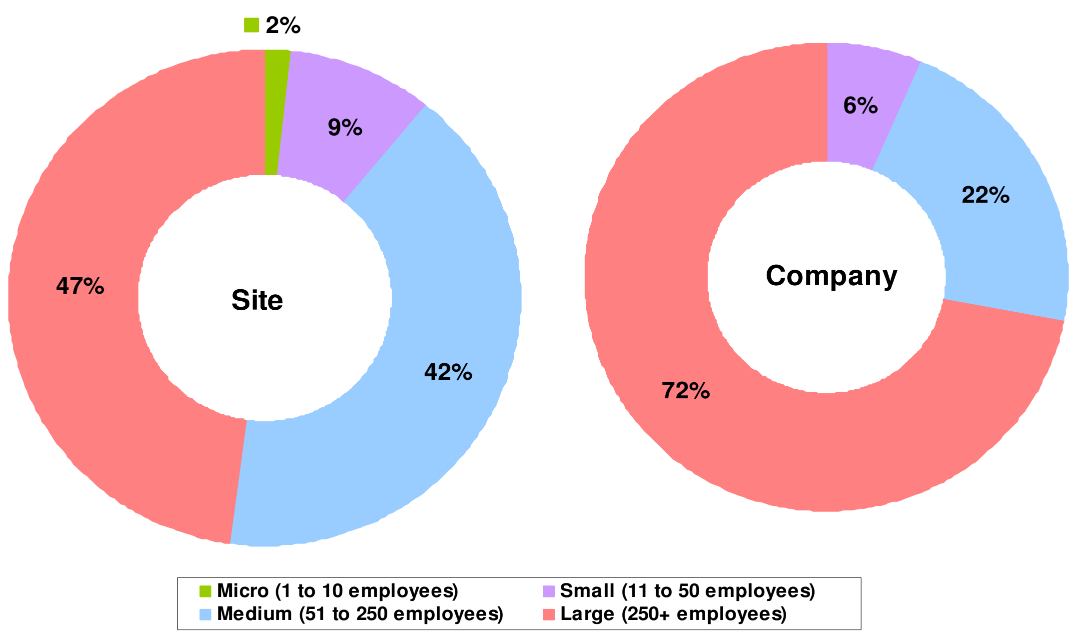



*Figure 2: Cogent Respondents by Size of Employer*

*All Cogent Sectors:*



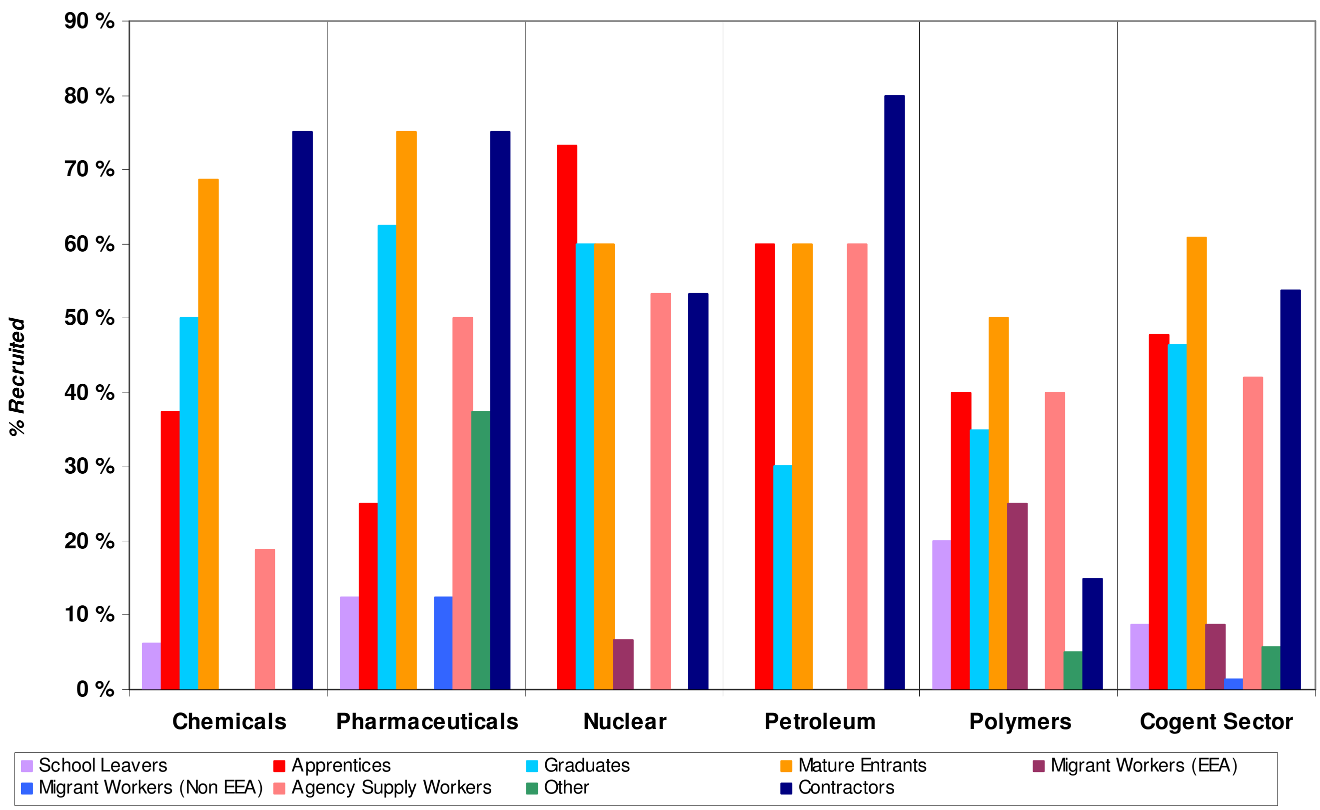
## 3.2 Recruitment and Staff Turnover

In total for the survey, 3,535 were recruited. In addition at least 7,200 were employed *via* contractors. Employment is mainly full-time with the main recruitment routes being: 'Mature Entrants' (61%), 'Apprentices' (48%), 'Graduates' (46%); and 'Agency' (42%). Across all sectors, 54% of employers reported dependence on contractors for routine operations. In the Chemicals, Pharmaceuticals and Petroleum sectors this dependence was reported by 75-80% of respondents. The incidence of recruitment of migrants was low (EEA: 9% and Non-EEA: 1%) and was predominantly in the Polymers sector. (Figure 3 displays the proportion recruited).

For the sites surveyed, the proportion of those employed directly suggests an annual sector turnover of 15%[2] in employment. Analysis of the entrants and leavers by occupation gives a profile of *in-demand occupations.*

There was a significant net increase in: (a) 'Professional Science and Engineering' occupations; and (b) 'Craft and Technical' occupations. In both cases, the entry levels were double the departure levels. Occupations such as 'Managers', 'Commercial and Marketing', and 'Administrative and Secretarial', indicated stable profiles, but 'Production and Operations' occupations indicated a significant decline (Figure 4 displays employment turnover).

***Figure 3: Proportion Recruited by the Sector***




[2] Calculated using the number of those recruited and the number of those leaving the Cogent sector (n=5,905)

Vacancies for Professional Scientists and Engineers were reported by 57% of employers as the most 'hard to fill', a clear 27% majority over those expressing the contrary opinion. Craft and Technical was the only other occupational category that came close to being labeled as 'hard to fill' (48% of employers reported this), with all other occupations being reported, on balance, as not 'hard to fill'. (Figure 5 displays the hard to fill vacancies by occupation).

Excluding Contractor recruitment, the inflow of employment indicated that most Cogent companies recruited Agency Supply Workers (40%) and Mature Entrants (36%). The smallest proportion recruited were School Leavers (1%) and Non-EEA Migrant Workers (<1%).

The outflow of employment was recorded in categories of 'Retirement', 'Redundancies' and 'Other'. Most employers listed 'other' as the main departure route for employees (55%), followed by redundancies (28%) and retirement (17%). The proportion of reported departures due to redundancy varied significantly by sector.

The inflow and outflow of employment are charted below (figure 6).

***Figure 4: Employment Turnover***

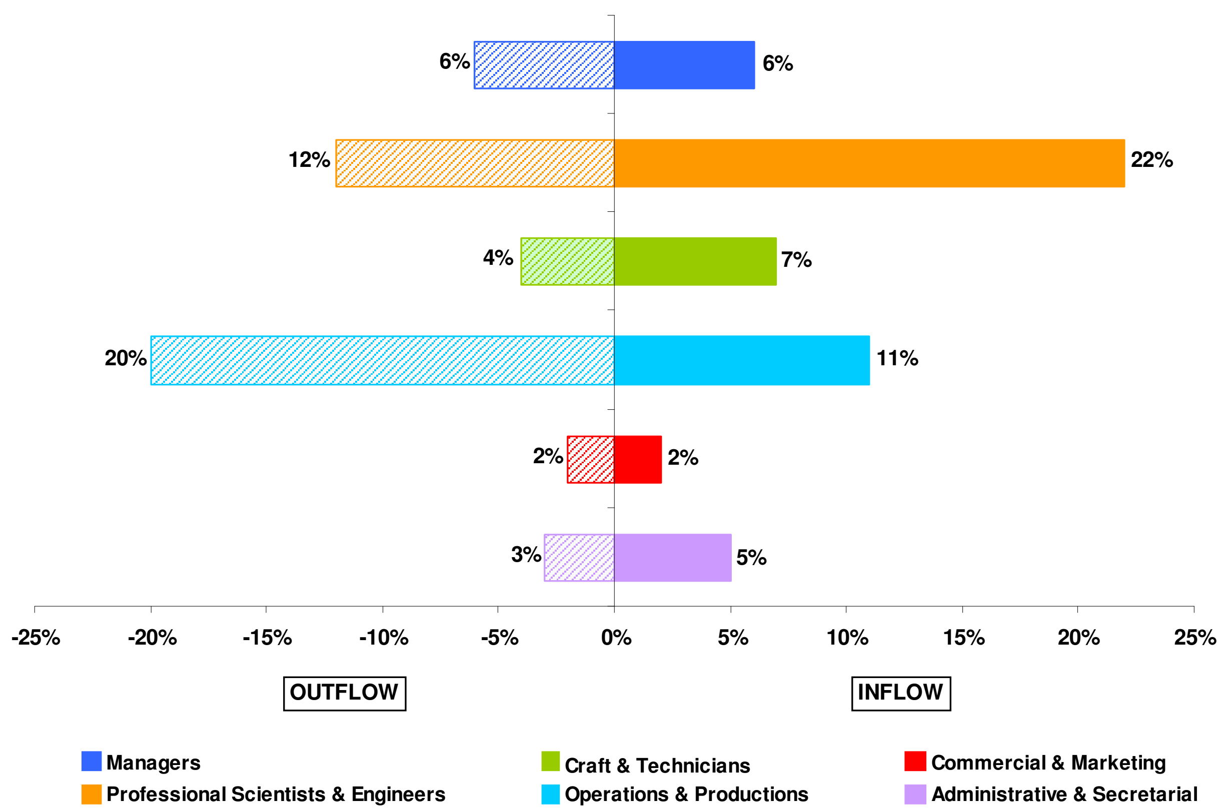


*Figure 5: Hard-to-Fill Vacancies*

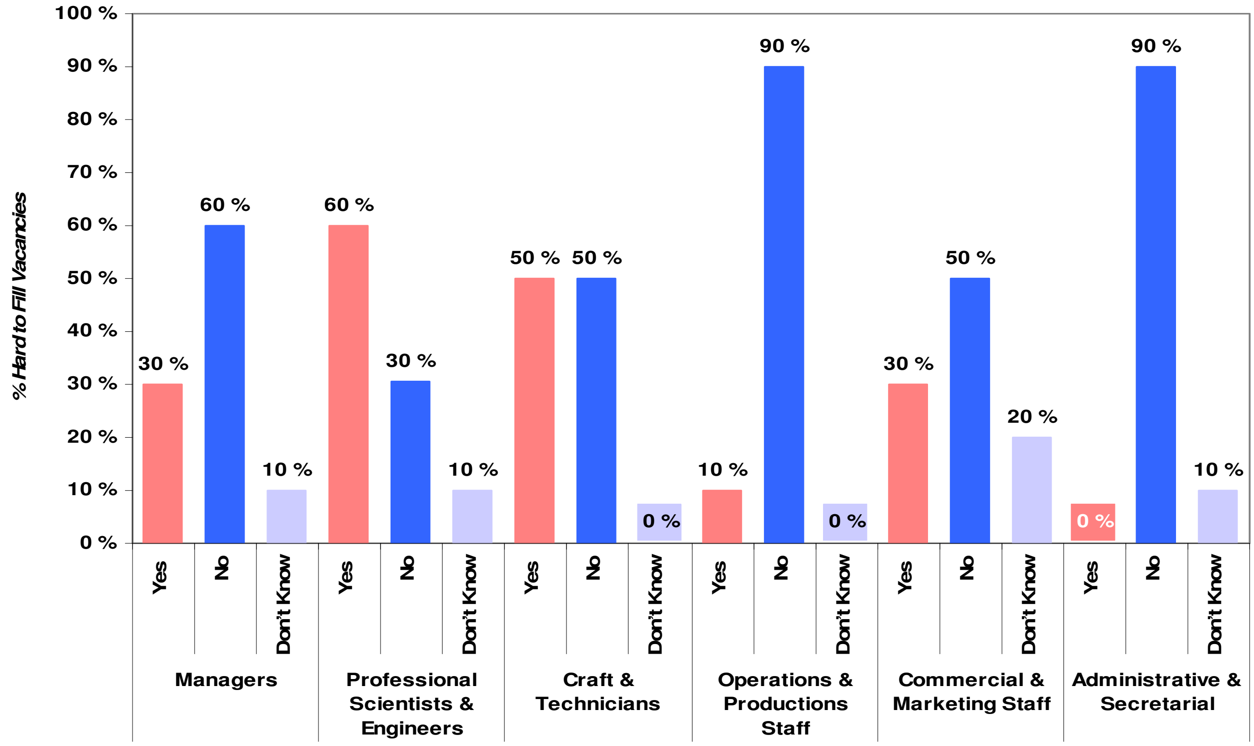
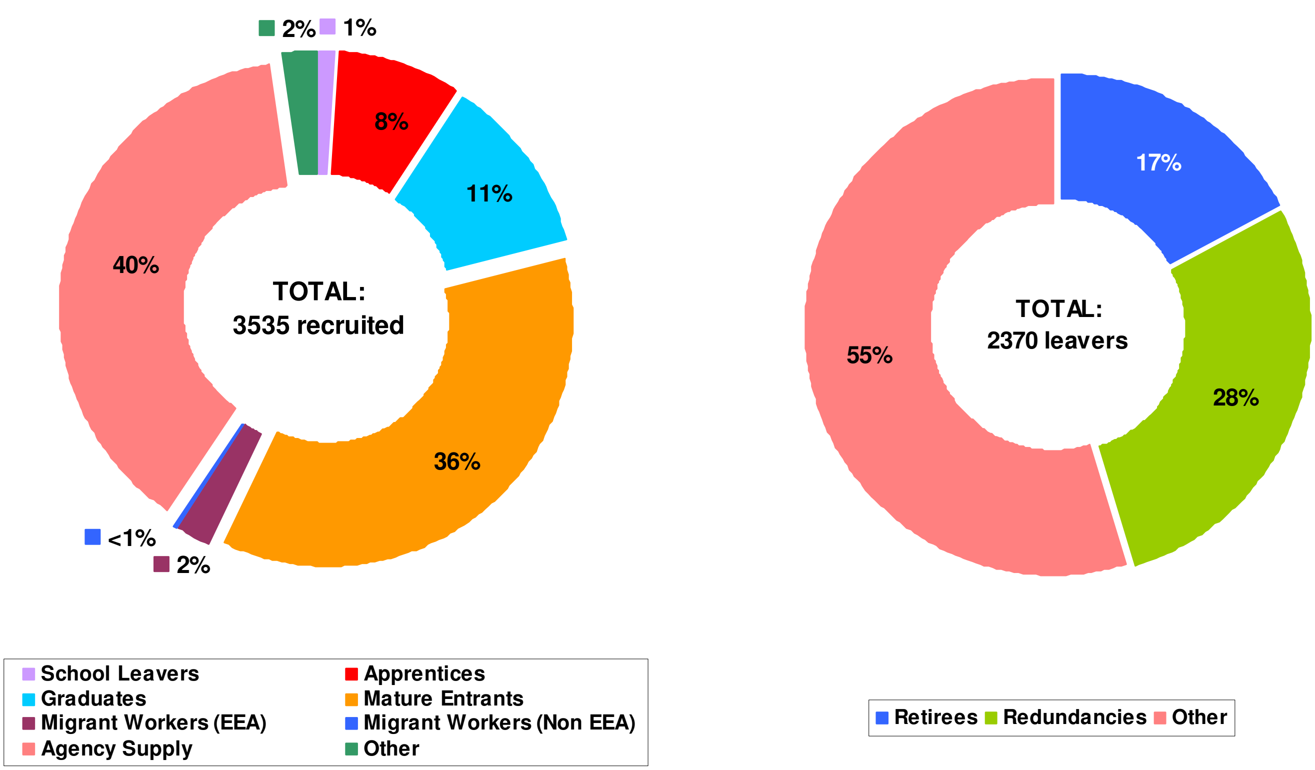



*Figure 6: Inflow & Outflow of Employment reported by the Sector*

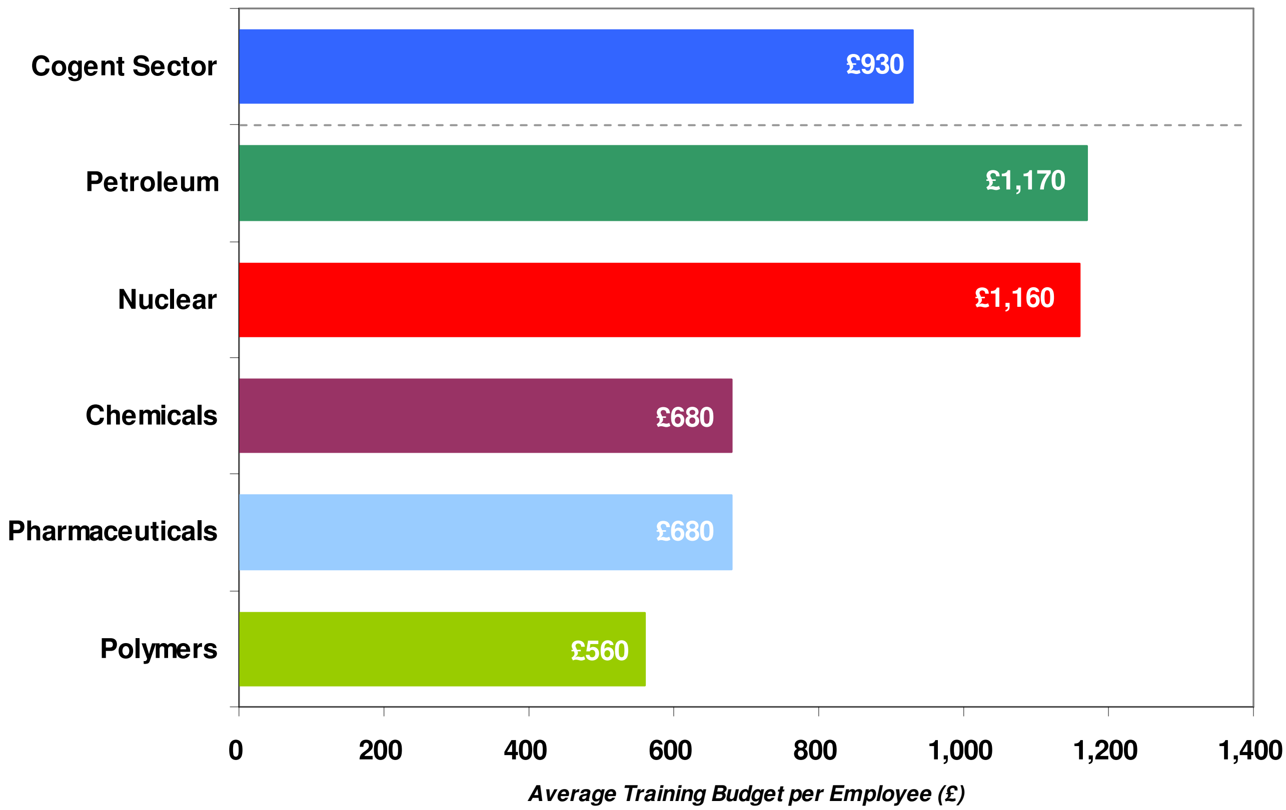


## 3.3 Training Budgets

The vast majority (92%) of companies reported having a training budget. Of those, the average was just over £300,000 with a maximum reported of £3,000,000. Of the budget maxima by sector, the lowest quoted for an individual site was £500,000. When Nuclear - the industry with the highest reported training budget - is stripped out, the headline average for top training budgets drops to around £1,000,000.

Correspondingly, the average without Nuclear becomes of the order of £200,000. Despite the recession, most (55%) reported that their budgets would remain similar in the coming year. A substantial proportion (25%) expected training budgets to be cut. For the sector, the average annual **spend on training per employee** is £930. The average training budgets per industry per employee for the sample are charted below (figure 7).

***Figure 7: Average Training Budgets (£)***



### 3.4 Qualifications – the Employers View

In general, employers were satisfied with the supply of qualifications across the sector. Satisfaction ratings were highest for 'Academic' qualifications; 'Competence-based' qualifications and 'Flexibility' of provision (respectively 40%, 32% and 28% majorities over the contrary opinion). But ratings were lower for the use of 'Apprenticeships' and the 'Accessibility' of provision (21% and 15% majority opinions, respectively). Despite these majorities, the proportion of employers that disagreed was of the order of 20% or higher suggesting scope for further SSC action, particularly in, awareness raising, and development of flexible and accessible provision.

### 3.5 Training

Health, Safety and Environment (HSE) were the most frequently reported training undertaken, when viewed across both internal and external training requirements. Companies tended to resource externally for specialist training needs ('Professional', 75%; 'Technical', 70%; 'HSE', 70%). (Figure 8).

When training needs are more directly related to a job, training tends to be internally resourced ('Job Specific', 90%; 'HSE', 86%; 'Competence', 62%). (Figure 9).

*Figure 8: Reported External Training*

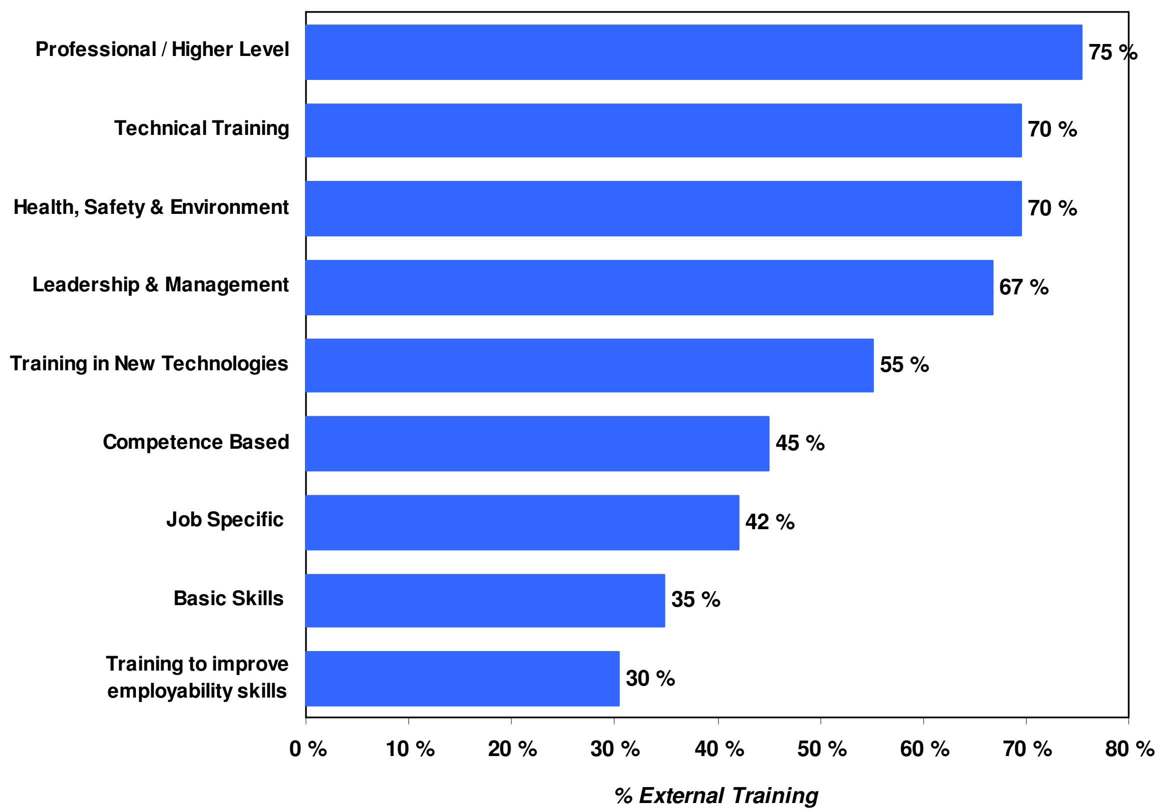
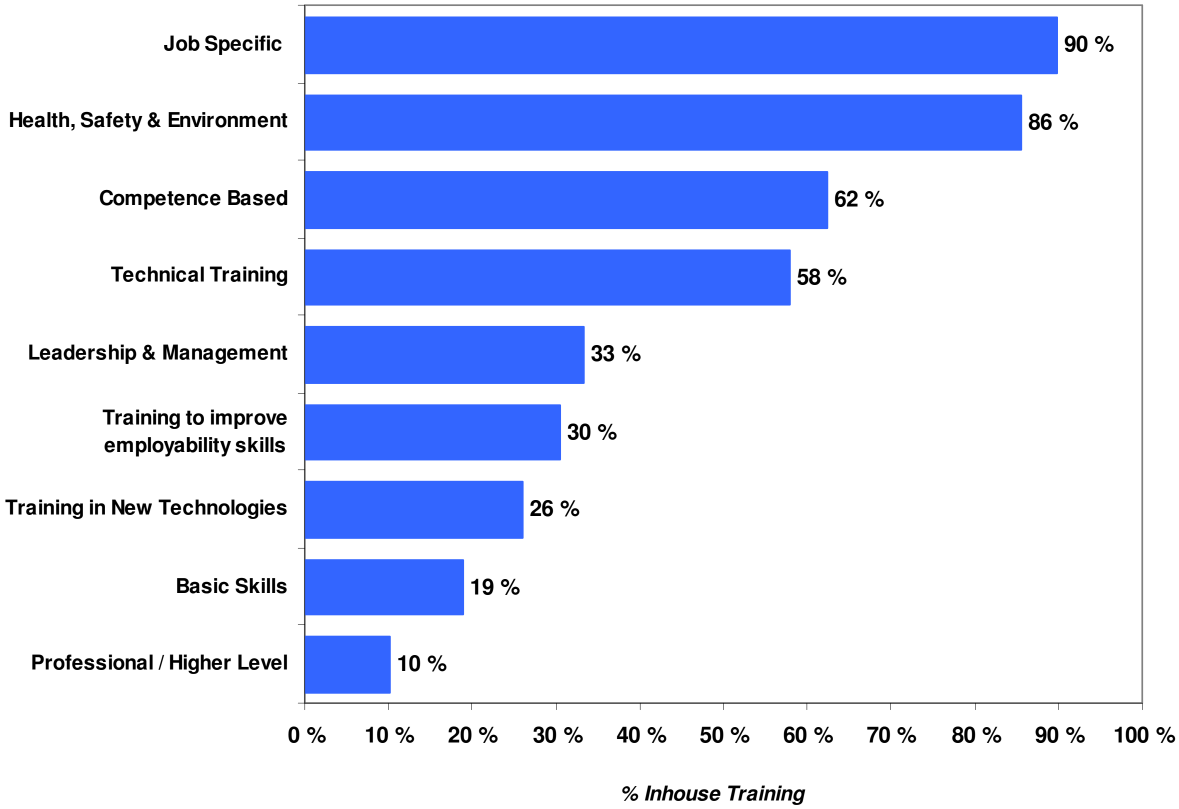


*Figure 9: Reported Internal Training*




## 3.6 Providers of Education & Training

For workforce development, employers made use of a range of private and public providers. The frequency of the use of providers is: private sector (94% of employers), FE sector (80% of employers), HE Sector (51% of employers).

Satisfaction ratings with each type of provider was measured for 'Cost, 'Relevance' of provision, 'Flexibility' of provision, 'Location' of provision, and the 'Quality' of those delivering education or training. For private training providers, satisfaction levels tended to be extremely high in all areas, ranging from the lowest of 76% satisfied (on Cost) to the highest level of satisfaction of 97% (on Quality). In the main, this reflects the highly tailored provision that private training providers must produce in order to secure a business offer.

The ratings for the public sector in FE and HE were also high, with all satisfaction levels between 60% and 85%.

The lowest of these ratings referred to relevance, flexibility and location. This portrays the constraints of qualification provision in a training context, as well as geographical coverage. The results suggest that while employers value such provision, there is scope for FE and HE to innovate in flexible and accessible provision, and that there is a role for the Sector Skills Council in facilitating this.

### 3.7 Education Supply

Employer expectations of the skills presented by 'School Leavers', 'Apprentices' and 'Graduates' were captured. For School Leavers, basic skills in literacy, ICT and numeracy are most relevant to employers. Most (43%) were neither satisfied nor dissatisfied, although a sizeable 19% expressed levels of dissatisfaction, while 38% expressed satisfaction.

All industry sectors placed a high level of importance on Apprentices (8% of the skills supply recruited were Apprentices, figure 6), as rated by 83% of employers. Industry returns in this connection ranged from as high as unanimous (100% of employers) in the Nuclear sector, to 57% of employers in the Pharmaceuticals sector. Employers expressed clear levels of satisfaction in many of the categories detailing what may be expected from an Apprentice. In priority order, employers valued 'Industry Awareness' followed, in equal measure, by 'Technical Skills', 'Practical Skills' and 'Employability Skills' .

The majority of industry sectors (78%) placed a high level of importance on Graduates (11% of the skills supply recruited were Graduates, fig.6). Employers also placed high priority on expectations from graduates in 'Practical Skills' and 'Industry Awareness'. High levels of expectation were attached to literacy, numeracy and IT skills. While employers apparently placed lower priority on core subject knowledge, when read in conjunction with general satisfaction ratings on STEM, it is clear that employers expect the high levels of subject knowledge but would wish to see improvements in practical skills. In this connection, 82% of employers were satisfied or very satisfied with STEM subject skills, while only 3% were not. Further, expectation ratings on 'Employability' and 'Innovation' reached majority status (37% and 24%, respectively) for graduates only.

### 3.8 Workforce Development

The degree of workforce development for the 'Existing Workforce' and the supply of 'School Leavers', 'Apprentices' and 'Graduates' was assessed for the skills categories of 'Basic', 'Competence', 'Technical' and 'Professional'. Competence and Technical training of the existing workforce was reported by a large proportion of employers (81% and 74%, respectively), while 64% also invested in the professional and higher level skills of the workforce. Technical training was the most prevalent training reported across all categories of employment, with 51% and 54% of employers also engaging in technical training for Apprentices and Graduates.

### 3.9 Skills Gaps, Shortages and Future Skills Needs

In the year past, a significant majority of employers indicated that skills gaps and shortages had had either 'some impact' or a 'significant impact' on business performance. This impact was reported by 83% of employers for the existing workforce, and by 72% of employers for new recruits. (Figure 10 displays skills gaps and shortages).

Between 94% and 97% of employers stated that their skills needs had either, remained 'constant', or had 'increased' relative to the previous year. This was highlighted for the employment areas of 'Competence', 'Technical', and 'Leadership and Management', where requirements had increased during the current year. This was reported by 65%, 58% and 54% of employers in each area, respectively. Looking a year ahead, the same areas remained relevant but with an expectancy of a continued increase in the skills development required. This was reported by 72%, 66% and 72% of employers respectively.

Skills needs are charted below (figure 11 & figure 12)

*Figure 10: Skills Gaps and Shortages*

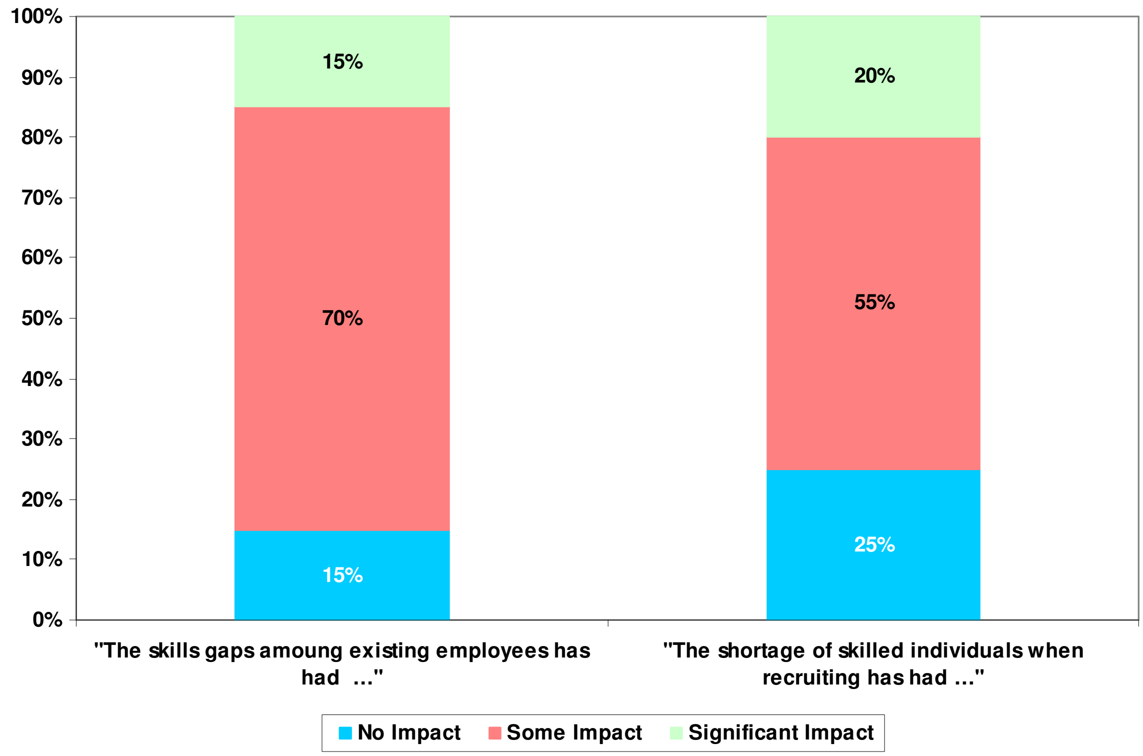



*Figure 11: Skills Needs (last 12 months)*

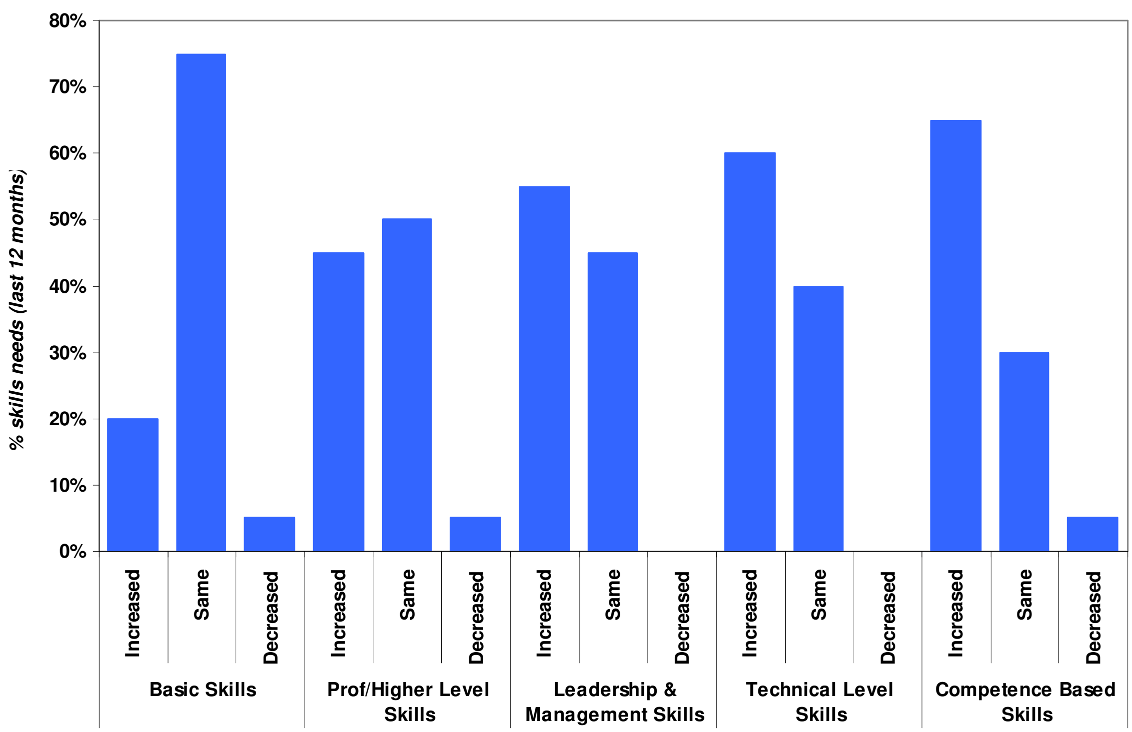
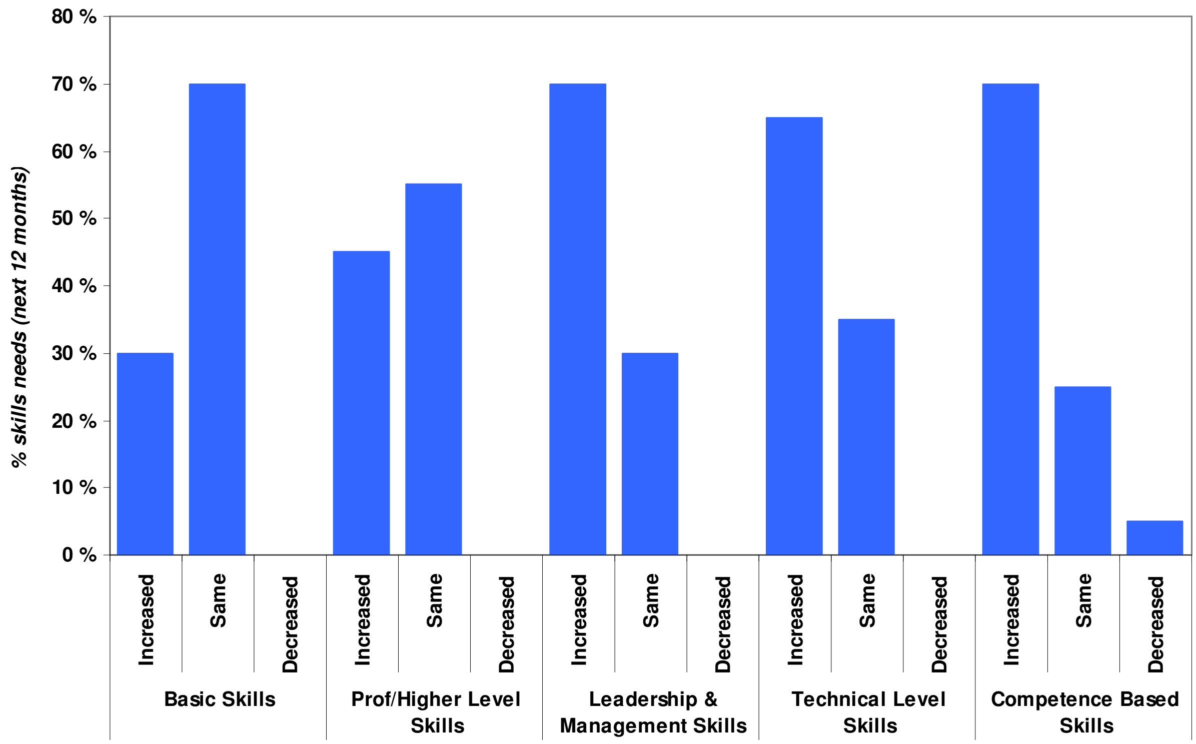


***Figure 12: Skills Needs (next 12 months)***




## 4.0 Skills and the Economy

Almost a third of employers (29%) reported preparing to extend into new technologies to maintain business performance. The nature of the new technologies and the skill requirements will be the subject of follow-up interviews.

Unsurprisingly, 95% of employers reported that the general economy had 'some impact' or a 'significant impact' on their businesses. However, for two industry sectors with considerable and unique internal economic drivers (Nuclear and Pharmaceuticals), the impact was rated at a lesser degree of severity.

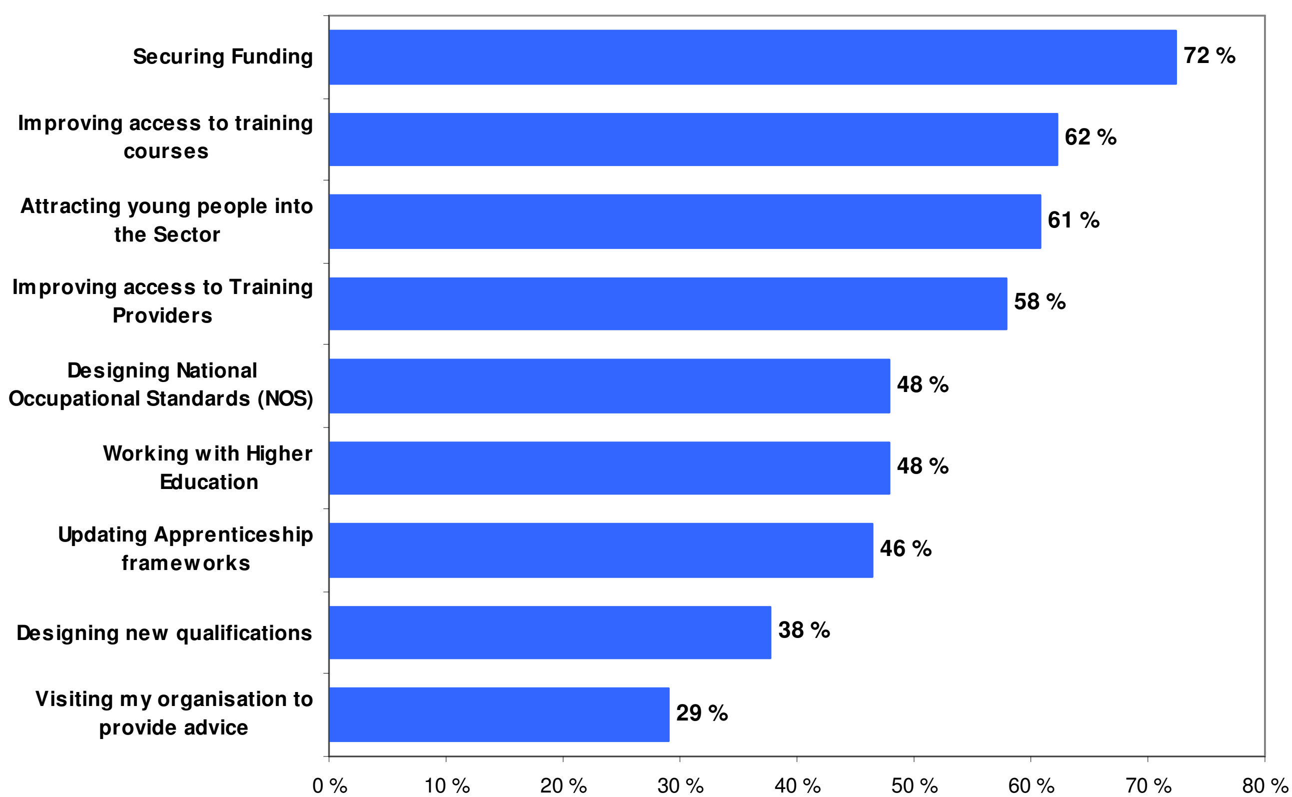
Looking ahead, employers were split in considering that the economic situation for their businesses would 'improve' (39%), 'remain static' (26%), or 'worsen' (26%) in the year ahead (8% of employers were undecided). This contrasts with the view of the same employers that the economy generally was expected to improve in the same period. This could be due, either to a perceived lag in industrial economic activity as the general economy picks up; or, it may arise as a result of the greater insight into their own sectors that employers undoubtedly have. In either case, the general conclusion is continuing uncertainty of the economy in the sector.

Given the lack of consensus about the future economic situation for businesses, most employers predicted no significant change in employment in the short term (2 years ahead) across the following categories: 'Process Operator', 'Technicians', 'Scientists and Engineers' and 'Management and Leadership'. However, the distribution of responses does indicate divergence in employment patterns by sector.

## 4.1 What Nuclear Employers want from a Sector Skills Council

From a defined list of SSC activities, employers were asked to select those they considered would be most beneficial to their businesses and industry. This gives, in effect, a popularity chart of the skills activities of the SSC that employers endorse. Figure 13 shows the relative importance of each activity reported by employers. The three most popular employer endorsements on skills activism were: 'securing funding' (for skills in the sector), as voted by 72% of employers; 'improving access to training provision' (62%), and 'attraction of young people' to the sector (61%).

***Figure 13: What Employers want from a Sector Skills Council***




## 5.0 Concluding Remarks

The data provided in this report is a unique snapshot of the Cogent footprint from a sizeable section of employers. The intention is that this, the first Skills Oracle will provide a datum for the development of trends in Labour Market Intelligence on an annual basis.

As noted in the introduction, the role of the project is two-fold providing a benchmark for individual companies, while also generating sector wide data that is absent from national sources but which is crucial to directing skill interventions over the longer term. Future Skills Oracle surveys will aim to build on the information gathered in 2009 to enable the development of trend analysis, focusing on specific areas of interest for each of Cogent's industries.

Cogent welcomes comments on any aspect of the survey or the report.

# Annex A: Skills Oracle 2010: Cogent Charts

This section includes charts presenting the following:

1. Recruitment and Staff Turnover
2. Training Budgets
3. Training
4. Qualifications Coverage
5. Education Supply
6. Workforce Development
7. Skills Gaps, Shortages and Future Skills Needs
8. Skills & the Economy
9. Anticipating What Lies Ahead
10. What Cogent Employers want from a Sector Skills Council

**In most cases, unless otherwise stated, the charts in this section present information for the complete Cogent Sector[1].**

Next to each chart (*in italics*) is the question asked in the Online Skills Oracle Survey.

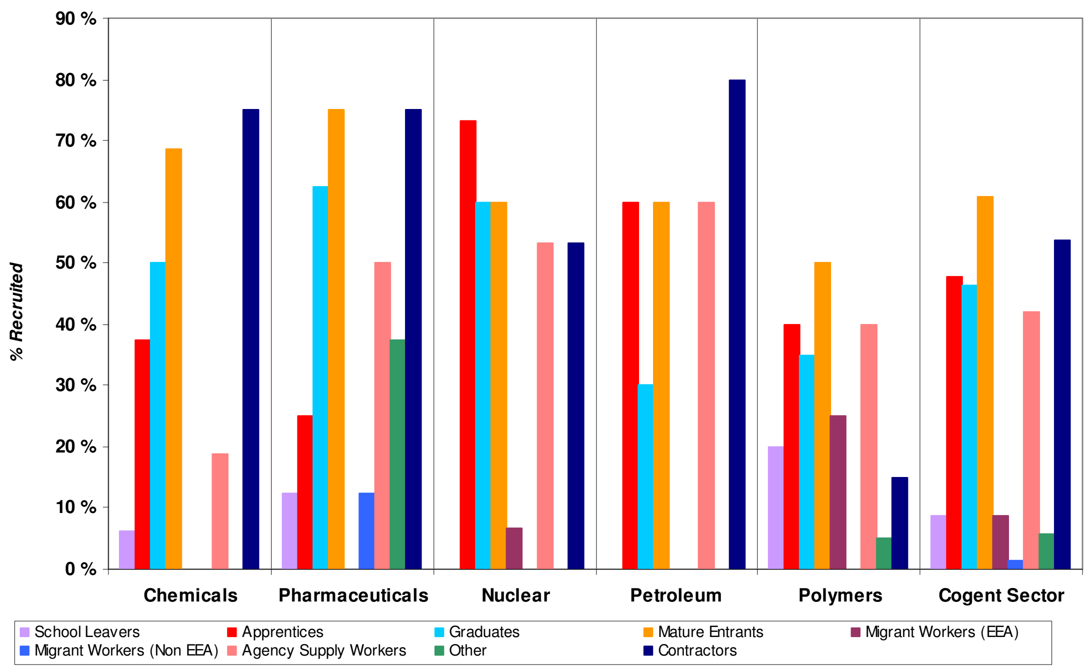
Industry-by-industry reports will be available later in the year.

[1] A representative sample of the Cogent footprint, excluding the Oil & Gas sector and Petroleum Forecourt Retail.

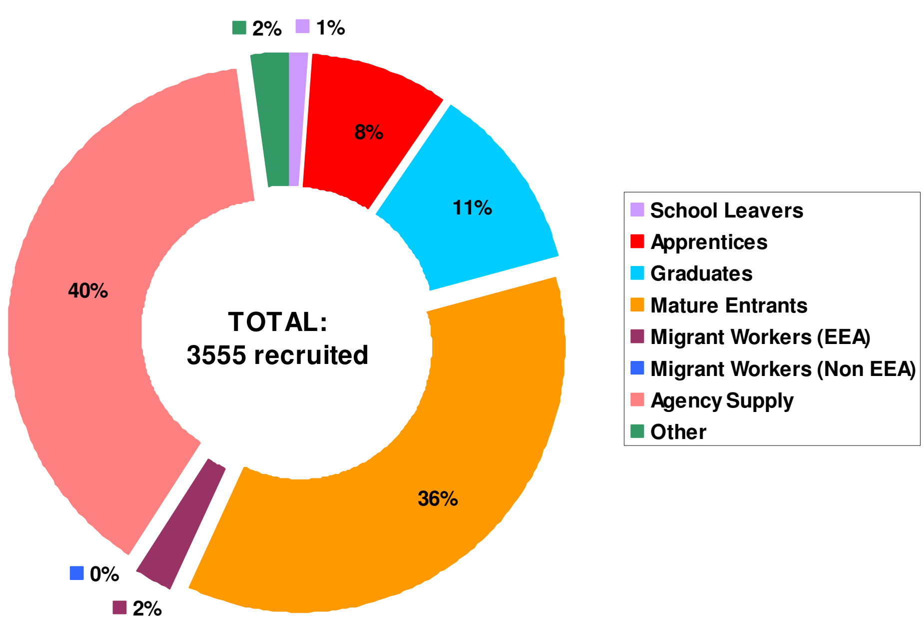
## 1. Recruitment and Staff Turnover

### 1.1 Workforce Recruitment

*Please indicate from the list below, all those recruited in the last 12 months. Please tick all that apply.*

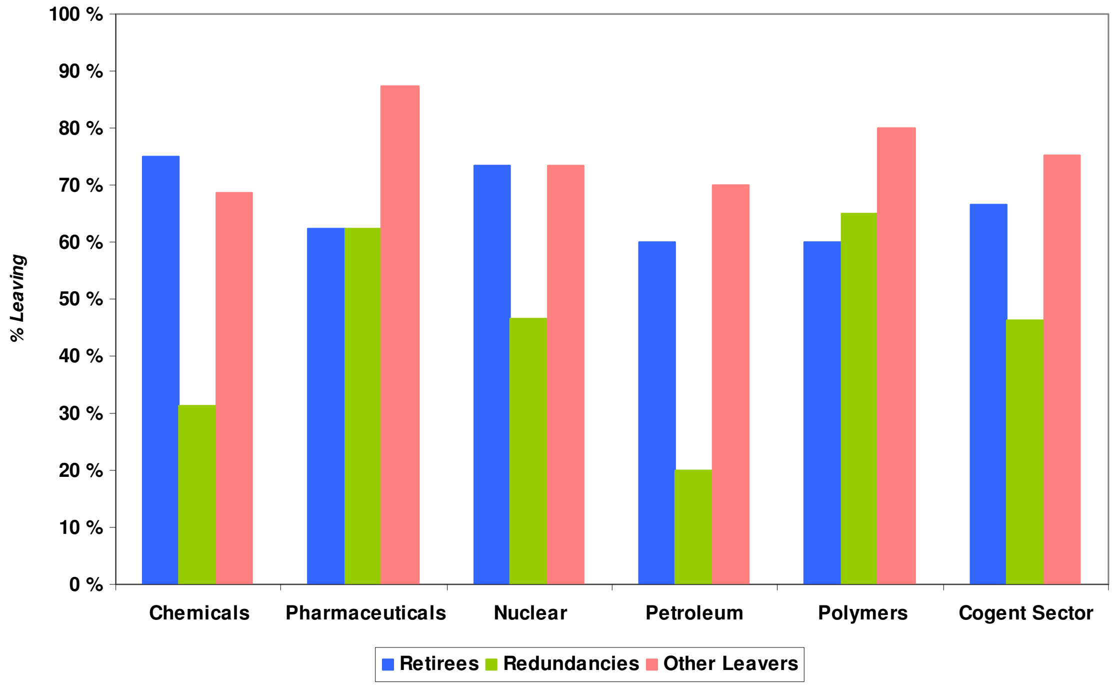



*Please indicate where possible, the number of those recruited.*

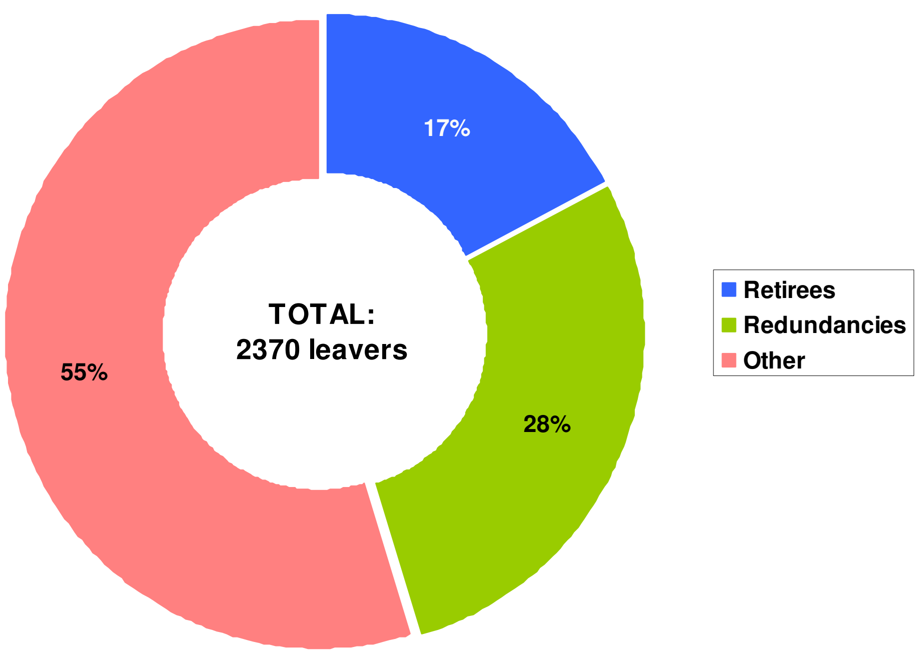


### 1.2 Workforce Leavers

*Please indicate from the list below those that have left over the past 12 months.*

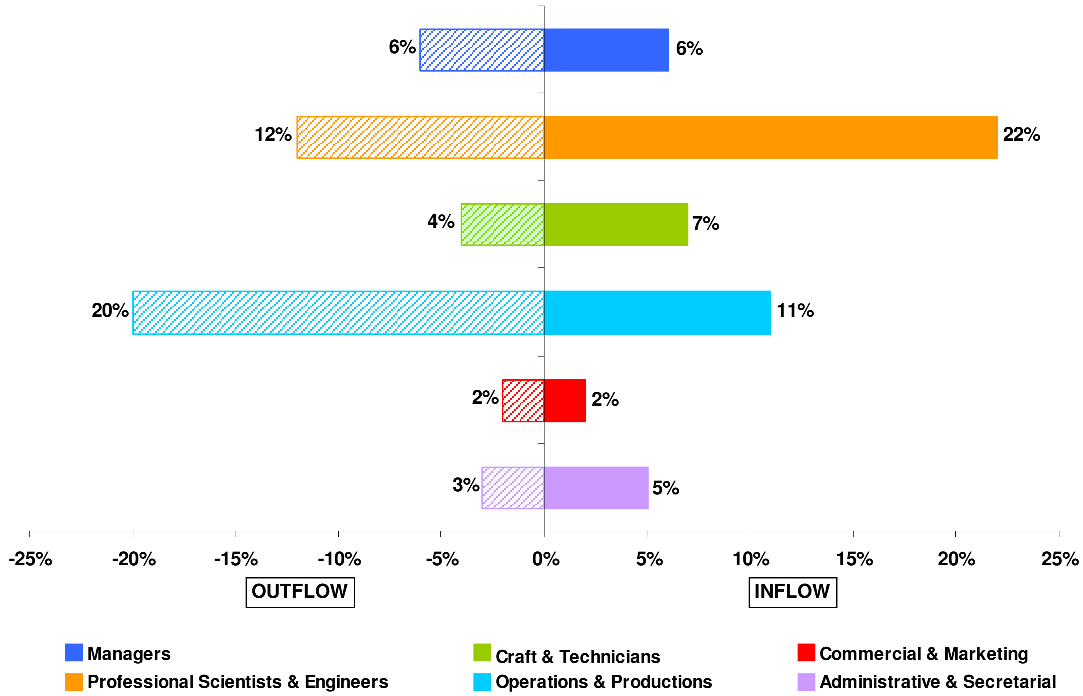



*Please indicate the number of leavers.*



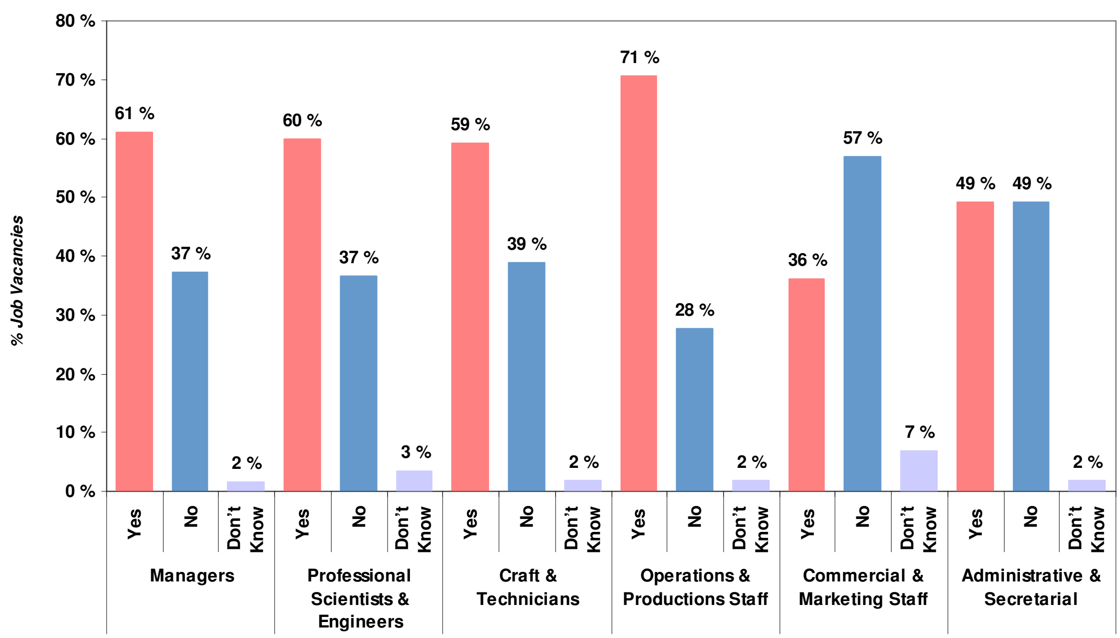
### 1.3 Employment Turnover

*Please indicate the number of entrants and leavers at your Site during the last 12 months, by Occupational Level.*

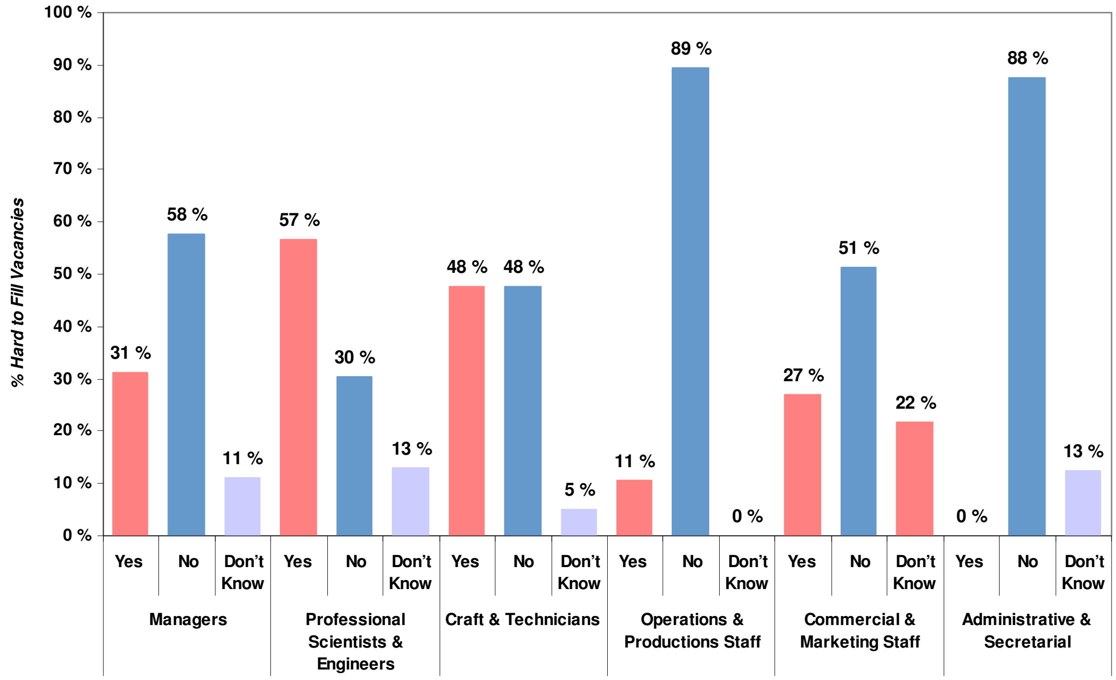



### 1.4 Job Vacancies

*Over the last 12 months, has your site had any job vacancies at the Occupational Levels below?*

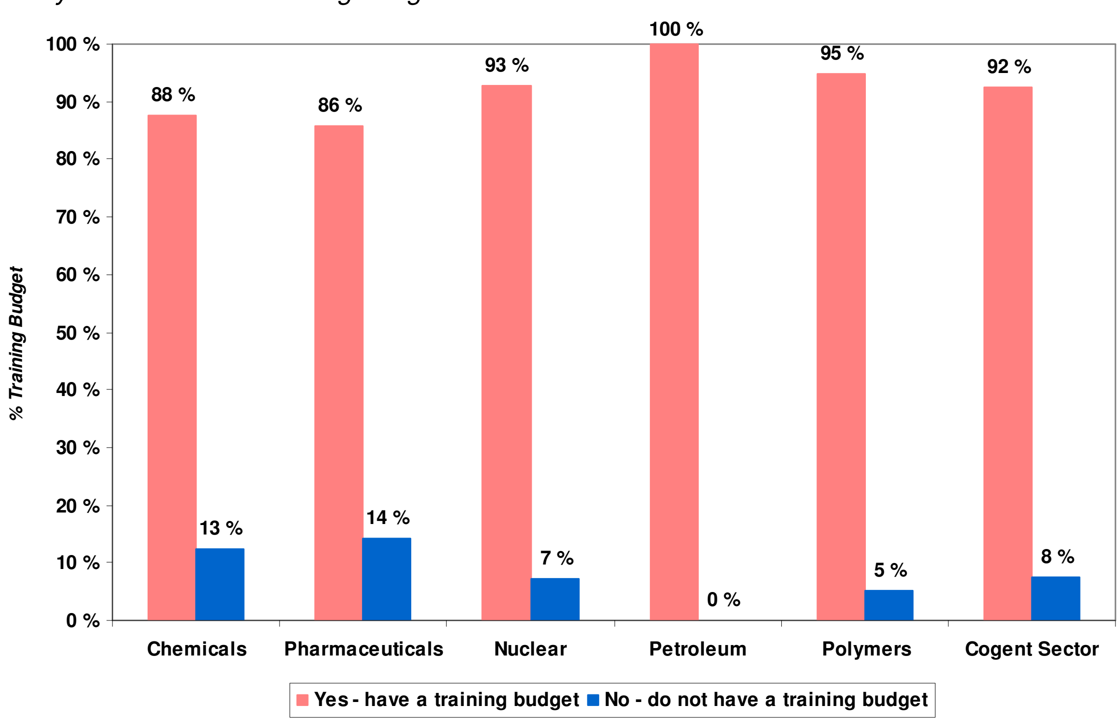


*Have these job vacancies been Hard-to-Fill?*

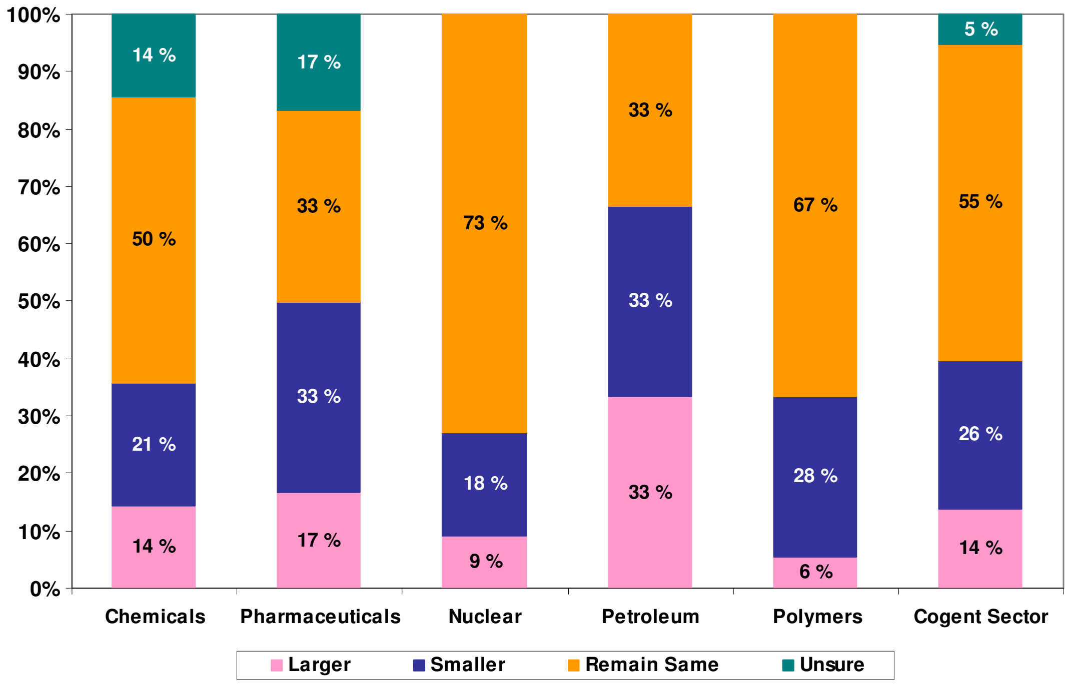



## 2. Training Budgets

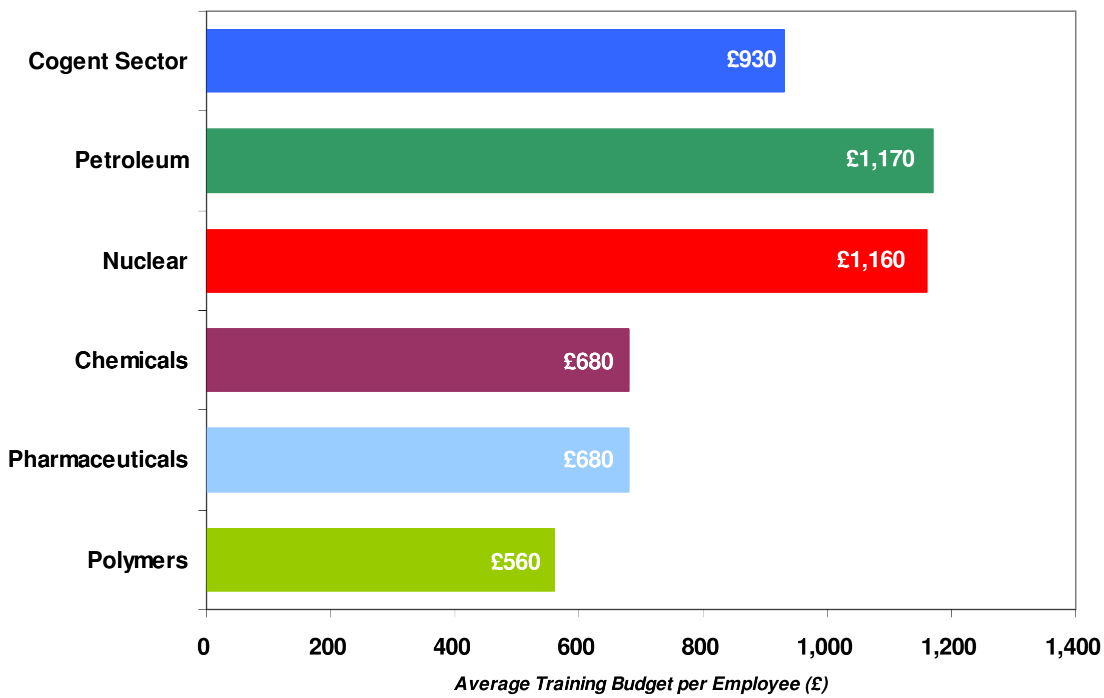
*Does your Site have a Training Budget?*



*Do you expect your Training Budget to; Increase, Decreasing or Remain the Same over the next 12 months?*



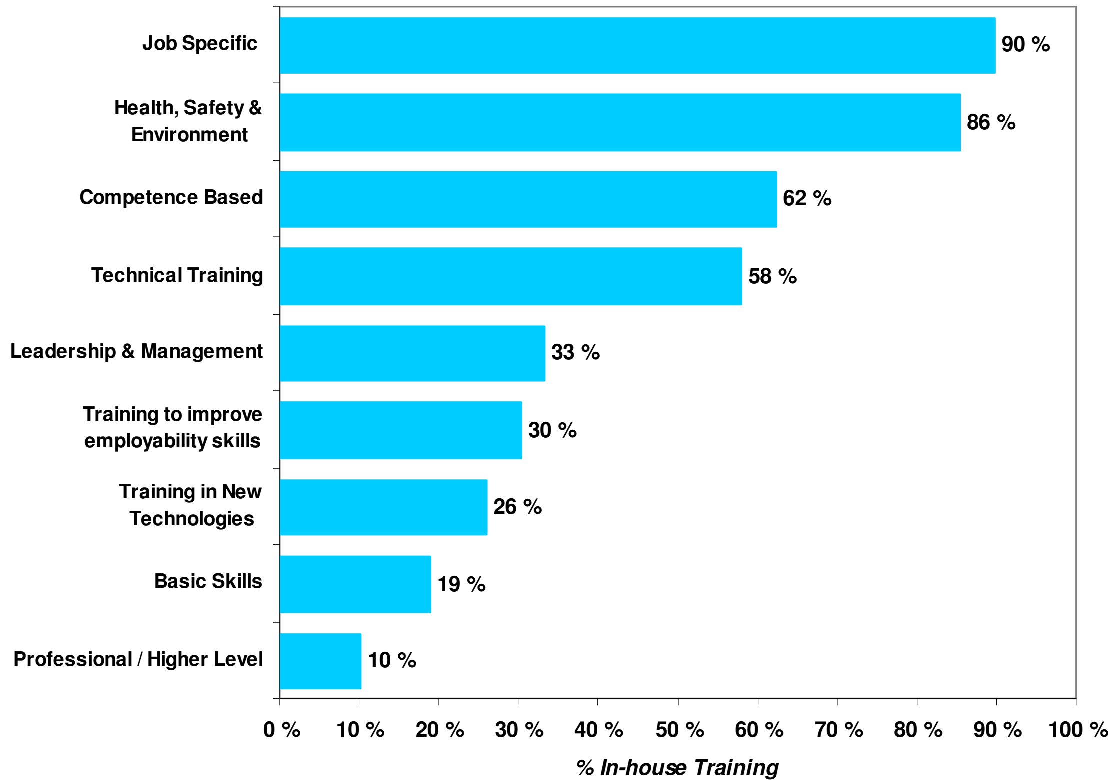

*Average Training Budget (£)*



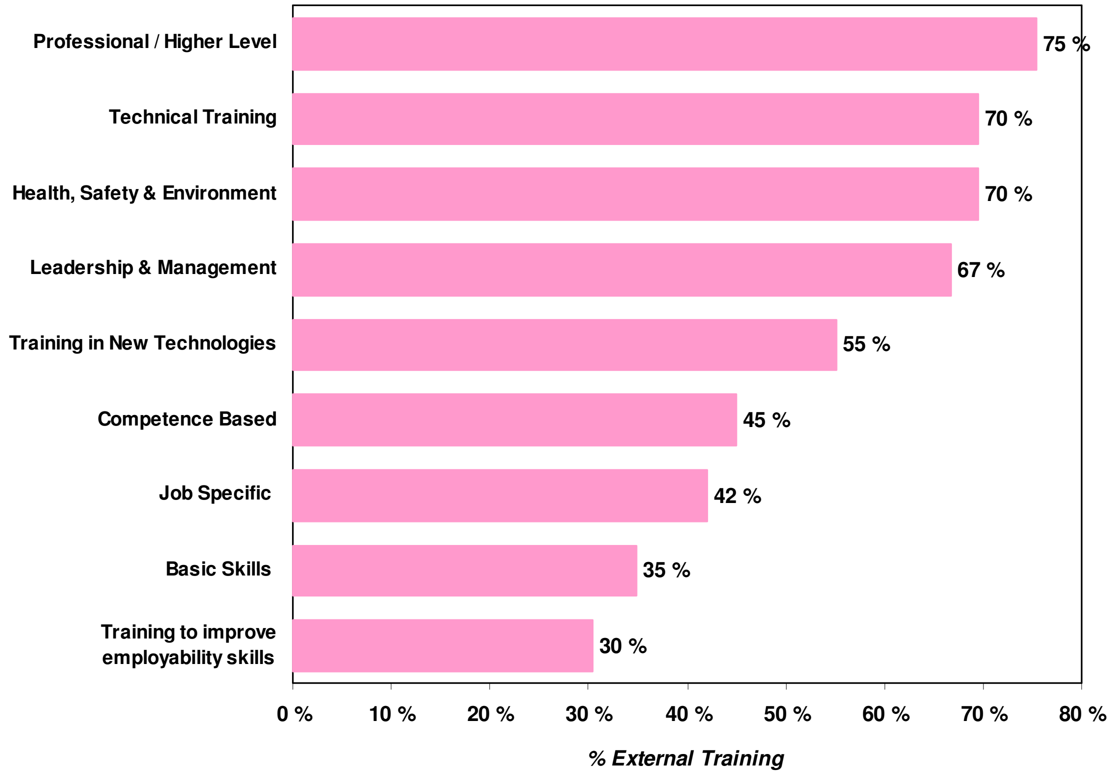
## 3. Training

*From the list below, please indicate over the last 12 months, the in-house and external training you have provided for employees? Please tick all that apply. Also, please highlight all those you consider to be a future training priority.*

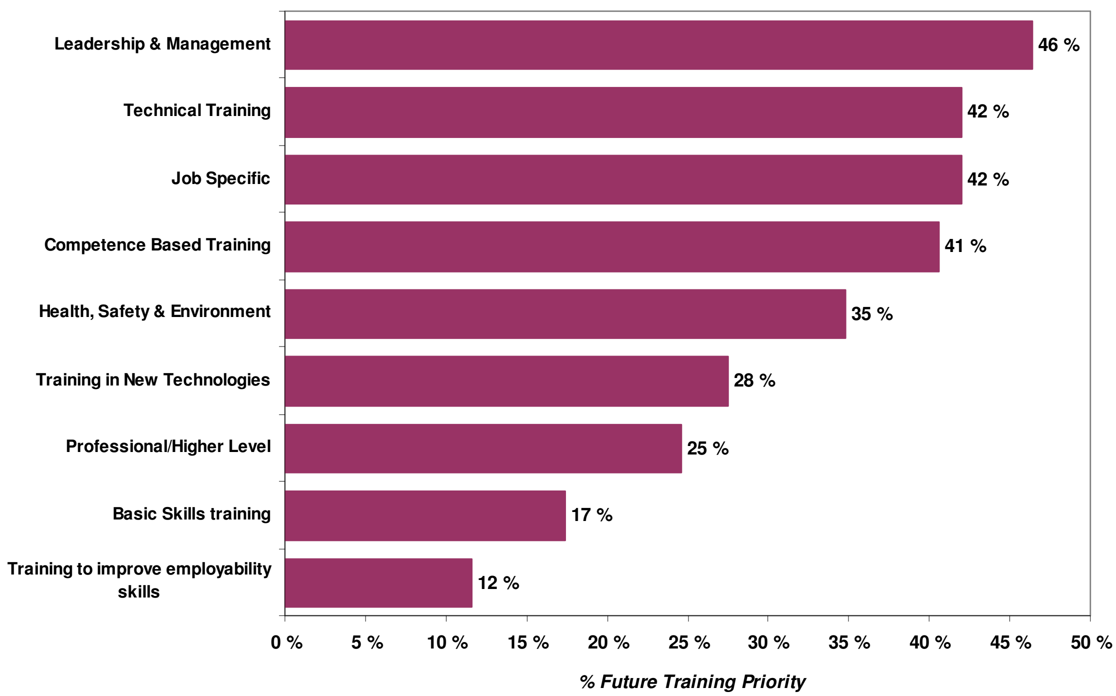
### 3.1 In-house Training



### 3.2 External Training

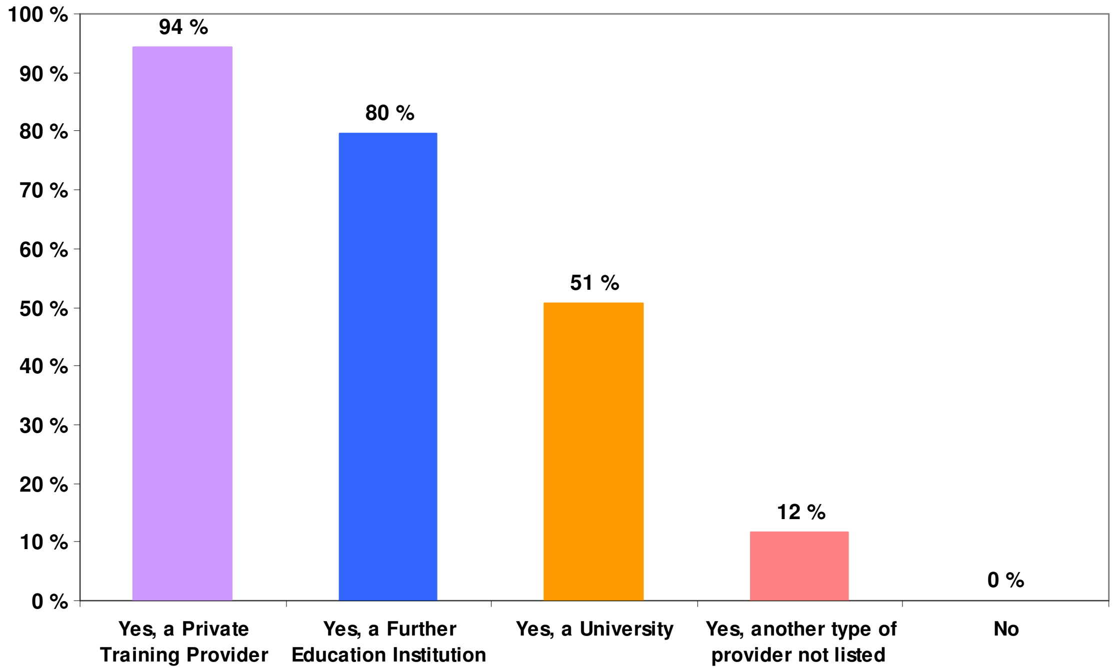



### 3.3 Future Training Priority



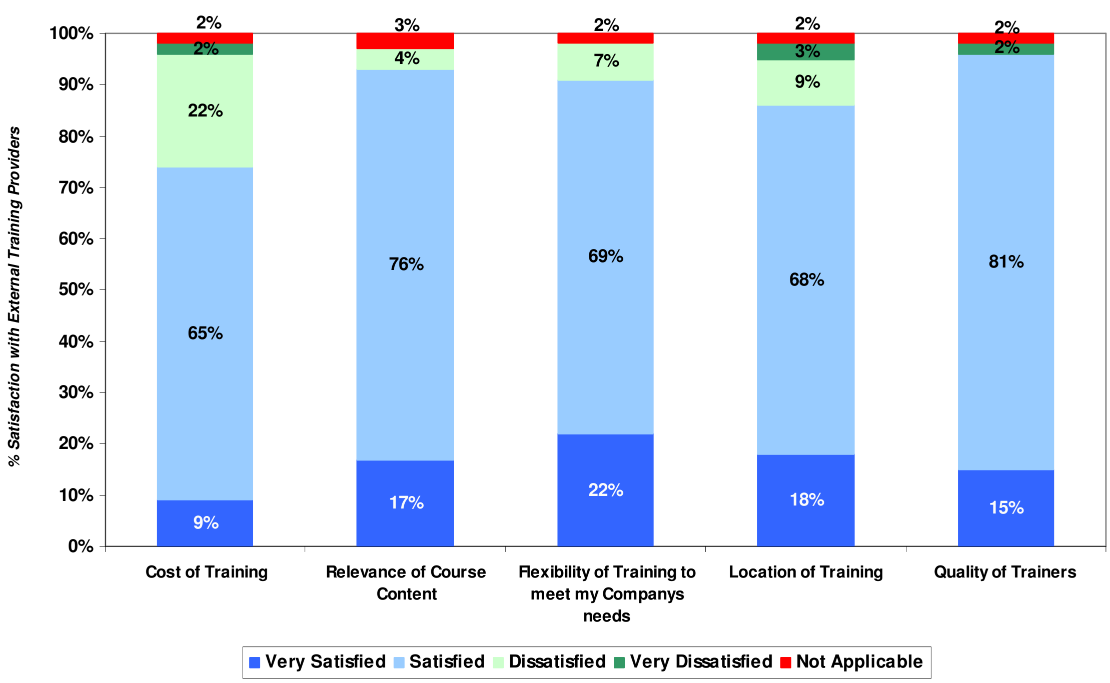
### 3.4 Training Providers

*With regard to the training that your Site has provided in the last 12 months, have you used any of the following Training Providers? Please tick all that apply.*



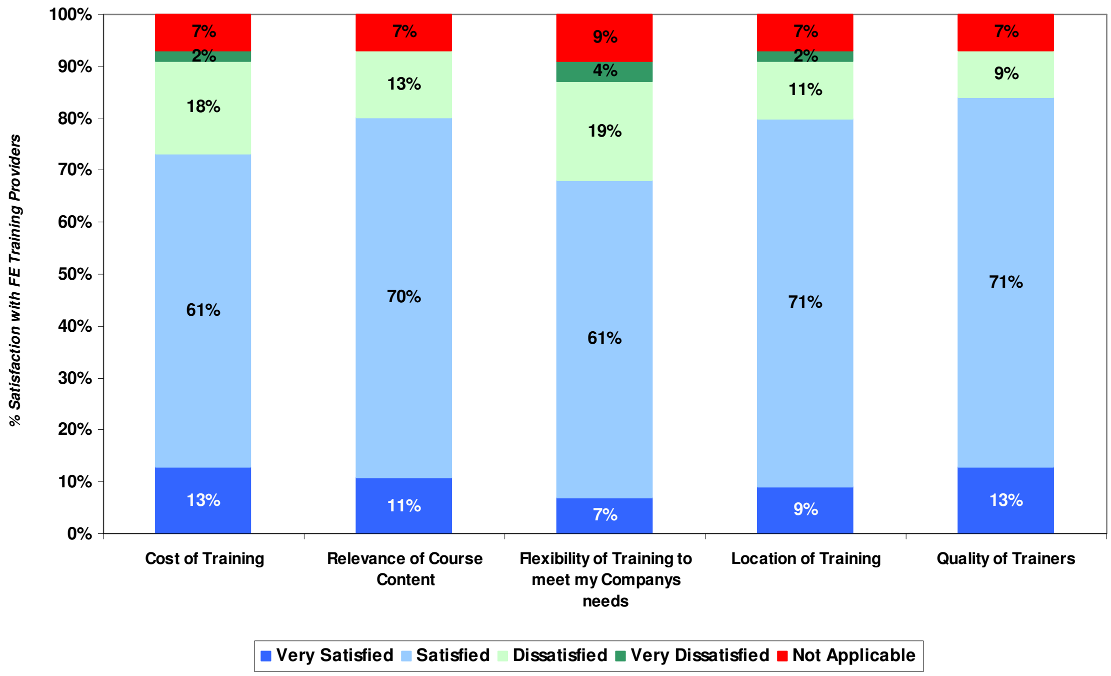

### 3.5 Satisfaction with External Training Providers

*Please indicate your Sites satisfaction with External Training Providers.*



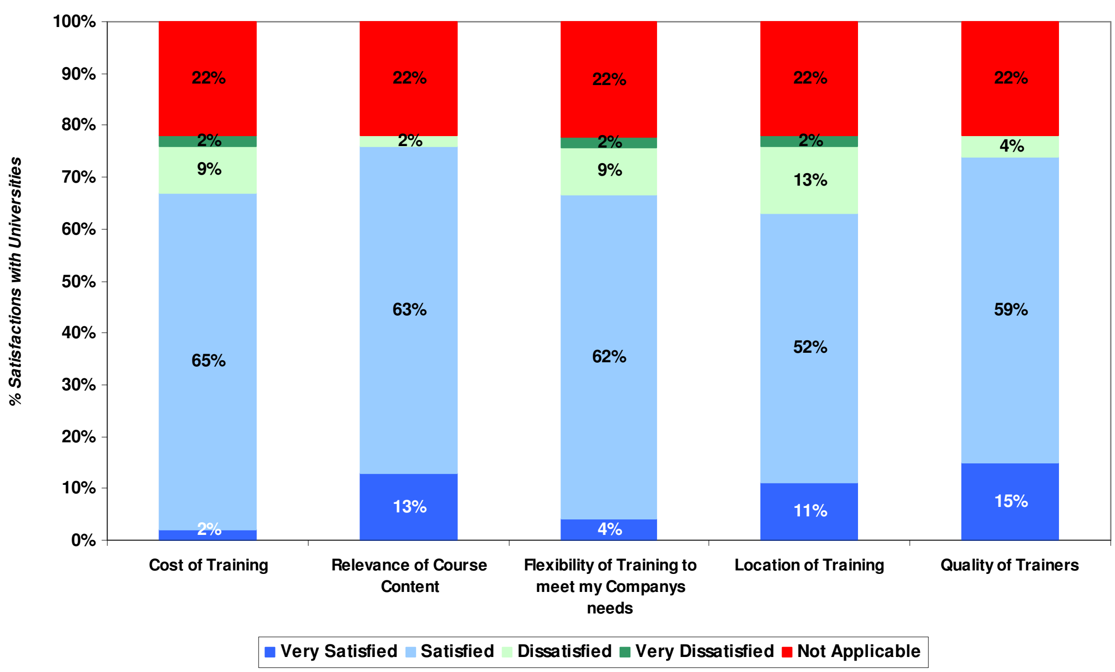
### 3.6 Satisfaction with Further Education (FE) Training Providers

*Please indicate your Sites satisfaction with Further Education Training Providers.*



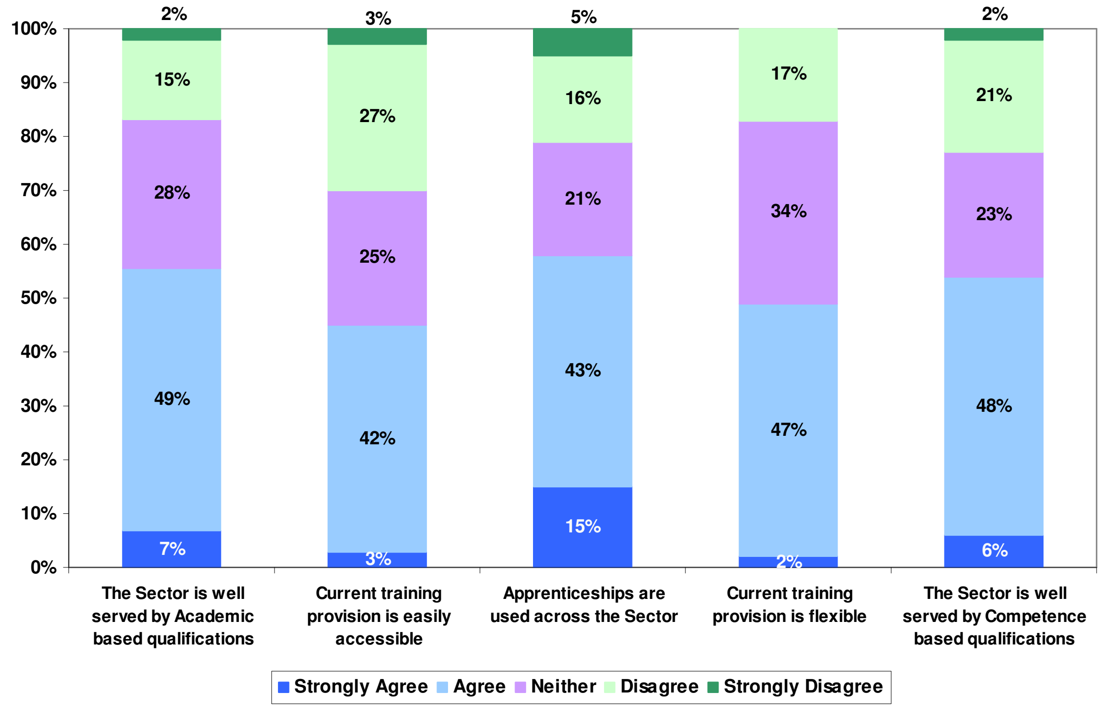

### 3.7 Satisfaction with Universities

*Please indicate your Sites satisfaction with Universities.*



## 4. Qualifications Coverage

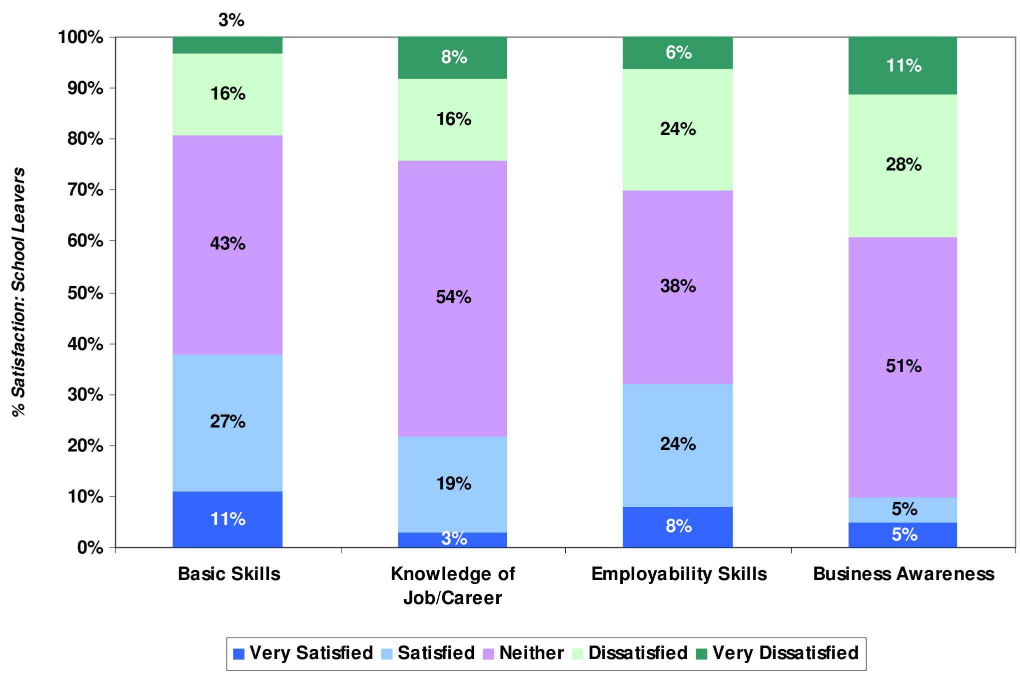
*Please indicate the extent to which you agree with the following statements:*



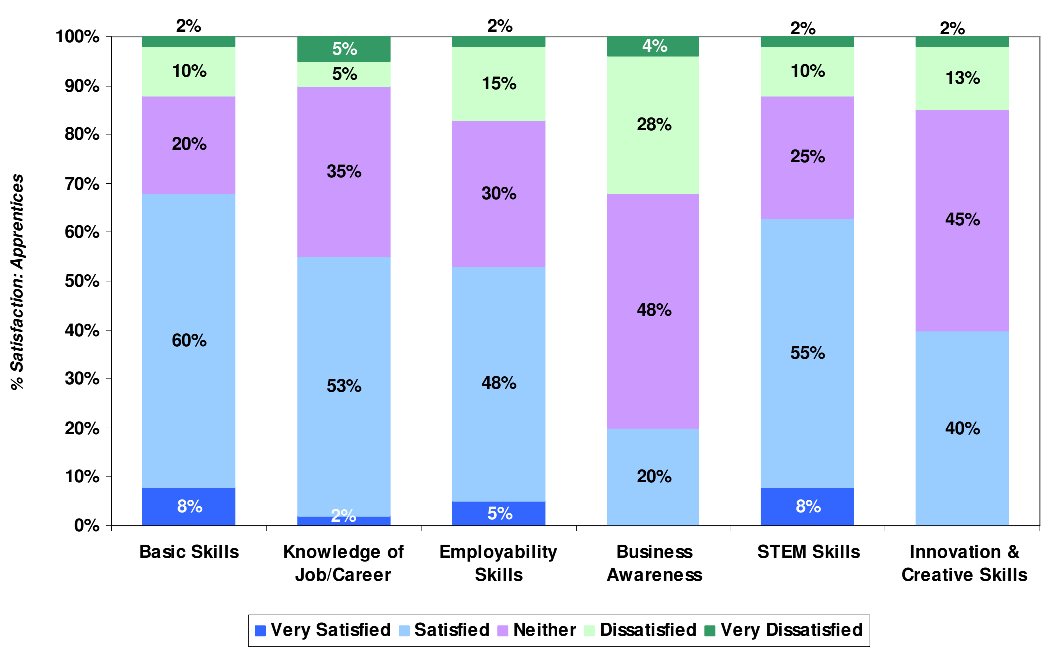
## 5. Education Supply

*During the last 12 months, please state how satisfied you were that the School Leavers, Apprentices and Graduates that applied for jobs at your Site were equipped with the following skills.*

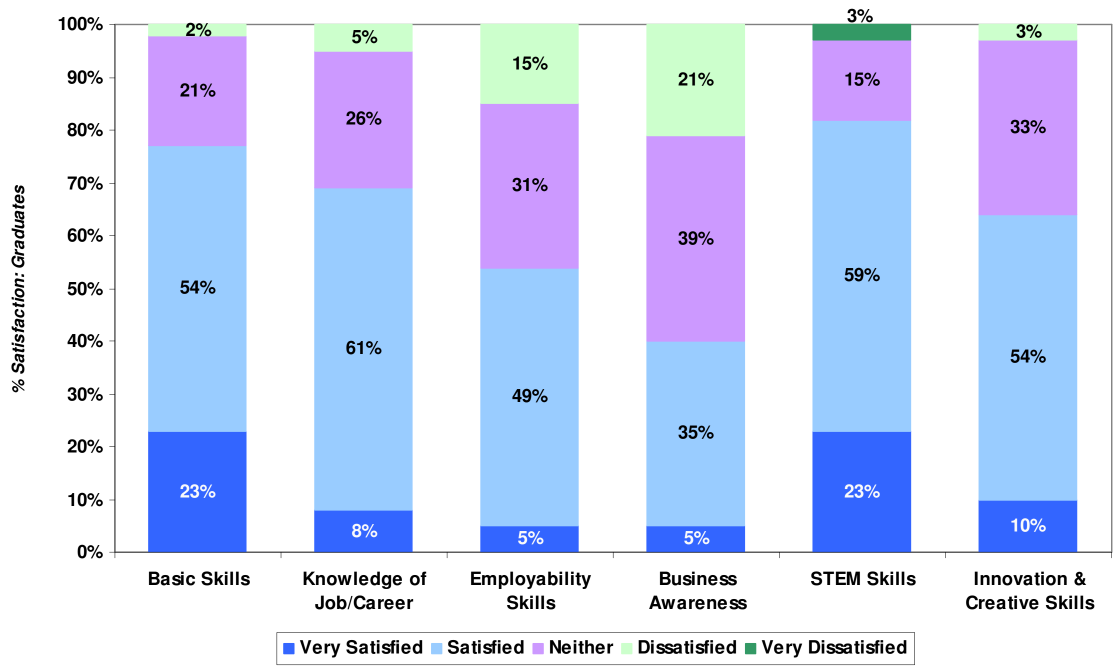
### 5.1 Level of Satisfaction: School Leavers




### 5.2 Level of Satisfaction: Apprentices

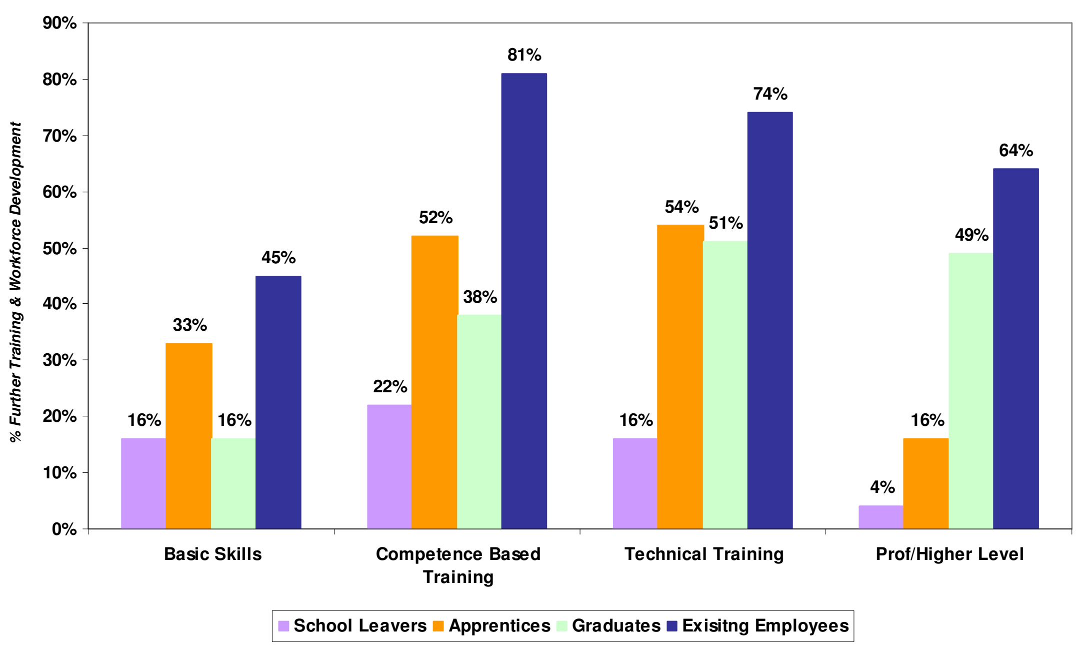


### 5.3 Level of Satisfaction: Graduates




## 6. Workforce Development

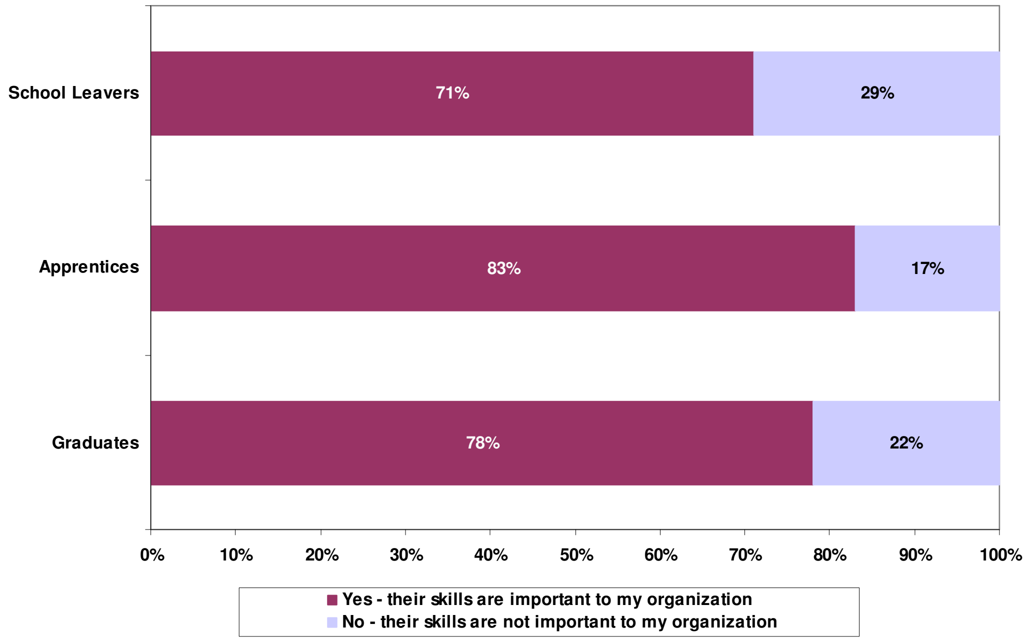
*Please indicate over the last 12 months, if you have given those School Leavers, Apprentices and Graduates recruited and also your existing employees any of the following types of training: Competence; Technical; Professional; Basic Literacy and Numeracy. Please tick all that apply.*



## 7. Skills Gaps, Shortages and Future Skills Needs

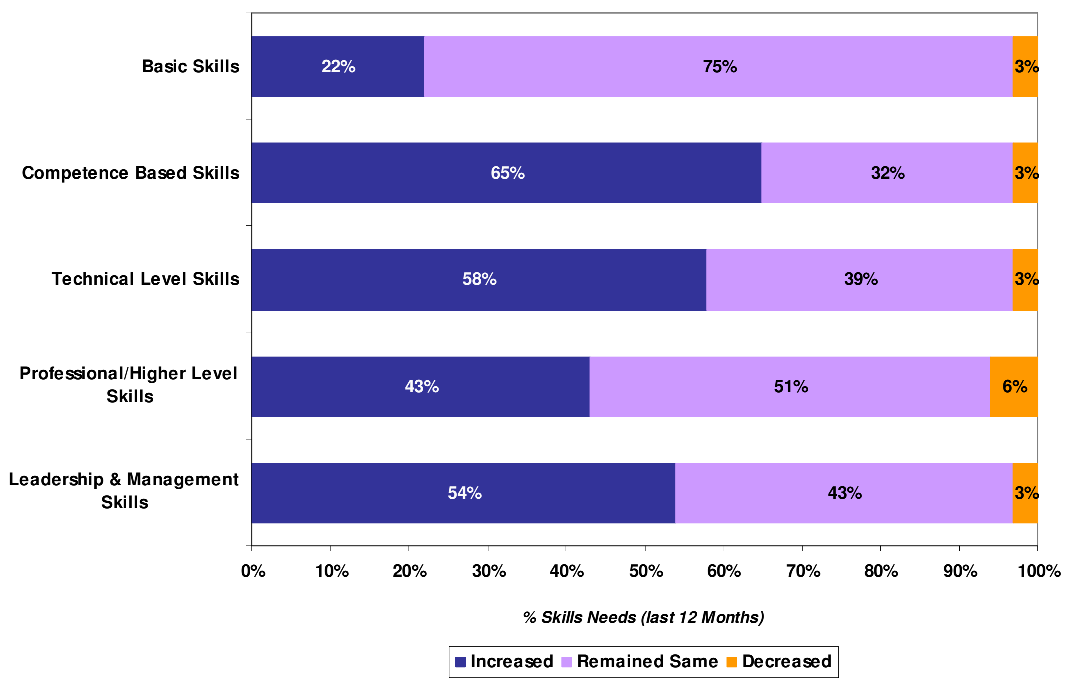
### 7.1 Importance of Skills

*Are the Skills of School Leavers; Apprentices; & Graduates Important to your organization?*



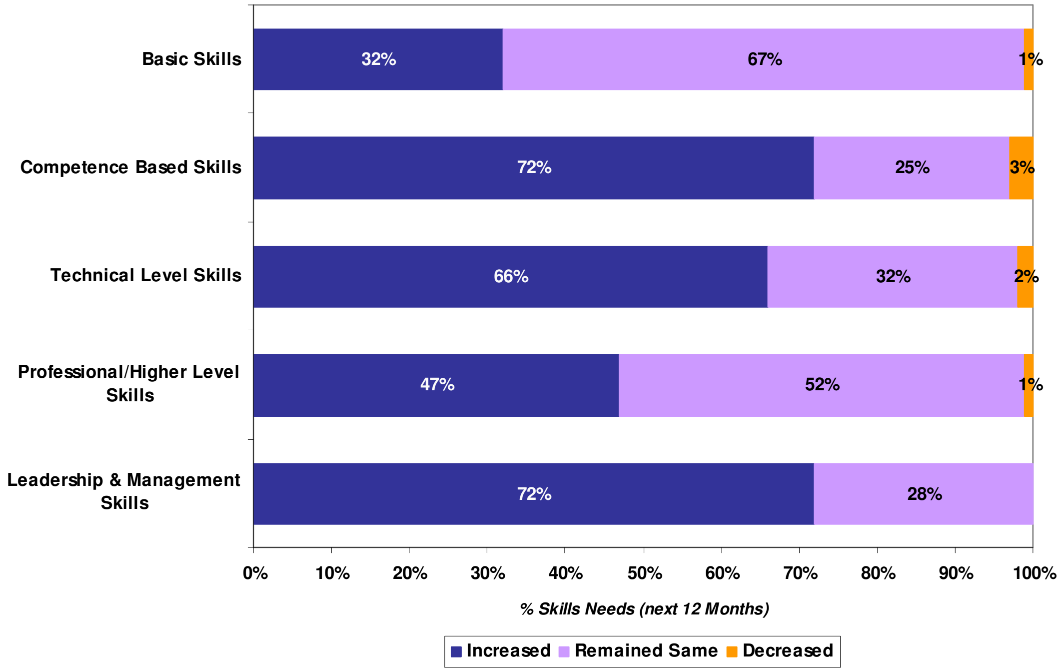

### 7.2 Skills Needs (last 12 Months)

*Thinking about your skills needs for the skills levels below, do you think your needs have: Increased, Remained Stable or Decreased over the last 12 months?*



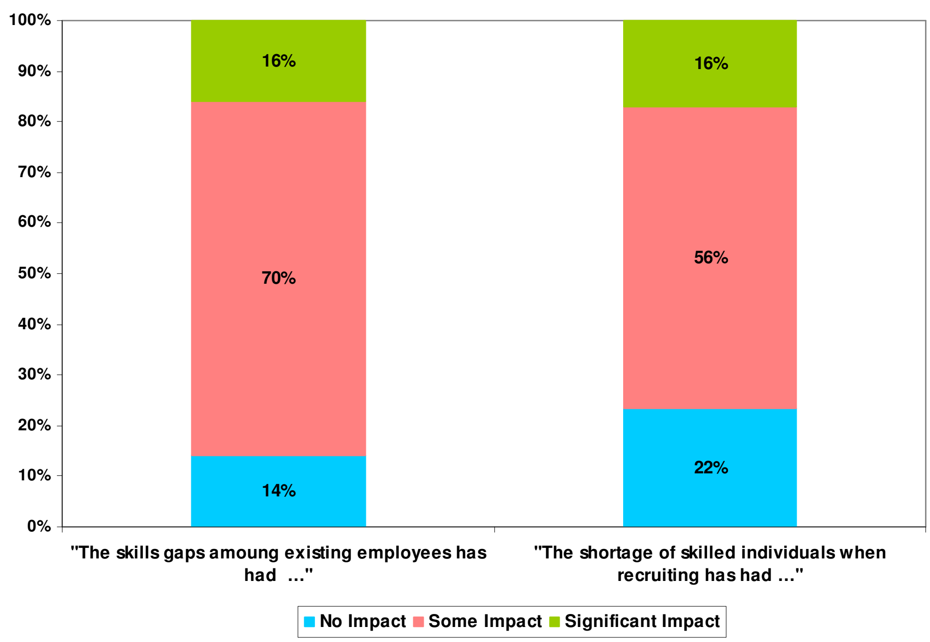
## 7.3 Skills Needs (next 12 Months)

*Thinking about your skills needs for the skills levels below, do you think your needs will: Increased, Remained Stable or Decreased over the next 12 months?*




## 7.4 Skills Shortages and Gaps

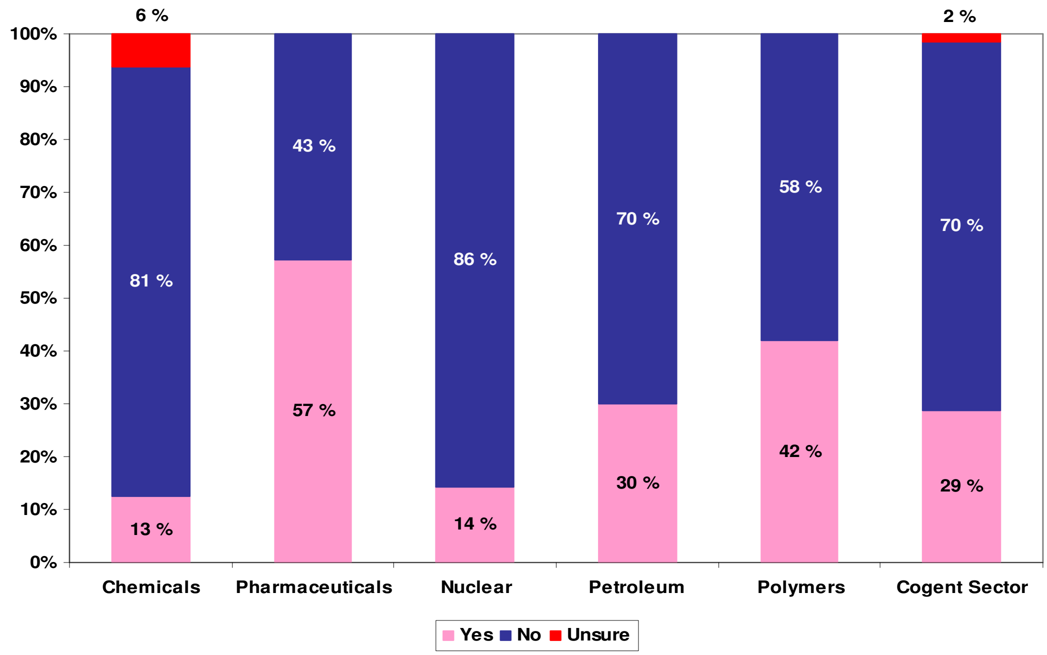
*During the last 12 months, how have Skills Shortages and Gaps in your Site impacted on your Business Performance?*



## 8. Skills & the Economy

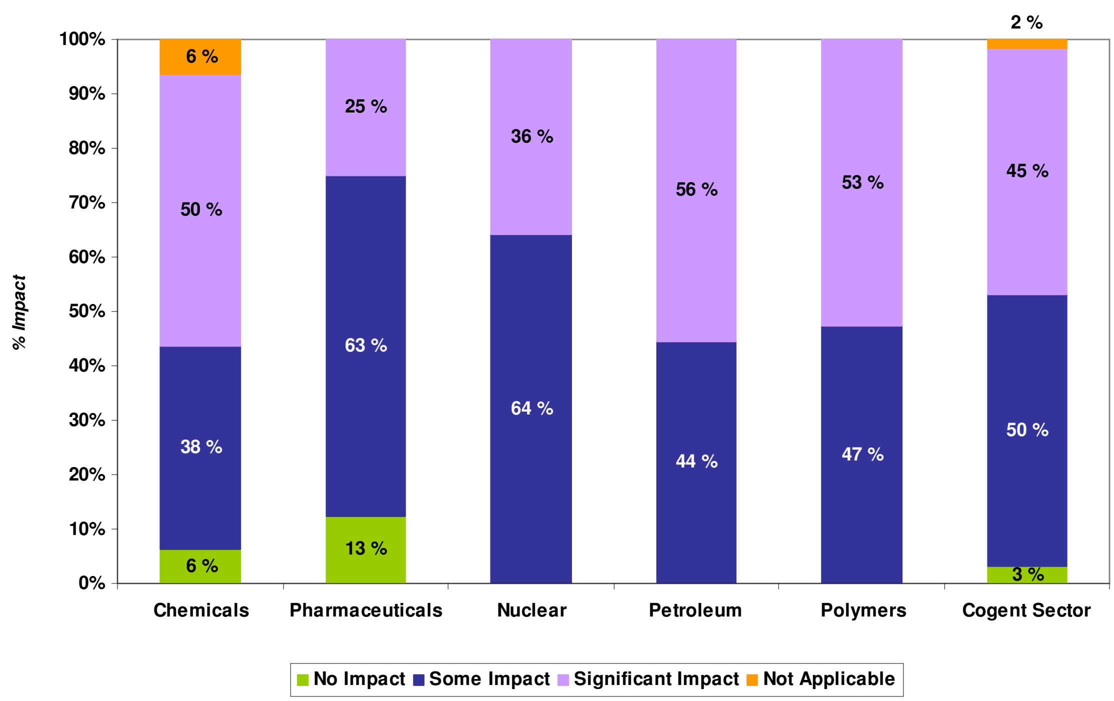
### 8.1 Diversification and Expansion

*Due to the current state of the Economy, has your Site had to diversify and expand its business to ensure Productivity levels? For example, has your Site expanded in to New Technologies etc?*



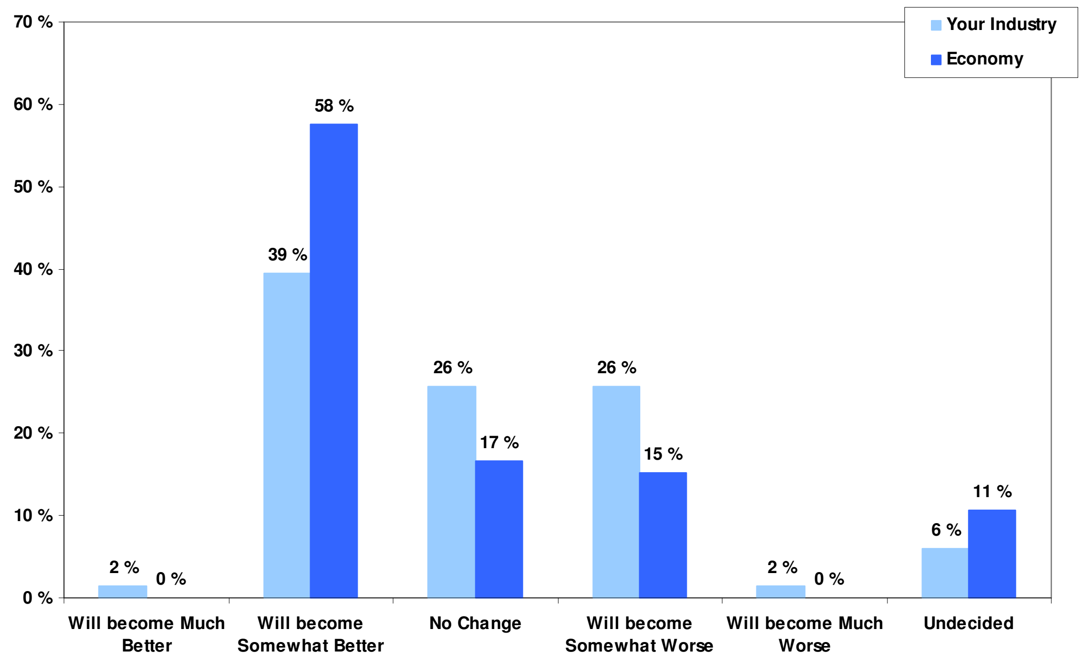

### 8.2 Impact of the Economy

*Over the last 12 months, please rate how the current Economic Climate has impacted on your business.*



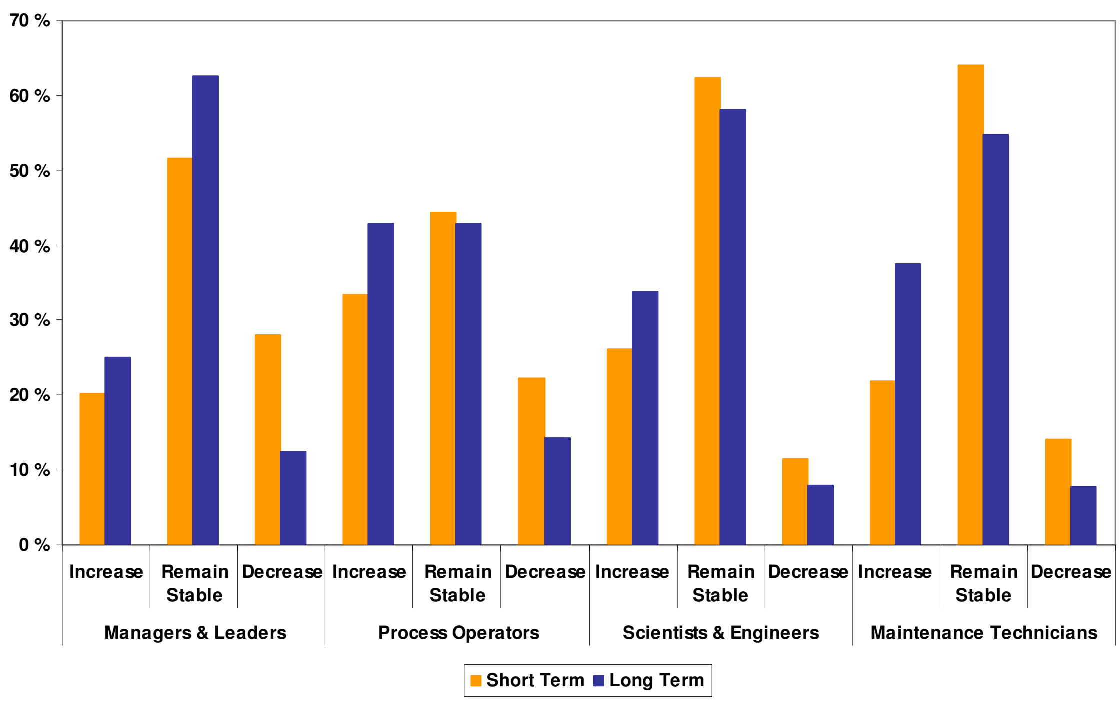
## 8.3 Changes to the Economy: The Next 12 Months

*Over the next 12 months, how do you see the Economy changing? When answering this question, please consider your Industry sector first, and then the Economy as a Whole.*



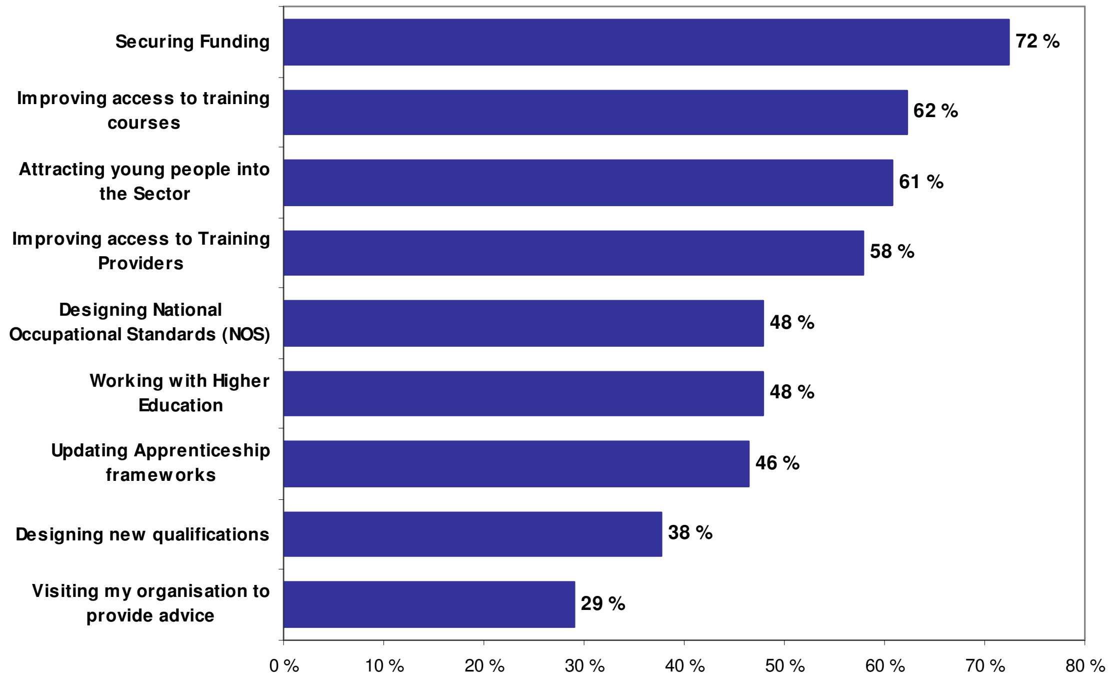

## 9. Anticipating What Lies Ahead

*In the Short Term (0 to 2 years) and Long Term (2 years +) do you expect employment in your Site to increase, remain stable or decrease?*



## 10. What Cogent Employers want from a Sector Skills Council

*What can Cogent do to help you?*



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**Should you wish to take part in the 2010 Skills Oracle, or would like some information please do not hesitate to contact Julie Plumbley by email at: Julie.plumbley@cogent-ssc.com**

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